



**QUEEN ANNE'S COUNTY
DEPARTMENT OF PUBLIC WORKS**

MAY 2, 2016

**PROJECT MANUAL
CONTRACT 16-03**

**SOUTHERN KENT ISLAND
SANITARY PROJECT**

TRANSMISSION SEWER MAIN

**PROPOSAL DUE
JUNE 29, 2016 AT 2:00 PM**

Professional Certification: I hereby certify that these documents were prepared for or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 16974, Expiration Date: June 25, 2016.



QUEEN ANNE'S COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

SOUTHERN KENT ISLAND SANITARY PROJECT

TRANSMISSION SEWER MAIN INSTALLATION
CONTRACT NO. SAN 16-03

TABLE OF CONTENTS

Section No. Title

BIDDING REQUIREMENTS

00030	Invitation to Bid
00100	Instructions to Bidders
00330	Bid Form
00410	Bid Bond
00415	Bidder's Experience
00417	Subcontractor & Supplier List
00418	Certification of Non-segregated Facilities
00419	Certification of Equal Employment Opportunity
00420	Non-Collusion Certification
00421	Affirmative Action Plan Certification
00422	Conflict of Interest Disclosure
00423	Assurances for Compliance with Federal Laws & Regulations

MDE REVOLVING LOAN FUND CONTRACT PROVISIONS

00450	Maryland Revolving Fund Requirements
00455	Prevailing Wage Rates

CONTRACT FORMS

00530	Agreement
00610	Performance Bond
00620	Payment Bond
00630	Maintenance Bond
00690	Application for Payment Affidavit

CONDITIONS OF CONTRACT

- 00700 General Conditions
- 00800 Supplemental Conditions

SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

- 01010 General Requirements
- 01151 Measurement and Payment
- 01590 Construction Facilities

DIVISION 2 - SITE WORK

- 02100 Clearing and Grubbing
- 02220 Excavation for Structures
- 02221 Trenching
- 02485 Finish Grading and Seeding
- 02575 Paving Restoration
- 02611 Pressure Sewer Pipe
- 02615 High Density Polyethylene Pipe System
- 02652 Pressure Sewer Testing
- 02800 Directional Drilling

DIVISION 3 - CONCRETE

- 03310 Concrete (Utility)

DIVISION 4 - DIVISION 16

- 11300 Miscellaneous Pumps
- 13300 Flow Meter

APPENDIX A

Maryland State Highway Administration Permit (via addendum)
Maryland Department of the Environment Construction Permit (via
addendum)
FAA/MAA Airport Construction Permit
Benchmarks

APPENDIX B - (Not to be considered as part of the Contract Documents)

Geotechnical Investigation
Utility Locates at WWTP

BIDDING REQUIREMENTS

CONTRACT NO. SAN 16-03

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00100	Instructions to Bidders
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00410	Bid Bond
00415	Bidder's Experience
00417	Subcontractor List
00418	Certification of Non-Segregated Facilities
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00421	Affirmative Action Plan Certification
00422	Conflict of Interest Disclosure
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QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

INVITATION TO BID

Sealed bids for the construction of a portion of the sanitary sewerage facilities for Phase 1 of the Southern Kent Island service area (consisting of the subdivisions of Kent Island Estates and Romancock on the Bay), Queen Anne's County, Maryland will be received from qualified bidders by the County Commissioners of Queen Anne's County at the Queen Anne's County Sanitary District, 310 Bateau Drive, Stevensville, Maryland 21666 until 2:00 p.m. local time on **June 29, 2016** at which time they will be opened publicly and read aloud.

The overall project is a failing septic system abatement project which will consist of three construction contracts:

- Contract SAN 16-01 – Septic Tank Effluent Pump Installation
- Contract SAN 16-02 – Community Sewer Main Installation
- Contract SAN 16-03 – Transmission Main Installation

The work of this contract, Contract No. SAN 16-03, consists of the installation of approximately 46,000 linear feet of 2-inch to 16-inch HDPE pressure sewer main. The vast majority of the work will be within SHA rights-of-way. A portion of the work must utilize horizontal directional drill methods. A crossing under US Rt 50/301 will also be required. Work will include the installation of division valves and air-release valves as well as stub-outs into the communities being served. Also included is the installation of a flow meter and a connection into the existing Kent Island Wastewater Treatment Plant.

Copies of the Contract Documents may be obtained beginning **May 2, 2016**. Contract Documents will be available at no cost in electronic format (only in .pdf format) on Maryland's Ebid Marketplace and on the County Web Site at:

<https://emaryland.buyspeed.com/bsa/external/publicBids.sdo>

<http://qac.org/Bids.aspx>

Plan holders shall register with an expression of interest to the QAC Project Manager, Alan Quimby, at aquimby@qac.org. The expression of interest shall identify:

- Contract Number – SAN 16-03
- Contractor's Legal Entity Name & Address
- Contractor Contact Person Name, Phone & E-mail address

General Contractors who do not register an expression of interest with the QAC Project Manager as described above will not be eligible to submit bids for the project.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

A notice of an addendum posting will be sent to all registered plan holders. Any Addenda issued shall be issued via electronic posting on the ebidmarketplace.com and Queen Anne's County Procurement websites (see links listed below). **However, it is the Bidders responsibility to ensure receipt of all addenda.**

<https://emaryland.buyspeed.com/bs0/external/advsearch/advancedSearch.sdo>

<http://qac.org/Bids.aspx>

A pre-bid meeting will be held at the Kent Island Estates Community Hall – 9402 Romancoke Road, Stevensville Maryland at 1:00 p.m. local time on June 8, 2016.

Bidders on this work will be required to comply with:

1. The President's Executive Order No. 11246 as amended by Executive Order 11375. The requirements for bidders and contractors under this order are explained in the Contract Documents.
2. The facilities to be constructed under this Invitation to Bid will include funds from the Maryland Water Quality Revolving Loan Fund. Bidders will be required to comply with Federal and State requirements pertaining to minority business enterprise and women's business enterprise.
3. The Davis Bacon Act labor standards provisions are applicable to this contract.
4. Use of American Iron and Steel provisions are applicable to this contract.
5. The successful bidder will be required to place both a Performance Bond and a Payment Bond, each in the amount of 100% of the contract price, and a Maintenance Bond in the amount of 5% of the contract price.

Each Bidder must submit a bid security of not less than five (5) percent with his bid, in the form and subject to the conditions provided in the Instructions to Bidders. Bids to remain open for 120 days. No bidder may withdraw his bid within one hundred twenty (120) days after the actual date of the opening thereof.

The Owner reserves the right, in the exercise of its sole judgment, to reject any or all Bids, and to re-advertise and award the Contract in the regular manner, or to waive any informalities, irregularities, mistakes, errors or omissions in any Bid received and to accept any Bid deemed to be responsive to this invitation and favorable to the interests of the County.

The County Commissioners of Queen Anne's County

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS

Terms used in these Instructions to Bidders, are defined and have the meanings assigned to them in the General Conditions.

The term "Lowest Responsible Responsive Bidder" means the Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award on the basis of the total bid.

The term "Owner" as used in the Contract Documents refers to the County Commissioners of Queen Anne's County. Project Manager for the Owner shall be Alan L. Quimby, Chief Sanitary Engineer, Queen Anne's County, Department of Public Works – Sanitary District, P.O. Box 10, 310 Bateau Drive, Stevensville, MD 21666-0010, phone number: 410-643-3535. E-mail: aquimby@qac.org.

The term "Engineer" refers to the engineering firm shown on the design drawings. All inquiries during the bidding period should be addressed to the Owner's Project Manager who will distribute the questions to the Engineer as necessary.

2. COPIES OF BIDDING DOCUMENTS

2.1 Complete sets of the Bidding Documents may be obtained digitally as noted in the Invitation to Bid.

2.2 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 Owner and Engineer in making Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

2.4 It is the Bidder's sole responsibility to ensure they are in receipt of any and all addenda issued in the preparation of their Bid as is stated in the Invitation to Bid.

3. QUALIFICATIONS OF BIDDERS

3.1 All Bidders must be able to demonstrate that at least 50% of the Work is to be completed with their own forces.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 3.2 Bidders must be able to demonstrate, via the projects listed in the 'Bidder's Experience' submittal, successful installation of at least 100,000 linear feet of pipe 16-inches (or larger).
- 3.3 To further demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within five days of Owner's request, written evidence such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the Project is located.
- 3.4 Bidders must register with the Project Manager as is stated in the Invitation to Bid. Failure to do so shall render their Bid non-responsive.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 4.1 Before submitting a Bid, each Bidder must (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; and (d) study and carefully correlate Bidder's observations with the Contract Documents. Special attention is directed to the Supplemental Conditions.

Bidder shall correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents and promptly give Owner and Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Owner and Engineer is acceptable to Bidder.

- 4.2 Reference is made to the General Conditions and Supplemental Conditions for the identification of those reports of investigations and tests of subsurface physical conditions and subsurface utilities at the site or otherwise which have been relied upon by Engineer or their agent in preparing the Drawings and Specifications. Owner will make such reports available to Bidder via Appendix B. These reports are not guaranteed as to accuracy or completeness, nor are they part of the Contract Documents. The Contractor must assume all risks in excavating for this Project and shall not be entitled to rely on any subsurface information obtained for the Engineer or indirectly from the Owner. Bidders, in using this information, thereby release Owner and Engineer of all liability as to the information contained within the subsurface information, and such Bidders accept such subsurface

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

information in accordance with the provisions of the General Conditions. Before submitting his Bid each Bidder will, at his own expense, conduct such investigations and tests as the Bidder may deem necessary to determine his Bid for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

- 4.3 Upon notification, Owner will allow each Bidder to access the site in order to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid.
- 4.4 The lands upon which the Work is to be performed, rights-of-way for access thereto, and other lands designated for use by Contractor in performing the Work are identified in the Supplemental Conditions, General Requirements or Drawings.
- 4.5 The submission of a Bid will constitute a representation by the Bidder that he has complied with every requirement of this Article 4 and that the Contract Documents are sufficient in scope and detail to indicate and convey a complete understanding of all terms and conditions for the performance of the Work. Bidder agrees at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

5. INTERPRETATIONS

All questions about the meaning or intent of the Contract Documents shall be submitted to Owner's Project Manager in writing at least fourteen (14) days prior to bid opening. Questions received later than ten days prior to the date for opening of Bids will not be answered. Replies will be issued only by Addenda made available not later than seven days prior to bid opening. Failure of any Bidder to receive such Addendum shall not relieve Bidder from the obligations under the Bid as submitted. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6. BID SECURITY

- 6.1 Bid Security shall be made payable to Owner, in an amount of five (5) percent of the Bidder's maximum Bid price and in the form of a certified check, bank cashier's check, or a Bid Bond on form attached, issued by a Surety meeting the requirements of paragraph 6.3.
- 6.2 The Bid Security of the Lowest Responsible Responsive Bidder will be

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

retained until such Bidder has furnished the required Performance Bond and Payment Bond and executed the Agreement whereupon it will be returned. If the successful Bidder fails to furnish the required Contract Security within 10 days of the Notice of Intent to Award or fails to execute and return the Agreement within ten days of the Notice of Award, Owner may annul Notice of Intent to Award or the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid Security of the three apparent lowest responsible responsive Bidders may be retained by Owner until the earlier of the seventh day after the "effective date of the Agreement" (which term is defined in the General Conditions) by Owner to Contractor or ten days after the time specified for Bids to remain open. Bid Security of other Bidders will be returned within ten days of the Bid opening.

- 6.3 All bonds submitted as Bid Security shall be executed by surety companies legally authorized to do business in Maryland. Such surety companies shall also be 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 current Circular 570 by the Audit Staff Bureau of Accounts, U.S. Treasury Department. Attorneys-In-Fact who sign Bid Bonds must file with each Bond a certified copy of their Power of Attorney to sign said Bonds, bearing the same date as the Bonds.

7. CONTRACT TIME

The number of days within which the Work is to be completed (the Contract Time) is set forth in the Agreement. It represents the number of days from the Effective date of Agreement to the date of Approval of the Final Payment.

8. LIQUIDATED DAMAGES

Provisions for liquidated damages are set forth in the Agreement.

9. SUBSTITUTE MATERIAL AND EQUIPMENT

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the "effective date of the Agreement". The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in paragraph 6.7 of the General Conditions which may be supplemented in the General Requirements section 1.06.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

10. SUBCONTRACTORS, ETC.

- 10.1 A list of all Subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the Work as to which such identification is so required shall be submitted with the bid and an experience statement is required on demand after the Bids are received with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization if requested by Owner. Information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization shall be submitted upon request by Owner. If Owner or Engineer after due investigation has reasonable objection to any proposed Subcontractor, other person or organization, either may, before giving the Notice of Intent to Award, request the apparent Lowest Responsible Responsive Bidder to submit an acceptable substitute and the Bid Price shall be increased or decreased by the difference in cost occasioned by such substitution. If the apparent Lowest Responsible Responsive Bidder declines to make any such substitution, the contract may 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 Subcontractor, other person or organization so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award it will be deemed the Owner and Engineer have no objection.
- 10.2 No Contractor shall be required to contract with any Subcontractor, other person or organization against whom he has reasonable objection.
- 10.3 Prior to execution of final contract documents or during construction, it is the Contractor's responsibility to notify, and seek approval from, the Owner of any additions or deletions to the required list of Subcontractors.

11. BID FORM

- 11.1 The Bid Form is included in the Contract Documents.
- 11.2 Bid Forms must be completed in ink or by typewriter. Where unit prices for estimated quantities appear on the Bid Form, the Bid price of each item on the form must be stated and extended; in case of a conflict, the unit price bid will take precedence and not the totals or extensions.
- 11.3 Estimates of quantities furnished by the Engineer are approximate and have been used as a basis for estimating the cost of Work, and will be used for the purpose of tabulating and comparing Bids and awarding the contract.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

The Engineer has endeavored to estimate quantities accurately; and to the best of his knowledge the information shown on the drawings is reasonably correct.

- 11.4 Bids by corporations must be executed in the corporate name by the president or vice-president (or other person having authority to bind the corporation, accompanied by corporate power of attorney) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.
- 11.5 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- 11.6 Bids by Limited Liability Corporations (LLC) must be executed in the LLC name and signed by an authorized member, whose title must appear under the signature and the official address of the LLC must be shown below the signature.
- 11.7 All names must be typed or printed below the signature.
- 11.8 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers and dates of which shall be filled in on the Bid Form).
- 11.9 The address to which communications regarding the Bids are to be directed must be shown.

12. SUBMISSION OF BIDS

- 12.1 Bids shall be submitted at the time and place indicated in the Advertisement for Bid and accompanied by the Bid Security and other required documents. No Bid shall be considered if it arrives after the time set for bid opening. If the bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face thereof.
- 12.2 Bids shall be submitted on the Bidding Document forms furnished as a separate packet with the Contract Documents. The bid packet consists of the following:
 - Bid Form
 - Bid Bond
 - Bidder's Experience

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- Subcontractor and Supplier List
- Certification of Non-segregated Facilities
- Certification of Equal Employment Opportunity
- Non-Collusion Certificate
- Affirmative Action Plan Certification
- Conflict of Interest Disclosure
- Assurances for Compliance with Federal Laws & Regulations

13. OPENING OF BIDS

Bids will be opened publicly and read aloud, and an abstract of the amounts of the base Bids, unit prices, and major alternates (if any) will be made available after the opening of Bids.

14. BIDS TO REMAIN OPEN

Except as otherwise permitted by law, Bids shall remain irrevocable for the period stated in the Invitation to Bid.

15. AWARD OF CONTRACT

15.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities and the right to disregard all nonconforming, non-responsive or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

15.2 In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and unit prices if requested in the Bid Form. The award will be made on the basis of the base bid (with no consideration of the auxiliary bid item).

15.3 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 as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the General Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.

15.4 Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

persons and organizations to do the Work or furnish equipment in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

15.5 If the contract is to be awarded, it will be awarded to the lowest responsible responsive Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

15.6 If the contract is to be awarded, Owner will give the lowest responsible responsive Bidder a Notice of Award within the time specified for Bids to remain irrevocable.

16. PERFORMANCE AND OTHER BONDS

Paragraph 5.1 of the General Conditions describes the Owner's requirements as to Performance and Payment Bonds. The lowest responsible responsive Bidder shall within ten days of the issuance of the Notice of Intent to Award furnish Performance and Payment Bonds each in an amount equal to 100% of the Bid, to the office of the Project Manager unless otherwise specified.

17. INSURANCE

Paragraph 5.2 through 5.6 of the General Conditions describes the Owner's requirements as to Insurance. The lowest responsible responsive Bidder shall furnish said proof of insurance as indicated in paragraph 5.7 of the General Conditions.

18. SIGNING OF AGREEMENT

When Owner gives a Notice of Award to the lowest responsible responsive Bidder, it will be accompanied by at least four (4) unsigned duplicate original copies of the Agreement and all other Contract Documents. Within ten days thereafter Contractor shall sign and deliver said duplicate original copies of the Agreement to Owner with all other Contract Documents attached. Within ten days thereafter, the duplicate original copies will be signed by Owner. The Owner, the Contractor, and the Engineer will each receive an executed duplicate original copy of the Contract Documents.

19. WATER QUALITY REVOLVING LOAN (WQRL) REQUIREMENTS

Attention is called to the MDE funding insert which is identified as Section 00450 of the Project Manual. Bidders will be required to adhere to all applicable provisions, not just those mentioned below. Some issues of note:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

19.1 Anti-Degradation Implementation Procedures – (refer to page 3 of Section 00450) – Note there are no Tier II catchment areas in the work area so these provisions are not applicable.

19.2 Buy American Iron and Steel – (refer to page 5 of Section 00450)

19.3 Assurance For Compliance With Federal Laws And Regulation – (refer to page 7 of Section 00450) - The apparent low bidder needs to submit this form with the bid package.

19.4 Disadvantaged Business Enterprise Program – (refer to page 8 of Section 00450) - The attention of Bidders is directed to the requirements pertaining to Disadvantaged Business Enterprises (DBE). **Participation in strict accordance to the Good Faith Efforts set forth in this insert is essential if to be awarded the bid. These efforts apply to any subcontractors as well.**

Within seven (7) days of the bid opening date, the apparent low bidder must submit full evidence of participation with the DBE program by submitting all documentation as well as the completed forms provided in the WQRL insert. Failure to submit DBE requirements within the specified time limit will be considered non-responsible.

19.5 Davis Bacon Wage Rates – (refer to page 32 of Section 00450) – Wage rates will apply to this work with all required documentation and record keeping provisions as noted in the insert. Refer to the provisions applicable to Government Entities. Note current applicable wage rates are located in Section 00455 of the Project Manual.

END OF SECTION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

BID FORM

To: The County Commissioners of Queen Anne's County

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Contract Documents to complete all Work as specified or indicated in the Contract Documents for the Contract Price indicated in this Bid within the Contract Time and in accordance with the Contract Documents.

The undersigned BIDDER submits this Bid with the understanding that the OWNER reserves the right to reject any or all bids submitted.

2. BIDDER accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security.

BIDDER will submit the required Performance and Payment Bonds within ten days after the date of OWNER's Notice of Intent to Award.

BIDDER will sign the Agreement within ten days after the date of OWNER's Notice of Award.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

- (a) BIDDER has examined copies of all the Contract Documents and hereby acknowledges receipt of the following Addenda and acknowledges the bid reflects the changes created by these addenda:

Number

Date

- (b) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

corporation; BIDDER has not directly or indirectly induced or solicited or induced any person, firm or a corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other Bidder or over OWNER; and

- (c) BIDDER hereby states that he has available adequate equipment and finances to properly and expeditiously prosecute the Work as bid, and is prepared to present further information to substantiate this statement.
4. BIDDER agrees that the Work will be completed on or before the dates or within the number of consecutive days indicated in the Agreement.
- BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.
5. The following documents are attached to and made a condition of this Bid:
- (a) Required Bid Security
 - (b) Bidder's Experience Statement with supporting data.
 - (c) Other documents as required by the Instructions to Bidders or Contract Documents.
6. Communications concerning this Bid may be forwarded to the address of BIDDER indicated below.
7. The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.
8. BIDDER covenants and warrants that he has had sufficient time to examine the site of the Work; that he has examined the site of the Work; and that he has based the within Contract Prices on his own independent examination and investigation of the site, subsurface materials, and conditions and has not relied on any subsurface information furnished to him by Owner or Engineer. BIDDER has examined the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the work and has made such independent investigations as BIDDER deems necessary.
9. BIDDER will complete the Work for the following price(s):

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

BID SCHEDULE

CONTRACT NO. SAN 16-03

<u>ITEMS</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>EXTENSION</u>
S-1	Mobilization	1	LS	\$_____	\$_____
S-2	Sediment & Erosion	1	LS	\$_____	\$_____
S-3	Traffic Control	1	LS	\$_____	\$_____
S-4	2" HDPE – Open Trench	115	LF	\$_____	\$_____
S-5	2" HDPE – HDD	135	LF	\$_____	\$_____
S-6	3" HDPE – Open Trench	560	LF	\$_____	\$_____
S-7	3" HDPE – HDD	140	LF	\$_____	\$_____
S-8	4" HDPE – Open Trench	915	LF	\$_____	\$_____
S-9	4" HDPE – HDD	775	LF	\$_____	\$_____
S-10	6" HDPE – Open Trench	2,400	LF	\$_____	\$_____
S-11	6" HDPE – HDD	1,445	LF	\$_____	\$_____
S-12	8" HDPE – Open Trench	590	LF	\$_____	\$_____
S-13	8" HDPE – HDD	975	LF	\$_____	\$_____
S-14	12" HDPE – Open Trench	9,670	LF	\$_____	\$_____
S-15	12" HDPE – HDD	50	LF	\$_____	\$_____
S-16	16" HDPE - Open Trench	20,640	LF	\$_____	\$_____
S-17	16" HDPE – HDD	7,925	LF	\$_____	\$_____

Bidder: _____

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

<u>ITEMS</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>EXTENSION</u>
S-18	WWTP Connection	1	LS	\$_____	\$_____
S-19	Air Release Valve	13	EA	\$_____	\$_____
S-20	3" Division Valve	1	EA	\$_____	\$_____
S-21	4" Division Valve	23	EA	\$_____	\$_____
S-22	6" Division Valve	5	EA	\$_____	\$_____
S-23	8" Division Valve	1	EA	\$_____	\$_____
S-24	12" Division Valve	10	EA	\$_____	\$_____
S-25	6" Cleanout Assembly	5	EA	\$_____	\$_____
S-26	2" Chemical Feed Line	1	LS	\$_____	\$_____
S-27	Flow Meter & Vault	1	LS	\$_____	\$_____
S-28	Rt 50/301 Crossing	470	LF	\$_____	\$_____
S-29	Pavement Milling	3,200	SY	\$_____	\$_____
S-30	19.0 mm HMA Base	1,800	TN	\$_____	\$_____
S-31	9.5 mm HMA Surface	550	TN	\$_____	\$_____
S-32	Contingent CR-6 MOT	750	CY	\$_____	\$_____
S-33	Contingent Concrete	50	CY	\$_____	\$_____
S-34	Contingent Select Backfill	6,000	CY	\$_____	\$_____
S-35	Contingent Sheeting	10	MBF	\$_____	\$_____

Bidder: _____

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

<u>ITEMS</u>	<u>DESCRIPTION</u>	<u>ESTIMATED QUANTITY</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>EXTENSION</u>
S-36	Contingent Excavation	350	CY	\$_____	\$_____
S-37	Contingent Test Pitting	50	CY	\$_____	\$_____
S-38	Contingent Silt Fence	1,000	LF	\$_____	\$_____
S-39	Contingent Ductile Iron Fittings	5	TONS	\$_____	\$_____

TOTAL BASE BID SEWER ITEMS S-1 THROUGH S-39 \$_____

IN WORDS _____

SUBMITTED this _____ day of _____, 201__.

A-1 Auxiliary WWTP Connection 1 LS \$_____ \$_____

Bidder: _____

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

A CORPORATION

Corporation Name: _____

State of Incorporation: _____

By: _____ /s/ _____
(Person Authorized to Sign) (Title)

(CORPORATE SEAL)

Attest: _____ /s/ Corporate Secretary

Business Address: _____

Phone No.: (____) _____

A LIMITED LIABILITY COMPANY

LLC Name: _____

State of Organization: _____

By: _____ /s/ _____
(Person Authorized to Sign) (Title)

(CORPORATE SEAL)

Attest: _____ /s/ Corporate Secretary

Business Address: _____

Phone No.: (____) _____

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

THAT _____

of _____ as Principal, and

_____ a corporation organized and existing under the laws of the State of Maryland and authorized to do business in the State of Maryland, as Surety, are held and firmly bound unto the County Commissioners of Queen Anne's County, Maryland, as Obligee, in the full and just sum of

_____ Dollars (\$ _____),
(written in words)

lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by those presents.

WHEREAS, the said Principal is herewith submitting its Bid proposal for the construction of **Contract No. SAN 16-03, Southern Kent Island Sanitary Project – Transmission Sewer Main Installation.**

THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal shall be given Notice of Intent to be awarded the Contract, the said Principal will, within the time required, give good and sufficient Bonds to secure the performance of the terms and conditions of the Contract and enter into an Agreement, then this obligation to be void; otherwise, the Principal and Surety will pay unto the Obligee the full amount of this Bid Security.

Signed, Sealed and Delivered this _____ day of _____, 20__.

Attest: PRINCIPAL

_____/s/ By: _____/s/
Secretary President/Owner

(SEAL)

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SURETY

_____/s/ By: _____/s/
Witness Attorney-in-fact

(SEAL)

NOTES:

Attach an appropriate Power of Attorney, dated as of the same date as the bond, evidencing the authority of the Attorney-in-Fact to act on behalf of the corporation.

If the Contractor is a Partnership, all partners shall execute the bond.

Surety companies executing bonds must appear on the U.S. Department of the Treasury most current Bond List (Circular 570 as amended). Bond amounts are subject to the underwriting limitation listed in the most recent Circular 570.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

BIDDER'S EXPERIENCE

The following is a list of the projects similar in character and scope to the Work specified under this Contract which have been successfully completed by this Bidder during the past ten years.

This information must be furnished by each Bidder. The term "Complete" means accepted and final payment received from the Owner or authorized representative.

<u>Location & Type of Work</u>	<u>Owner's Name & Address</u>	<u>Engineer</u>	<u>Date Completed</u>	<u>Contract Price</u>
1. _____ _____				
2. _____ _____				
3. _____ _____				
4. _____ _____				

Bank Reference: _____

If the apparent low bidder, I hereby agree to furnish to the Owner a complete and current financial statement upon request.

_____/s/ _____
Bidder's Signature Date

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SUBCONTRACTOR LIST

Bidder proposes to utilize the following subcontractor on this project (indicate 'Self' if work is to be done by Bidder).

Sewer Main HDD	Name: _____ Address: _____
Sewer Main Open Trench	Name: _____ Address: _____
Road Restoration	Name: _____ Address: _____
Stakeout	Name: _____ Address: _____
Traffic Control	Name: _____ Address: _____
Other (Identify)	Name: _____ Address: _____

Bidder's Signature

Date

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CERTIFICATION OF NONSEGREGATED FACILITIES

By submission of this Bid, the Bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The Bidder further certifies that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity clause in any contract resulting from acceptance of this bid.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin because of habit, local custom, or otherwise.

The Bidder further agrees that (except where he has obtained identical certifications from proposed Subcontractors for specific time periods) he will obtain identical certifications from proposed Subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provision of the Equal Opportunity clause, and that he will retain such certifications in his files.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001

Date: _____

(Signature)

(Typed Name & Title of Signer)

Company Name and Address:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CERTIFICATION OF
EQUAL EMPLOYMENT OPPORTUNITY

This certification is required pursuant to Executive Order 11246 (30 CFR 12319-25). The implementing rules and regulations provide that any Bidder or prospective Contractor, and any of their proposed Subcontractors, shall state as an initial part of the Bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the Equal Opportunity clause - and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the Bidder has not filed a compliance report due under applicable instructions, such bidder shall be required to submit a compliance report within seven calendar days after bid opening. No contract shall be awarded unless such report is submitted.

CERTIFICATION BY BIDDER

1. The Bidder has participated in a previous contract or subcontract subject to Executive Order 11246 regarding Equal Employment Opportunity or a proceeding similar Executive Order.

Yes _____ No _____

2. If the Bidder has participated in such a contract or subcontract, he has filed all compliance reports that were required to be filed in connection with such contract or subcontract.

Yes _____ No _____

3. The Bidder has previously had contracts subject to the written affirmative action program requirements of the Secretary of Labor.

Yes _____ No _____

4. If the Bidder has participated in a contract or subcontract, he has developed and placed on file at each establishment affirmative action programs as required by the rules and regulations of the Secretary of Labor.

Yes _____ No _____

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

(If the answer to item 2 or item 3 is "No", attach a detailed explanation to this certification.)

I hereby certify that the information given herein is true and complete to the best of my knowledge and belief.

I understand that, if I have failed to file any compliance reports that have been required, I am not eligible and will not be eligible to have my bid considered or to enter into the proposed contract unless and until I make an arrangement regarding such reports that is satisfactory to the office where the reports are to be filed.

Typed Name

Title

Signature

Date

Business Name and Address:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

NON-COLLUSION CERTIFICATION

Bidder's Name: _____

Address: _____

This is to certify that neither the above named Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm, or person to submit collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or are in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder or to fix any overhead, profit, or cost element of the collusion, conspiracy, connivance or unlawful agreement for any advantage against the Owner or any person interested in the proposed Contract: and the price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest.

Signed _____

Title

Date

SEAL - If Bidder is a Corporation

Attest: _____

Secretary

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

AFFIRMATIVE ACTION PLAN CERTIFICATION

By submission of this bid, bidder certifies that to the greatest extent feasible, his hiring and training practices will be in compliance with the HUD 4010 Labor Provisions and Section 3 of HUD Act of 1968 such that:

- a) to the greatest extent feasible, opportunities for the training and employment be given to lower income residents of the project area and contracts for work be awarded to business concerns in the project area,
- b) attempt to recruit from the project area through local advertisement media, signs placed on the project site, and community organizations,
- c) maintain a list of lower income people if readily available and offer employment to them if qualified and if a vacancy exists.

Date: _____

(Signature)

(Typed Name of Signer)

(Title of Signer)

Company name and address:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CONFLICT OF INTEREST DISCLOSURE & EMPLOYMENT OF ALIENS STATEMENT

In connection with the undersigned's participation in the bid process or request for proposals being considered by the County Commissioners of Queen Anne's County ("the County") the undersigned does affirm under the penalties of perjury as follows:

I have reviewed the materials provided by the County in connection with my proposed bid or proposal and reviewed such records of my company and business as necessary to make the following statements:

(Check all appropriate boxes)

To the best of my knowledge and belief, neither I, the company identified below, nor any employee of the company have been involved or are presently involved in any situations or actions that might be regarded as an actual or potential conflict of interest in the event of a successful bid or award.

It appears that I, the company identified below or an employee of the company have been involved in some situations or actions that might be regarded as a potential conflict of interest should I submit the successful bid or proposal. Details of such situations and/or actions are as follows (attach additional sheets as necessary):

1. _____

2. _____

The following situations or actions in which I, my company or an employee of the company are presently involved might be regarded as a potential conflict of interest if I submit the successful bid or proposal (attach additional sheets as necessary):

1. _____

2. _____

I have attached a list of all present contracts between the company named below and the County.

Furthermore, vendors providing goods or services to Queen Anne's County Government, as a condition of doing business with the County, are required to comply with all applicable laws and regulations relating to the employment of aliens.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Should vendors providing goods or services to Queen Anne's County fail to comply with applicable laws and regulations relating to the employment of aliens, such failure shall constitute a material breach of the vendor's contractual relationship with Queen Anne's County and the County may take all reasonable steps to terminate the County's contractual relationship with the vendor. If you have questions, please consult the County Department that manages your vendor contract.

Signature: _____ Date: _____

Name: (please print) _____

Company/Organization: _____

ASSURANCES FOR COMPLIANCE WITH FEDERAL LAWS AND REGULATIONS

Project Name: _____ Contract No. (if applicable): _____

The contractor is required to comply with the following Federal laws and regulations:

1. Non-discrimination in Employment in accordance with Executive Order 11246 of September 24, 1965 entitled "Equal Employment Opportunity" as amended by Executive Order 11375 of October 13, 1967.
2. Debarment in accordance with the Executive Order 12549 and Executive Order 11246.
3. Anti-kickback in accordance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874).
4. Contract Work Hours and Safety Standards in accordance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330).
5. Compliance with Guidelines Contained in 40 CFR 247-254 (RCRA - Section 6002).
6. The prevailing Federal wage rates as determined by the U.S. Department of Labor under the Davis-Bacon and related acts. The prevailing wage determination category that should be used for this project is Heavy Construction (including water and sewer). Available at: <http://www.wdol.gov/>.

General Decision Number: _____ Date: _____

7. Maryland Antidegradation Implementation Procedures as promulgated in three regulations: COMAR 26.08.02.04 sets out the policy itself, COMAR 26.08.02.04-1, provides for identification and implementation of Tier II (high quality waters) of the antidegradation policy, and COMAR 26.08.02.04-2 that describes Tier III (Outstanding National Resource Waters or ONRW), the highest quality waters. No Tier III waters have been designated at this time.
8. Use of American Iron and Steel, as promulgated by H.R. 3547, "Consolidated Appropriations Act, 2014," Division G, Title IV, enacted on January 17, 2014.

I do solemnly declare and affirm that I am obligated to comply with the above Federal laws and regulations. It is understood that non-compliance with any one of the above Federal laws and regulations will be sufficient reason to cause termination of the contract.

Contractor

Signed by: _____
Authorized Officer

Date

Name (Print)

Title (Print)

00423

MDE REVOLVING LOAN FUND CONTRACT PROVISIONS

CONTRACT NO. SAN 16-03

00450	Maryland Revolving Fund Requirements
00455	Prevailing Wage Rates

**REQUIREMENTS AND CONTRACT PROVISIONS FOR THE TREATMENT WORKS PROJECTS
FINANCED THROUGH THE MARYLAND WATER QUALITY REVOLVING LOAN FUND
AND THE MARYLAND DRINKING WATER REVOLVING LOAN FUND
DEPARTMENT OF THE ENVIRONMENT
STATE OF MARYLAND**

The project or segment thereof to be constructed in accordance with these contract documents is subject to the following requirements. In the event of conflict with other requirements of the contract documents, the following requirements control unless the requirement is a minimum requirement. Nothing in this document shall be construed to prohibit the owner from requiring additional assurances, guarantees, indemnities, or other contractual requirements from any other party to this agreement.

- I. **ASSURANCES FOR COMPLIANCE WITH THE FOLLOWING FEDERAL AND STATE LAWS AND REGULATIONS:**
 1. **NON-DISCRIMINATION IN EMPLOYMENT**
 2. **DEBARMENT**
 3. **ANTI-KICKBACK**
 4. **CONTRACT WORK HOURS AND SAFETY STANDARDS.**
 5. **COMPLIANCE WITH CFR 40 247– 254 (RCRA - SECTION 6002)**
 6. **COMPLIANCE WITH PREVAILING FEDERAL WAGE RATES UNDER THE DAVIS-BACON AND RELATED ACTS IN ACCORDANCE TO SECTION VI OF THIS DOCUMENT**
 7. **MARYLAND ANTIDEGRADATION IMPLEMENTATION PROCEDURES**
 8. **USE OF AMERICAN IRON AND STEEL**
- II. **DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION**
 - **GUIDANCE DOCUMENTS AND FORMS (EPA & STATE FORMS)**

(Performance of the good faith steps are required, regardless of goal achievement. All information is to be submitted to the owner, prior to the owner's award of the contract, UNLESS OTHERWISE DIRECTED BY THE OWNER).
- III. **PRESIDENTIAL DOCUMENTS**
 - **ATTACHMENT II**

EXECUTIVE ORDER 13202 of February 17, 2001

EXECUTIVE ORDER 13208 of April 8, 2001
- IV. **SEVERABILITY**
- V. **PROJECT SIGN**
- VI. **FEDERAL WAGE RATE REQUIREMENTS UNDER THE DAVIS-BACON AND RELATED ACTS**

I. ASSURANCES

The contractor is required to comply with the Federal laws and regulations in regard to non-discrimination in employment, debarment, anti-kickback, contract work hours and safety standards, and prevailing Federal wage rates under the Davis-Bacon and related acts as delineated below.

1. Non-discrimination in Employment:

The contractor is required to comply with Executive Order 11246 of September 24, 1965 entitled "Equal Employment Opportunity" as amended by Executive Order 11375 of October 13, 1967.

The contract for the work under this proposal will obligate the prime contractor and its subcontractors not to discriminate in employment practices.

The contractor shall not maintain or provide for his/her employees the facilities, which are segregated on a basis of race, creed, color, or national origin, whether such facilities are segregated by directive or on a de facto basis.

The contractor must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain his/her eligibility to receive the award of the contract.

The contractor must be prepared to comply in all respects with the Contract Provisions regarding non-discrimination, as stipulated under the Labor Standards.

2. Debarment:

Under Executive Order 12549, an individual or organization debarred from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program, or a sub-agreement thereunder for \$25,000 or more.

Therefore, the bidder as an individual or as an organization, presently debarred, suspended, proposed for debarment, will be declared ineligible to participate in bidding the proposed contract as a prospective recipient of financial assistance from the Maryland Department of the Environment.

The contractor shall not enter into any sub-contract with any individual, firm or organization debarred from Government contracts pursuant to Executive Order 11246.

3. Anti-kickback:

The contractor and/or its sub-contractors shall comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874). Any evident illicit kickback practice in any shapes or forms will cause termination of the contract.

4. Contract Work Hours and Safety Standards:

The contractor and/or its sub-contractors shall comply with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330).

5. Compliance with 40 CFR: 247– 254 (RCRA - Section 6002):

The contractor shall comply with the guidelines contained in 40 CFR 247– 254 (Section 6002 of the Resource Conservation and Recovery Act).

State and local recipients and sub-recipients of grants, loans, cooperative agreements or other instruments funded by appropriated Federal funds shall give preference in procurement programs to the purchase of recycled products pursuant to the EPA guidelines.

6. Compliance with Prevailing Federal Wage Rates under the Davis-Bacon and Related Acts in accordance to Section VI of this document.

All laborers and mechanics employed by contractors and sub-contractors on projects funded directly by or assisted in whole or in part by and through the Federal Government programs including the State Revolving Loan fund shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code. With respect to the labor standards

specified in this section, the Secretary of Labor shall have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (64 Stat. 1267; 5 U.S.C.App.) and section 3145 of title 40, United States Code. Most recent Federal prevailing wages can be obtained from: <http://www.wdol.gov/>

The prevailing wage determination category that should be used for this project is Heavy Construction (including water and sewer). This determination is based on the Federal Department of Labor Wage and Hour Division classification.

7. **Maryland Antidegradation Implementation Procedures:**

The Clean Water Act requires three components to water quality standards that set goals for and protect each States' waters. The three components are: (1) designated uses that set goals for each water body (e.g., recreational use), (2) criteria that set the minimum conditions to support the use (e.g., bacterial concentrations below certain concentrations) and (3) an antidegradation policy that maintains high quality waters so they are not allowed to degrade to meet only the minimum standards. The designated uses and criteria set the minimum standards for Tier I.

Maryland's antidegradation policy has been promulgated in three regulations: COMAR 26.08.02.04 sets out the policy itself, COMAR 26.08.02.04-1, provides for identification and implementation of Tier II (high quality waters) of the antidegradation policy, and COMAR 26.08.02.04-2 that describes Tier III (Outstanding National Resource Waters or ONRW), the highest quality waters. No Tier III waters have been designated at this time. Any capital funding project occurring within Tier II catchment areas, which are areas that drain to Maryland's high quality designated Tier II stream segments, must undergo Antidegradation Review.

To determine if your project is located within Tier II catchment area, please visit:

<http://www.mde.state.md.us/programs/Water/TMDL/Water%20Quality%20Standards/Pages/HighQualityWatersMap.aspx>

Or contact Ms. Angel Valdez of MDE Environmental Standards and Assessment Program, at (410) 537-3606, or at angel.valdez@maryland.gov.

Please be aware that projects subject to an Antidegradation or Tier II review must adequately address comments that arise during the review before funding can be granted.

How Tier II Stream Segments are Designated

- Currently high quality stream segments are designated for the characteristic of biology using Maryland Biological Stream Survey (or comparable) data
- Streams are recorded in Table O (COMAR 26.08.02.04-1) and the pending list of streams awaiting promulgation or corrections is maintained on the MDE website.

The Basic Antidegradation Review Process

Many of the projects funded by the Water Quality Financing Administration (WQFA) at MDE result in a net improvement to water quality. As a result, the antidegradation review process for WQFA generally involves making sure that any land disturbance activities associated with the project includes additional controls. Any other antidegradation reviews specific to project discharges (e.g. end-of-pipe) will be addressed separately through the permitting process.

To help expedite the review process the following list of practices has been provided. These practices include "accelerated stabilization, redundant controls, increased riparian buffers, passive or active chemical treatment, or a reduction in the size of the grading unit" as stated in the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control to address Tier II issues. All practices implemented should be evident in plans. When using the list below to aide in planning keep in mind that application and site specifics will ultimately determine each recommendation's applicability. Also realize that this list is not exhaustive and additional practices may be identified as specific plans become available.

- **Initial Considerations:** including limiting vegetative disturbances, phasing and/or sequencing, accelerated stabilization, minimum weekly inspections, and timing of in-stream work to low flow periods or clear weather forecasts
- **Expanded Riparian Buffers (for new structures/expansions only):** from 100 to 230 feet, depending upon slope and soil composition, on all intermittent and perennial streams within project footprint to help further address direct hydrologic impacts to surface waters. See Table 1 for more details.

Table 1

Adjusted Average Optimal Buffer Width Key for HQ Waters (minimum width 100 feet)				
Slopes (%)				
Hydrologic Soil Group	0-5%	5-15%	15-25%	>25%
Ab	100	130	160	190
C	120	150	180	210
D	140	170	200	230

- **Streamside Management Zones (buffer areas for utility projects):** where disturbance and work cannot be avoided, utilize minimally disturbing & selective vegetative clearing methods, restorative planting (not seeding) for major near-stream clearings totaling 1 acre or more, no mulch placement within the streamside management zones, if possible allow small shrub growth
- **Enhanced Buffer Management:** including sheetflow of discharge beyond the minimum 100 foot vegetative buffer or implementing redundant mechanisms in dewatering exercises such as devices in manifold, use of chemical filtration aides, combining two practices such as filter bags with vegetated buffers and silt fencing. Also incorporation of super silt fencing or an equivalent practice when working near streams.
- **Enhanced Temporary Access Waterways Crossings:** including utilizing horizontal directional drilling/jack and bore for all major stream crossings or sensitive crossings, including a frac-out plan; preferential use of partial diversions (where possible); and utilization of temporary access bridges over fords.
- **Special Concern- pH and Water Quality:** For all activities related to in-stream grout placement, either in bags or as fill:
 1. To prevent impacts to in-stream pH, such operations should occur “in-the-dry”.
 2. An emergency treatment plan should be in place to address accidental material releases.
 3. Cure time allotted should reflect chemically stable grout material and should also represent the most conservative time in the expected cure range.
 4. The water quality standard numeric criteria for pH must be met in the ‘first flush’ before diversion is removed.
- **Stormwater Management:** follow the current guidelines within the Maryland Stormwater Design Manual (2009 Revised), including ESD to the MEP or other non-structural practices

8. Use of American Iron and Steel

None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public drinking water system or water quality treatment works unless all of the iron and steel products used in the project are produced in the United States.

In this section, the term “iron and steel products” means the following products made primarily of iron or steel:

- Lined or unlined pipes and fittings
- Manhole covers and other municipal castings
- Hydrants
- Tanks
- Flanges
- Pipe clamps and restraints
- Valves
- Structural steel
- Reinforced precast concrete
- Construction materials

Certification Process:

The final manufacturer that delivers the iron or steel product to worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. The certification should include the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a responsible party.

Additional documentation such as Step Certification may be needed if the certification is lacking important information. A Step Certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin.

Waiver:

A request for waiver may be submitted to MDE under at least one of the following waiver categories:

- (1) Applying this provision would be inconsistent with the public interest;
- (2) Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
- (3) Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

MDE may agree with the waiver request and submit it to the Administrator of the Environmental Protection Agency for final approval. Alternatively, MDE may, in its sole discretion, reject the waiver request and elect not to fund the project.

De Minimis Nationwide Waiver:

A De Minimis Nationwide Waiver was issued by EPA, on April 15, 2014, allowing non-AIS miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. The total cost for these incidental components should not exceed 5% of the total cost of the materials used in and incorporated into a project.

To be covered under this waiver, the grant/loan recipient must, in consultation with the contractor, take the following actions:

1. Retain relevant documentation (i.e. invoices) as to those items being covered under this waiver in their project files.
2. Summarize in reports to MDE the types and/or categories of items to which this waiver is applied, including the cost of each category/type. The report must also include the total cost of items covered by the waiver, the total cost of all materials used in and incorporated into the project, and the percentage of covered incidental items calculated by cost.
3. Upon the receipt of the report, MDE, within 30 calendar day of receipt, will accept and file the report, request additional information, or advise the grant/loan recipient that the items cannot be covered under this waiver and a project specific waiver is needed.
4. If no comments are received by MDE within 30 calendar days, the grant/loan recipient would not need to take any further action, unless more incidental items need to be covered, at which time cumulative summary would need to be submitted to MDE.

Within seven (7) days of the bid opening, the apparent low bidder shall sign the form of “Assurances for Compliance with Federal Laws and Regulations” pertaining to non-discrimination in employment, debarment, anti-kickback, contract work hours and safety, compliance with prevailing Federal wage rates under the Davis-Bacon and related acts, and Maryland Antidegradation Implementation Procedures, and use of American iron and steel. The form is appended herewith in Section I.

**ASSURANCES FOR COMPLIANCE WITH FEDERAL LAWS AND REGULATIONS
FOR WATER QUALITY-TREATMENT WORKS AND DRINKING WATER PROJECT**

Project Name: _____ Contract No. (if applicable): _____

The contractor is required to comply with the following Federal laws and regulations:

1. Non-discrimination in Employment in accordance with Executive Order 11246 of September 24, 1965 entitled "Equal Employment Opportunity" as amended by Executive Order 11375 of October 13, 1967.
2. Debarment in accordance with the Executive Order 12549 and Executive Order 11246.
3. Anti-kickback in accordance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874).
4. Contract Work Hours and Safety Standards in accordance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330).
5. Compliance with Guidelines Contained in 40 CFR 247-254 (RCRA - Section 6002).
6. The prevailing Federal wage rates as determined by the U.S. Department of Labor under the Davis-Bacon and related acts. The prevailing wage determination category that should be used for this project is Heavy Construction (including water and sewer). Available at: <http://www.wdol.gov/>.

General Decision Number: _____ Date: _____

7. Maryland Antidegradation Implementation Procedures as promulgated in three regulations: COMAR 26.08.02.04 sets out the policy itself, COMAR 26.08.02.04-1, provides for identification and implementation of Tier II (high quality waters) of the antidegradation policy, and COMAR 26.08.02.04-2 that describes Tier III (Outstanding National Resource Waters or ONRW), the highest quality waters. No Tier III waters have been designated at this time.
8. Use of American Iron and Steel, as promulgated by H.R. 3547, "Consolidated Appropriations Act, 2014," Division G, Title IV, enacted on January 17, 2014.

I do solemnly declare and affirm that I am obligated to comply with the above Federal laws and regulations. It is understood that non-compliance with any one of the above Federal laws and regulations will be sufficient reason to cause termination of the contract.

Contractor

Signed by: _____
Authorized Officer

Date

Name (Print)

Title (Print)

**II. Maryland Department of the Environment
Maryland Water Quality & Drinking Water Revolving Loan Fund Programs
Disadvantaged Business Enterprise Program (DBE)
Guidance for Prime (Construction & A/E) Contractors**

The Maryland Water Quality and Drinking Water Revolving Loan Fund Programs (RLF) receive federal funds from the U.S. Environmental Protection Agency (EPA). The funds are used to provide low interest rate loans to finance water quality and drinking water capital projects. As a condition of federal grant awards, EPA regulations require that loan recipients and sub-recipients (i.e., prime contractors and subcontractors) make a good-faith effort to award a fair share of work to DBEs who are small business enterprises (SBE's), minority business enterprises (MBE's) and women's business enterprises (WBE's). A/E service consultants who receive loan funds are also considered as prime contractors and must comply with DBE requirements. Additionally, EPA's DBE rule requires loan recipients and sub-recipients to adhere to the terms and conditions in Appendix A attached hereto.

To ensure compliance with EPA DBE requirements, the MWQFA has developed guidance for both Loan Recipients and Prime Contractors (sub-recipients) to undertake certain good faith efforts to provide opportunities for DBE firms to participate in contracts. EPA regulations require evidence of the demonstration of the six good faith efforts in trying to achieve the DBE participation goals. MDE's negotiated DBE participation goals with EPA have been approved as of January 25, 2016 and are effective for three years through September 30, 2018. The goals below are not a quota and apply to DBE participation only.

<i>Procurement Category</i>	<i>MBE Goal (%)</i>	<i>WBE Goal (%)</i>
Construction	18	16
Equipment	20	15
Services	28	19
Supplies	20	15

Good Faith Efforts: The following good faith efforts apply to the procurement categories involving EPA financial assistance funds (See Appendix B: EPA Good Faith Efforts):

- Step 1:** Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities by placing qualified DBEs on solicitation lists whenever they are potential sources.
- Step 2:** Establishing delivery schedules, where the requirement permits to encourage participation by DBEs. The prime contractor should allow a 30-day minimum advertising period for bidding.
- Step 3:** Dividing total requirements, when economically feasible, into small tasks or quantities, to permit maximum participation of DBEs.
- Step 4:** Encourage contracting with a consortium of DBEs, when a contract is too large for one of these firms to handle individually.
- Step 5:** Using the services and assistance of the Maryland Department of Transportation (MDOT), the United States Small Business Administration (SBA) and the Minority Business Development Agency (MBDA) of the U.S. Department of Commerce (See Appendix C).
- Step 6:** Require each sub-contractor, if subcontracts are to be let, to take the steps 1- 5.

**Please submit all information to:
DBE Coordinator, MWQFA
1800 Washington Blvd., Baltimore MD 21230
Phone: 410-537-3146, FAX: 410-537-3968**

http://www.mde.state.md.us/programs/Water/QualityFinancing/MinorityandWomensBusinessEnterprises/Pages/Programs/WaterPrograms/Water_Quality_Finance/MWBE/index.aspx

Disadvantaged Business Enterprise Program (DBE)

Guidance for Prime (Construction & A/E) Contractors

Demonstration of the Six Good Faith Efforts. See **Appendices A & B** for additional bidding instructions and contract administrative provisions.

A: Prime contractors are required to undertake good faith efforts. Steps 1 & 5 can be attained by developing a bidders list of qualified DBE firms that can bid as sub-contractors. The prime contractors should advertise in minority, local and regional newspapers and obtain a bidders list from the loan recipient to supplement their list. The bidders list used during sub-contractor solicitation must be available throughout the project's construction period.

In developing bidders list of qualified DBE firms for participation as sub-contractors in construction, equipment, services, and supplies, the prime contractors should contact and gather information from different resources (See **Appendix C**) such as:

- Loan Recipient
- U.S. Small Business Administration (US-SBA)
- Minority Business Development Agency (MBDA) of the US Department of Commerce
- Maryland Department of Transportation (MDOT)

The DBE bidders lists may be classified with Standard Industrial Classification (SIC) or NAICS codes, should be updated periodically, and should be made available to sub-contractors to solicit additional sub-contractors, if necessary. **The prime contractor is required to keep the bidders list throughout the project's construction period.**

B: Prime contractors are also required to undertake good faith efforts. Steps 2, 3, & 4, can be utilized during the project planning, design and/or pre-bidding phase, to assure that qualified DBE firms have procurement opportunities in construction, equipment, services, and supplies.

To provide procurement opportunities to DBE firms, the Prime Contractor should undertake the following:

- Conduct pre-bid meetings to inform potential bidders/contractors about DBE requirements and provide guidance in undertaking the required good faith efforts.
- Use the bidders list developed in Item A (above) to solicit DBE firms as sub contractors.
- Invite DBE firms, where appropriate, to meetings, conferences, etc., to inform them of procurement opportunities and develop, where possible, reasonable contract and delivery schedules that encourage and facilitate participation by DBEs.
- Determine if a project can be broken down into smaller components/contracts to allow opportunity for DBE firms to bid as sub-contractors.
- For projects broken down into smaller components (e.g., painting, roofing, excavation, pipe laying, etc.) ensure that the delivery schedules are reasonable.
- Encourage DBE firms, where appropriate, to apply as a consortium, or as part of a consortium of DBEs, when a contract is too large for one of these firms to handle individually.

MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard Suite 515 Baltimore MD 21230-1718
 410 537 3119 1-800-633-6101

http://www.mde.state.md.us/programs/Water/QualityFinancing/MinorityandWomensBusinessEnterprises/Pages/Programs/WaterPrograms/Water_Quality_Finance/MWBE/index.aspx

**Disadvantaged Business Enterprise (DBE) Good Faith Efforts Checklist
 To be completed by Prime (Construction & A/E) Contractor**

Project Name:

Procurement Category: Check box for all M/WBE procurement categories being reported under the above referenced project. **Construction** **Equipment** **Services** **Supplies**

For each procurement action, please answer the following questions

A: Develop Bidders List of DBE firms

- | | | | |
|----|--|------------------------------|-----------------------------|
| A1 | Did you develop a Bidders List of DBE firms? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| A2 | Did you advertise in minority, local, regional papers or Dodge Report? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| A3 | Did you send invitation for bids to DBE trade associations? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| A4 | Did you contact US-SBA/MBDA/MDOT? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| A5 | Did you receive Bidders List from Loan Recipient? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| A6 | Did you provide MDE with Bidders List? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

B: Smaller work components and delivery schedules

- | | | | |
|----|--|------------------------------|-----------------------------|
| B1 | Did DBE firms have opportunities to bid as subcontractors? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| B2 | Did you break down the project, where economically feasible, into smaller components for DBE firms to bid as subcontractors? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| B3 | Do project components have reasonable delivery schedules? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| B4 | Did you allow a reasonable time for DBEs to bid? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| B5 | Did you encourage DBEs to bid as a consortium due to project size? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

C: Solicitation Summary of DBE firms (Prime Contractor must fill EPA Form 6100-4)

- | | | | |
|----|---|------------------------------|-----------------------------|
| C1 | Did you use the Bidders List to solicit subcontractors? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| C2 | Did DBE firms bid as subcontractors (provide list, work type, & price)? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| C3 | Did you select any DBE firms as subcontractor? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| C4 | Is the subcontractor using any additional subcontractors? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

Prime contractor must provide to loan recipient: (1) list of ALL subcontractors (DBE and non-DBE) with type of work and estimated dollar amounts; (2) completed EPA Form 6100-4; and, (3) completed EPA Form 6100-3 for each DBE subcontractor. Also, EPA Form 6100-2 to each DBE subcontractor.

Supporting Documentation

In support of the actions taken in items A, B, and C, (above), all prime contractors must attach this checklist along with supporting documentation for "Yes" answers and an explanation for "No" answers. Examples of supporting documentation include: (i) Bidders List of DBE firms; (ii) list of sub-contract work elements possible under the prime contract; (iii) proof of contact with DBE firms as potential sub contractors (copies of invitations for bids/RFP, contact letters, faxes and telephone call sheets, etc.; (iv) copies of all procurement advertisements; and, (v) list of all sub contractors that submitted bids/RFP.

 Prime Contractor's Name and Title

 Prime Contractor Official's Signature/ Date

Contact Phone # _____



OMB Control No: 2090-0030
 Approved: 8/13/2013
 Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program
 DBE Subcontractor Utilization Form**

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE¹ subcontractors² and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Issuing/Funding Entity:			

I have identified potential DBE certified subcontractors	<input type="radio"/> YES	<input checked="" type="radio"/> NO	
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt	Currently DBE Certified?

Continue on back if needed

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

EPA FORM 6100-4 (DBE Subcontractor Utilization Form)



OMB Control No: 2090-0030
 Approved: 8/13/2013
 Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program
 DBE Subcontractor Utilization Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.



OMB Control No: 2090-0030
 Approved: 8/13/2013
 Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program
 DBE Subcontractor Performance Form**

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: <input type="radio"/> DOT <input type="radio"/> SBA <input type="radio"/> Other: _____		Meets/ exceeds EPA certification standards? <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> Unknown

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.



OMB Control No: 2090-0030
 Approved: 8/13/2013
 Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program
 DBE Subcontractor Performance Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.



OMB Control No: 2090-0030
 Approved: 8/13/2013
 Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program
 DBE Subcontractor Participation Form**

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE¹ subcontractor² the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

EPA FORM 6100-2 (DBE Subcontractor Participation Form)

APPENDIX A: EPA DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

EPA's Disadvantaged Business Enterprise Program rule applies to contract procurement actions funded in part by EPA assistance agreements awarded after May 27, 2008. The rule is found at Federal regulation Title 40, Part 33. Specific responsibilities are highlighted below.

Loan Recipient Responsibilities:

- Include MDE's DBE guidance in each contract with a primary contractor, *MDE, October 2008*.
- Employ the six Good Faith Efforts during prime contractor procurement (§ 33.301).
- Require prime contractor to comply with the following prime contractor requirements of Title 40 Part 33:
 - a) To employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).
 - b) To provide EPA form 6100-2 – *DBE Subcontractor Participation Form* to all DBE subcontractors (Optional submittal by subcontractors) (§ 33.302(e)).
 - c) To submit EPA forms 6100-3 – *DBE Program Subcontractor Performance Form* and 6100-4 – *DBE Program Subcontractor Utilization Form* with bid package or proposal. (§ 33.302 (f) and (g)).
 - d) To pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient (§ 33.302(a)).
 - e) To notify recipient in writing by its prime contractor prior to any termination of a DBE subcontractor for convenience by the prime contractor (§ 33.302(b)).
 - f) To employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
 - g) To employ the six good faith efforts described in § 33.301 even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
 - h) Provide grant recipient DBE participation achievements with bid proposal
- Maintain records documenting its compliance with the requirements of Title 40 Part 33, including BIDDERS LIST and documentation of its, and its prime contractors', good faith efforts (§ 33.501(a)).

Prime Contractor Responsibilities:

- Employ the six Good Faith Efforts steps in paragraphs (a) through (e) of § 33.301 if the prime contractor awards subcontracts (§ 33.301(f)).

- Provide EPA form number 6100-2 – *DBE Program Subcontractor Participation Form* and form number 6100-3 – *DBE Program Subcontractor Performance Form* to each DBE subcontractor prior to opening of the contractor’s bid or proposal (§ 33.302(e) and (f)).
- Complete EPA form number 6100-4 – *DBE Program Subcontractor Utilization Form* (§ 33.302(g)).
- Submit to recipient with it bid package or proposal the completed EPA form number 6100-4, plus an EPA form number 6100-3 for each DBE subcontractor used in the contractor’s bid or proposal (§ 33.302(f) and (g)).
- Pay subcontractors for satisfactory performance no more than 30 days from the prime contractor’s receipt of payment from the recipient (§ 33.302(a)).
- Notify the recipient in writing prior to prime contractor termination of a DBE subcontractor for convenience (§ 33.302(b)).
- Employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. (§ 33.302(c)).
- Employ the six good faith efforts described in § 33.301 even if the prime contractor has achieved its fair share objectives under subpart D of Part 33. (§33.302(d)).
- Provide loan recipient DBE participation achievements with bid proposal: (1) list of ALL subcontractors (DBE and non-DBE) with type of work and estimated dollar amounts; (2) completed EPA Form 6100-4; and (3) completed EPA Form 6100-3 for each DBE subcontractor.
- Maintain records documenting its compliance with the requirements of Title 40 Part 33, including BIDDERS LIST documentation of its, and its prime contractors’, good faith efforts (§ 33.501(a)).

Subcontractor Responsibilities:

- May submit EPA form 6100-2 – *DBE Subcontractor Participation Form* to Romona McQueen, EPA Region 3 DBE Coordinator (§ 33.302(e)).
- Must complete EPA form 6100-3 – *DBE Program Subcontractor Performance Form*, and submit it to the prime contractor soliciting services from the subcontractor prior to the opening of bids for the prime contract.

EPA Form	Requirement	Provided By	Completed By	Submitted To
EPA Form 6100-2	Loan Recipients required to have prime contractors provide form to Subcontractors	Prime Contractors	DBE Subcontractors (Optional)	EPA Region 3 DBE Coordinator Romona McQueen
EPA Form 6100-3	Loan Recipients required to have prime contractors provide form to Subcontractors	Prime Contractors	DBE Subcontractors with Prime Contractor’s Signature	Loan Recipients as part of a bid or proposal package
EPA Form 6100-4	Loan Recipients required to have prime contractors complete the form	Loan Recipients	Prime Contractors	Loan Recipients as part of a bid or proposal

Source: Federal Requirements and Contract Provisions for Special Appropriation Act Projects, US Environmental Protection Agency, Region III, June 2008

APPENDIX B: TITLE 40 PART 33 SUBPART C—GOOD FAITH EFFORTS**§ 33.102 When do the requirements of this part apply?**

The requirements of this part apply to procurement under EPA financial assistance agreements performed entirely within the United States, whether by a loan recipient or its prime contractor, for construction, equipment, services, and supplies.

§ 33.106 What assurances must EPA financial assistance recipients obtain from their contractors?

The recipient must ensure that each procurement contract it awards contains the term and condition specified in Appendix A to this part concerning compliance with the requirements of this part.

§ 33.206 Is there a list of certified MBEs and WBEs?

EPA OSDBU will maintain a list of certified MBEs and WBEs on EPA OSDBU's Home Page on the Internet. Any interested person may also obtain a copy of the list from EPA OSDBU. The Maryland Department of Transportation will also have a bidders list.

§ 33.301 What does this subpart require?

A recipient, including one exempted from applying the fair share objective requirements by § 33.411, is required to make the following good faith efforts whenever procuring construction, equipment, services and supplies under an EPA financial assistance agreement, even if it has achieved its fair share objectives under subpart D of this part:

- (a) Ensure DBEs are made aware of contracting opportunities fully practicable through outreach and recruitment activities. For Indian Tribal, State and Local and Government recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- (b) Make information on forthcoming opportunities available to DBEs, arrange periods for contracts, and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- (c) Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. For Indian Tribal, State and local Government recipients, this will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- (d) Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- (e) Use the services and assistance of the SBA and the Minority Business Development Agency of the Department of Commerce.
- (f) If the prime contractor awards subcontracts, require the prime contractor to take the steps in paragraphs (a) through (e) of this section.

§ 33.302 Are there any additional contract administration requirements?

- (a) Loan recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the recipient.
- (b) Its prime contractor must notify loan recipient in writing prior to any termination of a DBE subcontractor for convenience by the prime contractor.
- (c) If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six good faith efforts described in § 33.301 if soliciting a replacement subcontractor.
- (d) A recipient must require its prime contractor to employ the six good faith efforts described in § 33.301 even if the prime contractor has achieved its fair share objectives under subpart D of this part.
- (e) A recipient must require its prime contractor to provide EPA Form 6100-2—DBE Program Subcontractor Participation Form to all of its DBE subcontractors. EPA Form 6100-2 gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the prime contractor, how much the DBE subcontractor was paid and any other concerns the DBE subcontractor might have, for example reasons why the DBE subcontractor believes it was terminated by the prime contractor. DBE subcontractors may send completed copies of EPA Form 6100-2 directly to the appropriate EPA DBE Coordinator.
- (f) A recipient must require its prime contractor to have its DBE subcontractors complete EPA Form 6100-3—DBE Program Subcontractor Performance Form. A recipient must then require its prime contractor to include all completed forms as part of the prime contractor's bid or proposal package.
- (g) A recipient must require its prime contractor to complete and submit EPA Form 6100-4—DBE Program Subcontractor Utilization Form as part of the prime contractor's bid or proposal package.
- (h) Copies of EPA Form 6100-2—DBE Program Subcontractor Participation Form, EPA Form 6100-3—DBE Program Subcontractor Performance Form and EPA Form 6100-4—DBE Program Subcontractor Utilization Form may be obtained from EPA OSDBU's Home Page on the Internet or directly from EPA OSDBU.
- (i) A recipient must ensure that each procurement contract it awards contains the term and condition specified in the Appendix A concerning compliance with the requirements of this part. A recipient must also ensure that this term and condition is included in each procurement contract awarded by an entity receiving an identified loan under a financial assistance agreement to capitalize a revolving loan fund.

§ 33.410 Can a recipient be penalized for failing to meet its fair share objectives?

A recipient cannot be penalized, or treated by EPA as being in noncompliance with this subpart, solely because its MBE or WBE participation does not meet its applicable fair share objective. However, EPA may take remedial action under § 33.105 for a recipient's failure to comply with other provisions of this part, including, but not limited to, the good faith efforts requirements described in subpart C of this part.

Source: Federal Requirements and Contract Provisions for Special Appropriation Act Projects, US Environmental Protection Agency, Region III, June 2008

**APPENDIX C: RESOURCE LISTING AND CONTACT INFORMATION
FOR UTILIZATION OF MINORITY AND WOMEN’S BUSINESS ENTERPRISES**

Resource Listing	Contact	Website if applicable
<p>State of Maryland Governor’s Office of Minority Affairs The mission of the Governor's Office of Minority Affairs (GOMA) is facilitating minority business enterprise activities through coordinating and promoting government programs aimed at strengthening and preserving the state’s minority and women owned businesses.</p>	<p>Governor's Office of Minority Affairs Suite 1502 6 Saint Paul Street Baltimore MD 21202 767-8232 1-(877) 558-0998 f-(410) 333-7568 info@mdminoritybusiness.com</p>	<p>http://www.oma.state.md.us/</p>
<p>U.S. Small Business Administration (SBA) In addition to the national office, the SBA has local district and regional offices to assist small businesses in contracting with the public and private sector.</p>	<p>Website</p>	<p>www.sba.gov/category/navigation-structure/contracting/working-with-government</p>
<p>CCR/Pro-Net is an extensive database that combines the SBA’s Pro-Net database and the DOD’s Central Contractor Registration database of small businesses.</p>	<p>CCR Assistance Center 888-227-2423 269-961-5757 DSN: 661-5757</p>	<p>www.ccr.gov/ Select “Dynamic Small Business</p>
<p>U. S. Small Business Administration (SBA) - MD. District Office</p>	<p>City Crescent Bld. 6th Floor 10 South Howard St. Baltimore MD 21201 Phone: 410 962-6195</p>	<p>www.sba.gov/tools/local-assistance/districtoffices</p>
<p>Minority Business Development Administration (MBDA): The MBDA is an agency within the U.S. Dept. of Commerce, created to foster the development and growth of minority businesses in the U.S. and coordinates resources in the public and private sectors to help MBE’s. Recipients and bidders should contact the centers and provide notices of contracting opportunities. Also, see the Phoenix database, which matches minority companies with business opportunities.</p>	<p>1401 Constitution Ave NW Washington, D.C. 20230 Email: support@mbda.gov 1.888.324.1551</p>	<p>www.mbda.gov/</p>
<p>Standard Industrial Classification Codes (SIC) or North American Industry Classification System (NAICS) codes visit the website.</p>	<p>Website</p>	<p>www.sba.gov/content/north-american-industry-classification-system-codes-and-small-business-size-standards</p>
<p>Maryland Department of Transportation (MDOT) and the Minority/Disadvantaged Business Enterprise (MDOT – MBE/DBE). Loan recipients and bidders may locate qualified M/WBE’s through the MBE/WBE Directory.</p>	<p>Office Address 7201 Corporate Drive Hanover, MD 21076 Or</p>	<p>www.mdot.maryland.gov/Office %20of%20Minority%20Business %20Enterprise/HomePage.html http://mbe.mdot.state.md.us/dir</p>

	Mailing Address: P.O. Box 548 Hanover, MD 21076	ectory/ Click on “Proceed to Directory. Select any combination of the fields to identify M/WBE’s for the specific project opportunities.
U.S. EPA Office of Small, Disadvantaged Business Utilization (OSDBU) – OSDBU’s mission includes “fostering opportunities for partnerships, contracts, subagreements, and grants for small and socioeconomically disadvantaged concerns”. One of the resources to assist prime contractors is a listing of small and disadvantaged businesses (a vendor profile system) registered with OSDBU.	US.EPA Office of Small Programs 1200 Pennsylvania Avenue NW Mail Code 1230T Washington, D.C. 20460	http://cfpub.epa.gov/sbvps/ http://www.epa.gov/osdbu/ Select “search the OSDBU Registry” Click on the search criteria of interest (ethnicity, size, SIC, etc.)
National Black Chamber of Commerce	1350 Connecticut Ave. N.W. Suite 405 Washington D.C. 20036 Phone: 202 466-6888 Fax: 202 466-4918	www.nationalbcc.org Email: info@nationalbcc.org
Virginia Hispanic Chamber of Commerce (Northern Va.)	8300 Boone Blvd., 4 TH Floor Vienna, VA 22182 Phone: 804.378.4099 Fax: 703 893-1269	www.vahcc.com
U.S. Hispanic Chamber of Commerce	2175 K Street NW Suite 100 Washington, D.C. 20037	www.usbcc.com
National Association of Minority Contractors (NAMC)	666 11 Street N.W. Suite 520 Washington D.C. 20001 Phone: 202 347-8250	www.namcnational.org/
Maryland/Washington Minority Contractors (MWMCA)	1107 North Point Blvd, Suite 227 Baltimore, MD 21224 410.282.6101 410.282.6102 –fax	www.mwmca.org
National Association of Women’s Business Owners (NAWBO) – National	1760 Old Meadow Rd. Ste 500 McLean VA 22102 Phone: 800.556.NAWBO 703.506.3268 703.506.3266-fax	www.nawbo.org

NAWBO Baltimore Regional Chapter	4404 Silverbrook Lane, Suite E-204 Owings Mills MD 21117 Phone: 410 876-0502 410.654.9734-fax	www.nawbomaryland.org Email: info@nawbomaryland.org
NAWBO Delaware Chapter	P.O. Box 4657 Greenville Station Greenville, DE 19807-4657 Phone: 302 355.9945	www.nawbodelaware.org Email: info@nawbodelaware.org
MD/DC Minority Supplier Development Council (MSDC)	10770 Columbia Pike Lower Level, Suite L100 Silver Spring MD 20901 Phone: 301 592-6710 Fax: 301 592-6704	http://mddccouncil.org/
National Minority Supplier Development Council, Inc. (NMSDC)	1040 Avenue of the Americas, 2 nd Floor New York, New York 10018 Phone: 212 944-2430 212.719.9611-fax	www.nmsdcus.org/
UIDA Business Services is a Native American Procurement and Technical Assistance Center-maintains a comprehensive database of Native American owned firms	86 South Cobb Drive, MZ:0510 Marietta, GA 30063-0510 Phone, 770 494-0431 770.494.1236-fax or <u>Northeast Region</u> 2340 Dulles Corner Blvd Mail Stop: 1n01 Herndon, VA 20171 Phone: 703.561.3120 703.561.3124-fax	
Diversity Business (A multi-cultural online resource)	200 Pequot Avenue Southport, CT 06890 Phone 203.255.8966 203.255.8501-fax	www.diversitybusiness.com/
National Association of Women in Construction	327 S. Adams Street Fort Worth, TX 76104 Phone: 1-800-552-3506 Phone: 817.877.5551 817.877.0324-fax	www.nawic.org/

III. PRESIDENTIAL DOCUMENTS

PRESIDENTIAL EXECUTIVE ORDER 13202 OF FEBRUARY 17, 2001 and PRESIDENTIAL EXECUTIVE ORDER 13208 OF APRIL 8, 2001 are appended as Attachment II.

IV SEVERABILITY

In the event any provision of the within and foregoing Requirement, including any attachment thereto, shall be held illegal, invalid, unconstitutional or unenforceable by any court of competent jurisdiction, such holding shall not invalidate, render unenforceable or otherwise affect any other provision hereof.

V. PROJECT SIGN

The prime contractor shall provide and erect a sign at a prominent location at each construction site. The owner shall approve the site for the sign erection. The sign shall be prepared in accordance with detailed instructions to be provided by Maryland Department of the Environment (MDE).

It shall be the responsibility of the contractor to protect and maintain the sign in good conditions throughout the life of the project.

Attachment II

Presidential Documents

Executive Order 13202 of February 17, 2001

Preservation of Open Competition and Government Neutrality Towards Government Contractors' Labor Relations on Federal and Federally Funded Construction Projects

By the authority vested in me as President by the Constitution and laws of the United States of America, including the Federal Property and Administrative Services Act, 40 U.S.C. 471 *et seq.*, and in order to (1) promote and ensure open competition on Federal and federally funded or assisted construction projects; (2) maintain Government neutrality towards Government contractors' labor relations on Federal and federally funded or assisted construction projects; (3) reduce construction costs to the Federal Government and to the taxpayers; (4) expand job opportunities, especially for small and disadvantaged businesses; and (5) prevent discrimination against Government contractors or their employees based upon labor affiliation or lack thereof; thereby promoting the economical, nondiscriminatory, and efficient administration and completion of Federal and federally funded or assisted construction projects, it is hereby ordered that:

Section 1. To the extent permitted by law, any executive agency awarding any construction contract after the date of this order, or obligating funds pursuant to such a contract, shall ensure that neither the awarding Government authority nor any construction manager acting on behalf of the Government shall, in its bid specifications, project agreements, or other controlling documents:

(a) Require or prohibit bidders, offerors, contractors, or subcontractors to enter into or adhere to agreements with one or more labor organizations, on the same or other related construction project(s); or

(b) Otherwise discriminate against bidders, offerors, contractors, or subcontractors for becoming or refusing to become or remain signatories or otherwise to adhere to agreements with one or more labor organizations, on the same or other related construction project(s).

(c) Nothing in this section shall prohibit contractors or subcontractors from voluntarily entering into agreements described in subsection (a).

Sec. 2. Contracts awarded before the date of this order, and subcontracts awarded pursuant to such contracts, whenever awarded, shall not be governed by this order.

Sec. 3. To the extent permitted by law, any executive agency issuing grants, providing financial assistance, or entering into cooperative agreements for construction projects, shall ensure that neither the bid specifications, project agreements, nor other controlling documents for construction contracts awarded after the date of this order by recipients of grants or financial assistance or by parties to cooperative agreements, nor those of any construction manager acting on their behalf, shall contain any of the requirements or prohibitions set forth in section 1(a) or (b) of this order.

Sec. 4. In the event that an awarding authority, a recipient of grants or financial assistance, a party to a cooperative agreement, or a construction manager acting on behalf of the foregoing, performs in a manner contrary to the provisions of sections 1 or 3 of this order, the executive agency awarding the contract, grant, or assistance shall take such action, consistent with law and regulation, as the agency determines may be appropriate.

Sec. 5. (a) The head of an executive agency may exempt a particular project, contract, subcontract, grant, or cooperative agreement from the requirements of any or all of the provisions of sections 1 and 3 of this order, if the agency head finds that special circumstances require an exemption in order to avert an imminent threat to public health or safety or to serve the national security.

(b) A finding of "special circumstances" under section 5(a) may not be based on the possibility or presence of a labor dispute concerning the use of contractors or subcontractors who are nonsignatories to, or otherwise do not adhere to, agreements with one or more labor organizations, or concerning employees on the project who are not members of or affiliated with a labor organization.

Sec. 6. (a) The term "construction contract" as used in this order means any contract for the construction, rehabilitation, alteration, conversion, extension, or repair of buildings, highways, or other improvements to real property.

(b) The term "executive agency" as used in this order shall have the same meaning it has in 5 U.S.C. 105, excluding the General Accounting Office.

(c) The term "labor organization" as used in this order shall have the same meaning it has in 42 U.S.C. 2000e(d).

Sec. 7. With respect to Federal contracts, within 60 days of the issuance of this order, the Federal Acquisition Regulatory Council shall take whatever action is required to amend the Federal Acquisition Regulation in order to implement the provisions of this order.

Sec. 8. As it relates to project agreements, Executive Order 12836 of February 1, 1993, which, among other things, revoked Executive Order 12818 of October 23, 1992, is revoked.

Sec. 9. The Presidential Memorandum of June 5, 1997, entitled "Use of Project Labor Agreements for Federal Construction Projects" (the "Memorandum"), is also revoked.

Sec. 10. The heads of executive departments and agencies shall revoke expeditiously any orders, rules, regulations, guidelines, or policies implementing or enforcing the Memorandum or Executive Order 12836 of February 1, 1993, as it relates to project agreements, to the extent consistent with law.

Sec. 11. This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it, create any right to administrative or judicial review, or any right, whether substantive or procedural, enforceable by any party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.



THE WHITE HOUSE,
February 17, 2001

Federal Register

Vol. 66, No. 70

Wednesday, April 11, 2001

Presidential Documents**Title 3—****Executive Order 13208 of April 8, 2001****The President****Amendment to Executive Order 13202, Preservation of Open Competition and Government Neutrality Towards Government Contractors' Labor Relations on Federal and Federally Funded Construction Projects**

By the authority vested in me as President by the Constitution and the laws of the United States of America, including the Federal Property and Administrative Services Act, 40 U.S.C. 471 *et seq.*, and in order to (1) promote and ensure open competition on Federal and federally funded or assisted construction projects; (2) maintain Government neutrality towards Government contractors' labor relations on Federal and federally funded or assisted construction projects; (3) reduce construction costs to the Federal Government and to the tax payers; (4) expand job opportunities, especially for small and disadvantaged businesses; (5) prevent discrimination against Government contractors or their employees based upon labor affiliation or lack thereof; and (6) prevent the inefficiency that may result from the disruption of a previously established contractual relationship in particular cases; thereby promoting the economical, nondiscriminatory, and efficient administration and completion of Federal and federally funded or assisted construction projects, it is hereby ordered that Executive Order 13202 of February 17, 2001, is amended by adding to section 5 of that order the following new subsection:

- (c) The head of an executive agency, upon application of an awarding authority, a recipient of grants or financial assistance, a party to a cooperative agreement, or a construction manager acting on behalf of the foregoing, may exempt a particular project from the requirements of any or all of the provisions of sections 1 and 3 of this order, if the agency head finds: (i) that the awarding authority, recipient of grants or financial assistance, party to a cooperative agreement, or construction manager acting on behalf of the foregoing had issued or was a party to, as of the date of this order, bid specifications, project agreements, agreements with one or more labor organizations, or other controlling documents with respect to that particular project, which contained any of the requirements or prohibitions set forth in sections 1(a) or (b) of this order; and (ii) that one or more construction contracts subject to such requirements or prohibitions had been awarded as of the date of this order.



THE WHITE HOUSE,
April 6, 2001.

[FR Doc. 01-9086
Filed 4-10-01; 8:45 am]
Billing code 3195-01-P

THE CONSTRUCTION SITE SIGN FOR PROJECTS FINANCIALLY SUPPORTED BY STATE REVOLVING LOAN FUNDS AND OTHER FUND SOURCES

White Background

Light Blue Scroll

Black Letters

PROJECT TITLE
Project Type (by MDE)

A PROJECT FINANCIALLY SUPPORTED BY THE
STATE OF MARYLAND AND
U.S. ENVIRONMENTAL PROTECTION AGENCY

UNDER THE DIRECTION
OF THE



Maryland
Department of
the Environment

APPROVED BY THE
MARYLAND BOARD
OF PUBLIC WORKS



Larry Hogan, Governor
Peter V.R. Franchot, Comptroller
Nancy K. Kopp, Treasurer

Total Project Cost: _____
State Loan: _____
State Grant: _____
Federal Funds: _____
Other Funds: _____
Local Funds: _____

4'

8'

PROJECT SIGN

Project Type:

Insert the selected item under the project title:

- Green Infrastructure Project - Constructing environmentally beneficial “green” infrastructure
- Wetlands - Creating wetlands to improve water quality and create wildlife habitat
- Stream restoration - Restoring streams to improve water quality and create wildlife habitat
- Living shorelines - Turning shorelines into living habitats to improve water quality and to reduce erosion and flooding
- Septic connections - Connecting homes to public sewer to eliminate failing septic systems, improve water quality, and protect public health
- Drinking water extension - Connecting homes to public water supply to improve drinking water quality
- Stormwater project - Reducing stormwater runoff to improve water quality, protect public health, and reduce flooding
- CSOs, Sewer project - Preventing sewer overflows to improve water quality and protect public health
- ENR - Reducing pollution to improve Maryland waterways and the Chesapeake Bay and to protect public health

VI. FEDERAL WAGE RATE REQUIREMENTS UNDER THE DAVIS-BACON AND RELATED ACTS

Preamble

With respect to the Clean Water and Safe Drinking Water State Revolving Funds, EPA provides capitalization grants to each State which in turn provides subgrants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman Numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I-5.

Occasionally, the subrecipient may be a private for profit or not for profit entity. For these types of recipients, the provisions set forth in Roman Numeral II, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section II-3(ii)(A), below and for compliance as described in Section II-5.

I. Requirements For Subrecipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Lorraine Fleury, EPA Region III, at 215-814-2341 or at fleury.lorraine@epa.gov for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at <http://www.dol.gov/whd/>

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days

prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

- (ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such

laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be

sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the

ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5(a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5(a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State,

EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of

the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (a)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert

in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

- (a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.
- (b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB . Subrecipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.
- (c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract . Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.
- (d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.
- (e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

II. Requirements For Subrecipients That Are Not Governmental Entities

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are not governmental entities. If a subrecipient has questions regarding when DB

applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Lorraine Fleury, EPA Region III, at 215-814-2341 or at fleury.lorraine@epa.gov for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at <http://www.dol.gov/whd/>

Under these terms and conditions, the subrecipient must submit its proposed DB wage determinations to the State recipient for approval prior to including the wage determination in any solicitation, contract task orders, work assignments, or similar instruments to existing contractors.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the Subrecipient obtains its proposed wage determination, it must submit the wage determination to the State recipient DB point of contact for wage determinations for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official.

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

- (i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.
- (ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional

classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request, and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s) shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The

required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide

apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of

forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient shall upon the request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (a)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a). The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c). The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB . In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d). The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

General Decision Number: MD160042 01/08/2016 MD42

Superseded General Decision Number: MD20150042

State: Maryland

Construction Type: Heavy Sewer and Water Line

County: Queen Anne's County in Maryland.

SEWER & WATER LINE CONSTRUCTION

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number Publication Date
 0 01/08/2016

SUMD2010-059 01/01/1993

	Rates	Fringes
Laborers:		
Laborers.....	\$ 7.37	
Pipelayers.....	\$ 9.73	1.03
Power equipment operators:		
Backhoes.....	\$ 13.12	2.21
Loaders.....	\$ 11.22	1.28
TRUCK DRIVER.....	\$ 8.97	.44

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within

the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion

date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor

200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

□

CONTRACT FORMS

CONTRACT NO. SAN 16-03

00530	Agreement
00610	Performance Bond
00620	Payment Bond
00630	Maintenance Bond
00690	Application for Payment Affidavit

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

AGREEMENT

THIS AGREEMENT, is entered into this ____ day of _____, 20__ by and between the County Commissioners of Queen Anne's County, Maryland, hereinafter called OWNER, and a Corporation known as _____ organized and existing under the laws of the State of _____ hereinafter called CONTRACTOR.

WITNESSETH, that OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

CONTRACTOR shall complete all Work as specified and indicated in the Contract Documents for **Contract No. SAN 16-03, Southern Kent Island Sanitary Project – Transmission Sewer Main.**

Article 2. ENGINEER

Davis, Bowen & Friedel, Inc. is hereinafter called ENGINEER and will assume all duties and responsibilities and will have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion, inspection and review of the Work and other duties and responsibilities of the ENGINEER in accordance with the Contract Documents.

Article 3. CONTRACT TIME

- 3.1 The Work will be substantially complete in accordance with paragraph 14.8 of the General Conditions within 730 consecutive calendar days after the date indicated in the Notice to Proceed.
- 3.2 The Work will be completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions within 790 consecutive calendar days after the date indicated in the Notice to Proceed.
- 3.3 Liquidated Damages: It is acknowledged that the CONTRACTOR's failure to achieve substantial completion of the Work within the Contract Time provided by the Contract Documents will cause the OWNER to incur substantial economic damages and losses of types and in amounts which are impossible to compute and ascertain with certainty as a basis for recovery by the OWNER of actual damages, and that liquidated damages represent a fair, reasonable and appropriate estimate thereof. Accordingly, in lieu of actual damages for such delay, the CONTRACTOR agrees that liquidated damages may be assessed and recovered by the OWNER

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

as against the CONTRACTOR and its Surety. In the event of delayed completion and without the OWNER being required to present any evidence of the amount or character of actual damages sustained by reason thereof; therefore CONTRACTOR shall be liable to the OWNER for payment of liquidated damages in the amount of **One Thousand Dollars (\$1000.00)** for each day that Substantial Completion is delayed beyond the Contract Time as adjusted for the time extensions provided by the Contract Documents. Such liquidated damages are intended to represent estimated actual damages and are not intended as a penalty, and CONTRACTOR shall pay them to OWNER without limiting OWNER's right to terminate this Agreement for default as provided elsewhere herein.

Article 4. CONTRACT PRICE

OWNER shall pay CONTRACTOR for performance of the Work in accordance with the Contract Documents in lawful money of the United States of America the sum of \$ _____ in accordance with CONTRACTOR'S Unit Price Bid.

Article 5. PAYMENT

CONTRACTOR shall submit monthly applications for Payment in accordance with Article 14 of the General Conditions. A retainage equal to 5% of the value of the work completed shall be withheld until the final application for payment. Final payment shall not be made until the submission, review & acceptance of as-builts. CONTRACTOR acknowledges the potential penalty for unacceptable efforts in providing as-builts in a timely fashion as detailed in the General Condition 6.19.4.

Article 6. INTEREST

All moneys not paid when due hereunder shall bear interest at the rate of 6% per annum.

Article 7. GUARANTEE PERIOD

CONTRACTOR shall warrant and guarantee his Work, materials and equipment in accordance with Article 13 of the General Conditions for a period of two (2) years from the date of OWNER'S approval of the Certificate of Final Completion. The CONTRACTOR shall provide a maintenance bond at 5% of the contract price for these two (2) years. Bond shall be placed prior to release of retainage.

Article 8. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

8.1 CONTRACTOR has familiarized himself with the nature and extent of the Contract

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Documents, Work, locality, and with all local conditions and federal, state and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work, including the applicability of federal, state or local taxes including sales or use tax and assumes full responsibility for the payment of same.

- 8.2 CONTRACTOR further covenants and warrants that he has had sufficient time to examine the site of the Work; that he has examined the site of the Work; and that he has based the within contract prices on his own independent examination and investigation of the site, subsurface materials and conditions, and has not relied on any subsurface information or existing underground utility information furnished to him by OWNER or ENGINEER.
- 8.3 CONTRACTOR has correlated the results of such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.
- 8.4 CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

Article 9. CONTRACT DOCUMENTS

The Contract Documents, which comprise the entire agreement between OWNER and CONTRACTOR, are incorporated to this Agreement by reference, made a part hereof and consist of the following:

- 9.1 This Agreement
- 9.2 Project Manual entitled "**Contract 16-03 Southern Kent Island Sanitary Project – Transmission Sewer Main**", dated **May 2, 2016**, including all provisions within.
- 9.3 All applicable portions of the "Requirements and Contract Provisions for the Treatment Works Projects Financed through the Maryland Water Quality Revolving Loan Fund and the Maryland Drinking Water Revolving Loan Fund – Department of the Environment – State of Maryland" dated February 2016, which are contained within the Project Manual.
- 9.4 Drawings consisting of plans and profiles entitled **Transmission Main - Southern Kent Island (SKI) Sewer Service Area**", dated **February 1, 2106**, prepared by Davis, Bowen & Friedel, Inc.
- 9.5 Addenda numbers ___ through ___, inclusive.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 9.6 CONTRACTOR's Bid.
- 9.7 Documentation submitted by CONTRACTOR prior to Notice of Award.
- 9.8 Any Change Orders, duly delivered after execution of Agreement.
- 9.9 Payment, Performance, and Maintenance Sureties.

There are no Contract Documents other than those listed above in this Article 9. The Contract Documents may only be altered, amended or repealed by a Change Order.

Article 10. MISCELLANEOUS

- 10.1 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law); and, unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 10.2 OWNER and CONTRACTOR each binds himself, his partners, successors, assigns and legal representatives to the other party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

Article 11. OTHER PROVISIONS

- 11.1 CONTRACTOR agrees that he, and his Subcontractors, will pay each person engaged in the Work of this Agreement not less than the minimum wage determination for the applicable described class of work, in accordance with law, as specified by the State of Maryland or the United States Government, under any Maryland or federal law which is made applicable to the Project, by the terms of the Contract Documents or addenda thereto.
- 11.2 To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (1) 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 there from, and (2) is caused in whole or in part by any negligent act or omission

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity, which would otherwise exist as to any party or person, described in this Paragraph 11.2.

11.3 In any and all claims against the OWNER or the ENGINEER or any of their agents or employees by any employee of the CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 11.2 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 Subcontractor under worker's or workmen's compensation acts, disability benefit acts or other employee benefit acts.

IN WITNESS WHEREOF, the parties hereto have signed four (4) copies of this Agreement. One duplicate original each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This Agreement will be effective on _____, 2016.

OWNER: The County Commissioners of
Queen Anne's County, MD

CONTRACTOR: _____

_____/s/
Todd R. Mohn, Director Public Works

_____/s/
Name, Title

Attest:

_____/s/
Treasurer
Attest:

_____/s/

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That We, _____ as
Principal, and _____ a corporation
organized and existing under the laws of the State of Maryland and authorized to do
business in the State of Maryland, as Surety, are held and firmly bound unto the County
Commissioners of Queen Anne's County, Maryland, and the Maryland State Highway
Administration, as Obligee, in the full and just sum of

_____ Dollars (\$_____)

(100% of the Contract Price) lawful money of the United States of America, for the
payment of which sum, well and truly be made, we bind ourselves, our heirs, executors,
administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that

WHEREAS, the Principal contemplates entering into a certain Contract with the Obligee
for construction of **Contract No. SAN 16-03, Southern Kent Island Sanitary Project –
Transmission Sewer Main**", with a Project Manual dated **May 2, 2016**, pursuant to
drawings, specifications and other related documents, constituting the Contract
Documents, which are incorporated into the Agreement by reference, and

NOW, THEREFORE, if the Principal and Obligee shall enter into an Agreement with
respect to performance of such work, and if the Principal shall well, truly and faithfully
perform its duties, all the undertakings, covenants, terms, and conditions of the Agreement
and the Contract Documents during the original term thereof, and any extensions thereof,
then this obligation shall be void; otherwise to remain in full force and effect.

The obligation of the Surety hereunder shall extend to all obligations of the Principal in
connection with warranty and/or maintenance obligations of the Principal which survive the
completion of the work.

PROVIDED, FURTHER, that the said Surety, for value received hereby agrees that no
change, extension of time, alteration or addition to the terms of the Contract or to the work
to be performed thereunder or the specifications accompanying the same shall in any way
affect the obligation of the Surety on this Bond, and the Surety does hereby waive notice
of any such change, extension of time, alteration or addition to the terms of the Contract or
to the work or to the specifications.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

IN WITNESS WHEREOF,

the Principal and Surety cause this instrument to be Signed, Sealed and Delivered

this ____ day of _____, 2016.

PRINCIPAL

_____/s/ By: _____/s/
(Principal) Secretary

Address: _____

_____/s/ _____
Witness as to Principal

Address: _____

(SEAL)

SURETY

_____/s/ By: _____/s/
(Surety) Secretary Attorney-in-Fact

Address: _____

_____/s/ _____
Witness as to Surety

Address: _____

(SEAL)

NOTES:

Attach an appropriate Power of Attorney, dated as of the same date as the Bond, evidencing the authority of the Attorney-in Fact to act on behalf of the corporation. Surety companies executing bonds must appear on the U.S. Department of the Treasury most current Bond List (Circular 570 as amended). Bond amounts are subject to the underwriting limitation listed in the most recent Circular 570.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That We, _____
as Principal, and _____ a corporation
organized and existing under the laws of the State of Maryland and authorized to do
business in the State of Maryland, as Surety, are held and firmly bound into the County
Commissioners of Queen Anne's County, Maryland, as Obligee, in the full and just sum of
_____ Dollars (\$_____)

(100% of the Contract Price) lawful money of the United States of America, for the
payment of which sum, well and truly be made, we bind ourselves, our heirs, executors,
administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION are such that

WHEREAS, the Principal contemplates entering into a certain contract with the Obligee for
construction of **Contract No. SAN 16-03, Southern Kent Island Sanitary Project –
Transmission Sewer Main**", with a Project Manual dated **May 2, 2016**, pursuant to
drawings, specifications and other related documents, constituting the Contract
Documents, which are incorporated into the Agreement by reference, and

NOW, THEREFORE, if the Principal and Obligee shall enter an Agreement with respect to
performance of such work, and if the Principal shall promptly make payment to all persons,
firms, Subcontractors, associations, partnerships and corporations furnishing materials for
or performing labor in prosecution of the work provided for in such Agreement and the
Contract Documents during the term thereof, then this obligation shall be void; otherwise
to remain in full force and effect.

The obligation of the Surety hereunder shall extend to all indebtedness incurred by the
Principal in connection with warranty and/or maintenance obligations of the Principal which
survive the completion of the work.

PROVIDED, FURTHER, that the said Surety, for value received hereby agrees that no
change, extension of time, alteration or addition to the terms of the Contract or to the work
to be performed thereunder or the specifications accompanying the same shall in any way
affect the obligation of the Surety on this Bond, and the Surety does hereby waive notice
of any such change, extension of time, alteration or addition to the terms of the Contract or
to the work or to the specifications.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

IN WITNESS WHEREOF,

The Principal and Surety cause this instrument to be Signed, Sealed and Delivered

this ____ day of _____, 2016.

PRINCIPAL

_____/s/
(Principal) Secretary

By: _____/s/

Address: _____

_____/s/
Witness as to Principal

Address: _____

(SEAL)

SURETY

_____/s/
(Surety) Secretary

By: _____/s/

Attorney-in-Fact

Address: _____

_____/s/
Witness as to Surety

Address: _____

(SEAL)

NOTES:

Attach an appropriate Power of Attorney, dated as of the same date as the bond, evidencing the authority of the Attorney-in-Fact to act on behalf of the corporation.

Surety companies executing bonds must appear on the U.S. Department of the Treasury Most current Bond List (Circular 570 as amended). Bond amounts are subject to the underwriting limitation listed in the most recent Circular 570.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

of _____

a corporation incorporated under the laws of the State of _____ as SURETY, are held and firmly bound unto the County Commissioners of Queen Anne's County, Maryland, and the Maryland State Highway Administration in the full and just sum of (5% of the Contract Price)

_____ dollars (\$ _____),

lawful money of the United States of America, to be paid to said County Commissioners of Queen Anne's County, Maryland, or its assigns, to which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

Sealed with our respective seals and dated this _____ day of _____ 2016.

WHEREAS, the above bounden PRINCIPAL has entered into a contract with the said County Commissioners of Queen Anne's County, Maryland bearing even date herewith, for the construction of **Contract No. SAN 16-03, Southern Kent Island Sanitary Project – Transmission Sewer Main**", with a Project Manual dated **May 2, 2016**, for approximately the sum of

_____ dollars (\$ _____), and

WHEREAS, it was one of the conditions of the award with the County Commissioners of Queen Anne's County, pursuant to which said contract was entered into, that these presents should be executed.

NOW THEREFORE, if the Principal shall remedy without cost to the OWNER any defects which develop during a period of two (2) years from the date of completion and acceptance of the work performed under said contract provided such defects, in the judgment of the OWNER or his successor having jurisdiction in the premises, are caused by defective or inferior materials or workmanship, then this obligation shall be void; otherwise to remain in full force or virtue.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

IN WITNESS WHEREOF, the said PRINCIPAL and SURETY have duly executed this bond under seal the day and year first above written.

_____(SEAL)
CONTRACTOR

BY

ATTEST

AUTHORIZED OFFICER (CORPORATE SEAL)

_____(SEAL)
SECRETARY

_____(SEAL)

_____(SEAL)

SURETY COMPANY

ATTEST

BY

(SEAL) SECRETARY

ATTORNEY-IN-FACT

NOTES:

Attach an appropriate Power of Attorney, dated as of the same date as the bond, evidencing the authority of the Attorney-in-Fact to act on behalf of the corporation. Surety companies executing bonds must appear on the U.S. Department of the Treasury Most current Bond List (Circular 570 as amended). Bond amounts are subject to the underwriting limitation listed in the most recent Circular 570.

THE UNDERSIGNED CONTRACTOR HEREBY SWEARS UNDER PENALTY OF PERJURY THAT (1) THE ATTACHED APPLICATION FOR PAYMENT NO. ____ IS A TRUE AND CORRECT STATEMENT OF WORK DONE AND MATERIAL INCORPORATED TO DATE, (2) ALL MATERIALS AND EQUIPMENT INCORPORATED IN THE SAID PROJECT OR OTHERWISE LISTED IN OR COVERED BY THIS APPLICATION FOR PAYMENT ARE FREE AND CLEAR OF ALL LIENS, CLAIMS, SECURITY INTERESTS AND ENCUMBRANCES. IN ADDITION, CONTRACTOR CERTIFIES THAT THEY HAVE COMPLIED WITH DEPARTMENT OF LABOR, SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION PROMULGATED UNDER THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970.

DATE: _____ 20____

(CONTRACTOR)

BY: _____
(NAME AND TITLE)

COUNTY OF _____

STATE OF _____

I HEREBY CERTIFY, that on this ____ day of _____, 20____, before me, the subscriber, a Notary Public of the State and County aforesaid, personally appeared _____, who acknowledged himself/herself to be the _____ of _____, being authorized to do so, executed the above application for payment and statement on behalf of said contractor and that all of the statements therein are true, correct and complete, by signing the name of the corporation/partnership/limited liability company by himself/herself as _____.

WITNESS my hand and notarial seal.

Notary Public
My Commission Expires: _____

CONDITIONS OF THE CONTRACT

CONTRACT NO. SAN 16-03

00700	General Conditions
00800	Supplemental Conditions

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

Agreement - The written agreement between the OWNER and the CONTRACTOR covering the Work to be performed. The Contract Documents will be attached to and made a part of the Agreement.

Application for Payment - The form furnished by the OWNER which is to be used by the CONTRACTOR in requesting progress payments and which is to include the schedule of values required by paragraph 14.1 and an affidavit of the CONTRACTOR that progress payments theretofore received from the OWNER on account of the Work have been applied by the CONTRACTOR to discharge in full all of the CONTRACTOR's obligations incurred in connection with the Work covered by all prior applications for payment.

Bid - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bidder - Any person, firm or corporation submitting a Bid for the Work.

Bonds - Bid, Performance, Payment and Maintenance Bonds and other instruments of security, furnished by the CONTRACTOR and his Surety in accordance with the Contract Documents.

Change Order - A written order to the CONTRACTOR signed by the OWNER authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications, the Drawings, and any permits provided prior to bid, as the same are more specifically identified in the Agreement, together with all Modifications issued after the execution of the Agreement.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Contract Price - The total moneys payable to the CONTRACTOR under the Contract Documents.

Contract Time - The number of consecutive calendar days stated in the Agreement for the completion of Work.

CONTRACTOR - As used herein refers to the firm or company selected to perform the construction of the improvements by the OWNER.

COUNTY - The County Commissioners of Queen Anne's County (synonymous with OWNER).

Day – As used herein refers to a calendar day.

Drawings - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by the ENGINEER and are referred to in the Contract Documents.

EFFECTIVE DATE OF AGREEMENT - The date as indicated within the Agreement on page 00530-5.

ENGINEER – The engineering firm as shown on the Plans who, as used herein, refers to the OWNER's representative who designed the improvements, will review certain shop drawings, will respond to Requests For Information, attend public outreach meetings, and will be the initial interpreter of disputes between the OWNER and the CONTRACTOR.

Field Order - A written order issued by the ENGINEER which clarifies or interprets the Contract Documents in accordance with paragraph 9.3 or orders minor changes in the Work in accordance with paragraph 10.2.

Final Completion - The date of the approval of the final progress payment.

INSPECTOR – An agent of the OWNER, who is a subordinate of the Resident Project Representative, and ensures the Project is constructed in accordance with the design.

Modification - (a) A written amendment of the Contract Documents signed by both parties; (b) a Change Order; (c) a written clarification or interpretation issued by the ENGINEER in accordance with paragraph 9.3; or (d) a written order for a minor change or alteration in the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Work issued by the OWNER pursuant to paragraph 10.2. A modification may only be issued after execution of the Agreement.

Notice of Intent to Award - The written notice by the OWNER to the CONTRACTOR that the CONTRACTOR is qualified to construct the Work and is the apparent low responsible responsive Bidder and that upon compliance with the conditions precedent to be fulfilled by the CONTRACTOR within the time specified, the OWNER may execute and deliver the Agreement to him.

Notice to Proceed - The written notice by the OWNER to CONTRACTOR indicating that all conditions have been fulfilled, the Agreement has been executed, and the CONTRACTOR may occupy the site and begin construction.

OWNER - As used herein shall refer to the entity for which the construction is required in order to improve a property. COUNTY shall be considered synonymous with OWNER.

Project - The entire construction to be performed as provided in the Contract Documents.

Resident Project Representative - The authorized representative of the OWNER who is assigned to the Project site, or any part thereof, and who coordinates all day to day oversight of the construction methods and is the primary liaison between the CONTRACTOR, ENGINEER, and OWNER.

Shop Drawings - All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the CONTRACTOR, a Subcontractor, manufacturer, supplier, or distributor and which illustrate the equipment, material or some portion of the Work.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual, 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.

Substantial Completion - The date as certified by the ENGINEER when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

for which it was intended, or if there be no such certification, the date when final payment is due in accordance with paragraph 14.13.

Superintendent - CONTRACTOR'S authorized representative who is assigned to the project site.

Work - Any and all obligations, duties and responsibilities necessary to the successful completion of the project assigned to or undertaken by the CONTRACTOR under the Contract Documents, including the furnishing of all labor, materials, equipment, and other incidentals.

ARTICLE 2 -PRELIMINARY MATTERS

Award:

- 2.1 The award of the Contract, if it is awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items, and will be to the lowest responsible responsive bidder whose qualifications indicate the award will be in the best interest of the OWNER and whose proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigations as he deems necessary to establish the responsibility, qualifications and financial ability of the Bidders to do the Work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. In analyzing Bids, the OWNER may take into consideration alternates and unit prices, if requested by the Bid Forms. If the Contract is awarded, the OWNER will give the successful Bidder a Notice of Award within the time indicated in the Instructions to Bidders.

Delivery of Bonds and Certificates of Insurance:

- 2.2 The OWNER may, at any time during the firm-bid period following the opening of Bids, give Notice of Intent to Award the Contract to the bidder designated by the OWNER as the apparent lowest responsible responsive bidder for such Work. The Bidder so designated shall furnish to the OWNER within ten days after the date of such notice, the required Payment and Performance Bonds. Failure of the apparent lowest responsible responsive bidder to deliver the Bonds within the prescribed period shall be just cause for the OWNER to declare the Bid and any Security therefor forfeited. The OWNER may, in its sole discretion, award the Contract to said Bidder, following receipt of said properly executed Bonds. During this same period, the CONTRACTOR will supply certificates of

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

insurance in accordance with Article 5.7.

Forfeiture of Bid Security:

- 2.3 Failure of the successful Bidder to execute and deliver the Agreement within ten days of the Notice of Intent to Award shall be just cause for the OWNER to annul the Notice of Intent to Award and declare the Bid and any Security therefor forfeited.

Execution of Agreement:

- 2.4 At least four (4) counterparts of the Agreement and such other Contract Documents as practicable will be signed by the OWNER and the CONTRACTOR within ten days of the Notice of Award. The OWNER, the CONTRACTOR, and the ENGINEER will each receive an executed duplicate original copy of the Contract Documents.

Copies of Documents:

- 2.5 The OWNER will furnish to the CONTRACTOR up to five (5) complete sets of the Specifications and Drawings as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Before Starting Work:

- 2.6 Within thirty (30) days after the execution of the Agreement, the CONTRACTOR will submit to the OWNER for approval, an estimated progress schedule indicating the starting and completion dates of the various stages of the Work, a schedule of shop drawing submissions, and an anticipated draw schedule for the length of the contract.
- 2.7 Before starting the Work, a pre-construction conference will be held to review the above schedules, to establish procedures for handling shop drawings and other submissions and for processing applications for payment, and to establish a working understanding between the parties as to the Project. Present at the conference will be the OWNER or his representative, the ENGINEER, the Resident Project Representative, the CONTRACTOR, and the Superintendent.
- 2.8 Before undertaking the Work the CONTRACTOR will carefully study and compare the Contract Documents and check and verify all figures shown thereon and all field measurements. He will at once report in writing to the OWNER any conflict, error or

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

discrepancy which he may discover. The CONTRACTOR assumes full responsibility for having familiarized himself with the nature and extent of the Contract Documents, Work, locality, and local conditions that may in any manner affect the Work to be done.

Commencement of Contract Time, Notice to Proceed:

- 2.9 The Contract Time will commence to run on the effective date of the Agreement. A Notice to Proceed will be issued as confirmation that the Work may begin.

Qualifications of Subcontractors, Materialmen and Suppliers:

- 2.10 Upon submission of the bid, each Bidder will submit to the OWNER and the ENGINEER for acceptance a list of the names of Subcontractors and such other persons and organizations (including those who are to furnish principal items of materials or equipment) proposed for those portions of the Work as to which the identity of the Subcontractors and other persons and organizations must be submitted as specified in the Contract Documents. Prior to the Notice of Award, the OWNER will notify the apparent low responsible responsive Bidder in writing if either the OWNER or the ENGINEER, after due investigation, has reasonable objection to any Subcontractor, person or organization on such list. The failure of the OWNER or the ENGINEER to make objection to any Subcontractor, person or organization on the list prior to the Notice of Award shall constitute an acceptance of such Subcontractor, person or organization. Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the OWNER to reject defective Work, material or equipment, or Work, material or equipment not in conformance with the requirements of the Contract Documents.
- 2.11 If, prior to the Notice of Award, the OWNER or the ENGINEER has reasonable objection to and refuses to accept any Subcontractor, person or organization on such list, the apparent low Bidder may, prior to Notice of Award, either: (a) submit an acceptable substitute and the Bid Price shall be increased or decreased by the difference in cost occasioned by such substitution; or (b) withdraw his Bid and not forfeit his Bid Security. If, after the Notice of Award the OWNER or the ENGINEER refuses to accept any Subcontractor, person or organization on such list, the CONTRACTOR will submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Starting the Work:

- 2.12 The CONTRACTOR will start the Work in accordance with the requirements of the Notice to Proceed.

ARTICLE 3 - CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS

- 3.1 It is the intent of the Specifications and Drawings to describe a complete Project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between the OWNER and the CONTRACTOR. They may be altered only by a Modification.
- 3.2 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If the CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, he will call it to the OWNER's attention in writing before proceeding with the Work affected thereby. In resolving such conflicts, errors and discrepancies, the Documents shall be given precedence in the following order: the Agreement, Addenda, Supplementary Conditions, these General Conditions, the Specifications, and the Drawings. Figure dimensions in drawings shall govern over scale dimensions, and detailed drawings shall govern over general drawings. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for in both Documents. Work, materials or equipment described in words which so applied have a well-known technical or trade meaning shall be deemed to refer to such recognized standards.
- 3.3 Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and the Contract Documents shall be read and enforced as though it were included herein. If through mistake or otherwise, any such provision is not inserted, or is not correctly inserted, then, upon the application of either party, the Contract Documents shall forthwith be altered to make such insertion.

ARTICLE 4 - AVAILABILITY OF LANDS, SUBSURFACE CONDITIONS, REFERENCE POINTS

- 4.1 The OWNER will provide, as indicated in the Contract Documents and not later than the date when needed by the CONTRACTOR, the lands upon which the Work is to be done,

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

rights-of-way for access thereto, and such other lands which are designated for the use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the OWNER, unless otherwise specified in the Contract Documents. If the CONTRACTOR believes that any delay in the OWNER's furnishing these lands for providing such easements entitles him to an extension of the Contract Time, he may make a claim therefor as provided in Article 12. The CONTRACTOR will provide all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. The CONTRACTOR shall not utilize any lands, other than those provided by the OWNER, unless and until he shall place on file with the OWNER a written agreement, executed by the property owner and the CONTRACTOR, which shall clearly state the terms and conditions under which the CONTRACTOR has obtained permission or right to such use. Filing of such agreement with the OWNER shall not effect or imply enforcement of agreement terms and conditions by the OWNER.

Subsurface Conditions:

- 4.2 Certain subsurface conditions have been the basis of Project design. Any subsurface investigation results, test boring data, underground utility locations or other information acquired by the OWNER, or by the ENGINEER for the OWNER prior to Advertisement for Bids, have been acquired for the use of the OWNER only. No claim is made as to the sufficiency, accuracy or completeness thereof where such information may be shown or inferred on the Drawings. The OWNER makes information available to the CONTRACTOR but only upon the express understanding that all conclusions drawn therefrom are the conclusions of the CONTRACTOR and that providing such information shall in no way constitute a guarantee of accuracy. Neither the OWNER nor the ENGINEER accepts any responsibility for any conclusion, regarding subsurface conditions, that the CONTRACTOR may draw from review of data provided. It is the sole responsibility of the CONTRACTOR to satisfy himself as to the subsurface conditions to be encountered in the Work, by whatever means he deems advisable. No claims for additional payment due to unanticipated subsurface conditions (including, but not limited to, the number, nature, or positioning of underground utilities) will be considered.

Reference Points - General:

- 4.3 The OWNER will establish such general reference points as in his judgment will enable the CONTRACTOR to proceed with the Work. All such reference points (if any) are shown on the Drawings. Any additional points required by the CONTRACTOR will be

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

established at CONTRACTOR's expense. The CONTRACTOR will be responsible for the layout of the work and will protect and preserve the established reference points and will make no changes or relocations without prior written approval of the OWNER. He will report to the OWNER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. The CONTRACTOR will replace and accurately relocate all reference points so lost, destroyed, or moved.

- 4.4 The CONTRACTOR shall furnish qualified personnel and all materials required for construction stakeout. Construction stakeout shall originate from, and be based on, horizontal and vertical control points established by the OWNER if sufficient number are available, or from those established by the CONTRACTOR at CONTRACTOR's expense if the number provided by the OWNER is deemed insufficient. The location of the OWNER provided control points are shown on the Drawings.

The CONTRACTOR shall make all necessary computations required to accurately locate the Work at the coordinates or station values shown on the Drawings. One week prior to proceeding with said Work, the CONTRACTOR shall prepare and submit for the ENGINEER's review, one copy of the CONTRACTOR's computations required to indicate excavation depths (i.e., cut sheets) and proposed horizontal locations of structures, pipelines, and appurtenances.

For pipeline jobs, from established horizontal control points and based on computations made by the CONTRACTOR, the CONTRACTOR shall locate the centers of all appurtenances and points along the pipeline at twenty-five (25) foot intervals. From established vertical control points (benchmarks), the CONTRACTOR shall determine and record existing ground elevations along the centerlines of pipelines, and at appurtenances, at a maximum of fifty (50) foot intervals. All pressure pipelines shall be covered to the depth as shown on the Drawings' profile unless they conflict with a pre-existing utility which will then require a deeper cover in order to deflect under.

A digital computer master file of the Work is available from the OWNER for the CONTRACTOR's use provided the CONTRACTOR signs a Release of Liability form and as such recognizes that the use of the master file is at his own risk. CONTRACTOR must take the file as is.

ARTICLE 5 - BONDS AND INSURANCE

Performance, Payment and Maintenance Bonds:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

5.1 The CONTRACTOR will furnish Performance, Payment, and Maintenance Bonds as security for the faithful performance, payment, and warranty of all his obligations under the Contract Documents. These Bonds shall be in amounts as shown in the Instructions to Bidders and in the form and with such sureties as are acceptable to the OWNER. Performance and Payment bonds shall remain in effect until final payment has been made in accordance with paragraph 14.12 and the Maintenance Bond at all times thereafter during the warranty period specified in paragraph 13.9.

CONTRACTOR's Liability Insurance:

5.2 OWNER: The legal title and address of the OWNER is:

The County Commissioners of Queen Anne's County
107 North Liberty Street
Centreville, MD 21617

5.3 CONTRACTOR'S Liability Insurance: The CONTRACTOR shall purchase and maintain insurance during the life of this Contract such Comprehensive General Liability Insurance including product and completed operations liability insurance as will provide protection from the CONTRACTOR'S performance of the Work and the CONTRACTOR'S other obligations under the Contract Documents, whether such performance is by the CONTRACTOR, or by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. This coverage shall include:

Bodily Injury	\$1,000,000 per occurrence/\$2,000,000 aggregate
Property Damage	\$1,000,000 per occurrence/\$2,000,000 aggregate
Personal Injury	\$1,000,000 per occurrence/\$2,000,000 aggregate
Products & Completed Ops	\$1,000,000 per occurrence/\$2,000,000 aggregate

5.3.1 Excess Liability – per occurrence amount shall be equal to the amount of the bid, rounded to the nearest million dollars, less the above General Liability per occurrence amount. The Excess Liability coverage follows the terms and conditions of the Primary Commercial General Liability, Public Official Liability (Owner's Protective Liability) and Automobile Liability coverages.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 5.4 Comprehensive Automobile Liability Insurance: The CONTRACTOR shall purchase and maintain during the life of this Contract such Comprehensive Automobile Liability Insurance including Employer's Non-Owned and Hired Car Liability.
- 5.4.1 Minimum combined single limit for bodily injury and property damage shall be \$1,000,000 per occurrence/\$2,000,000 aggregate.
- 5.5 Worker's Compensation Insurance: The CONTRACTOR shall purchase and maintain during the life of this Contract standard Worker's Compensation Insurance as statutorily required by Maryland including employer's liability coverage (Coverage B) with limits of at least \$100,000 or as required by law, whichever is greater. A Broad Form All States Endorsement shall be attached.
- 5.6 OWNER's Protective Liability Insurance: The CONTRACTOR shall take out and furnish to the OWNER and maintain during the life of this Contract, OWNER'S Protective Liability Insurance including Full XCU with coverage in amounts specified in paragraph 5.3 covering personal injury and property damage.

Insurance Certificates and Policies:

- 5.7 The CONTRACTOR shall file with the OWNER, as hereinbefore required, satisfactory proof of acceptable insurance coverage. Such proof shall, unless otherwise required by the OWNER, consist of the following:
- 5.7.1 Certificates of all insurance policies shall be furnished in a number of copies equal to the number of counter parts of the Contract Documents executed. Which copies shall be clear, readable reproductions, but must be the entire policy including endorsements, exceptions, riders, qualifications and restrictions, exactly as maintained in the records of the insured.
- 5.7.2 Certificates of insurance on the insurance carrier's standard form indicating all policies required by law and the Contract Documents. Each certificate shall carry the provision that the policy may not be canceled or materially changed except upon sixty (60) days (or the legal minimum, whichever is greater) written notice to the OWNER. All insurance shall be kept in force throughout the entire construction period and remain in effect until finally complete in accordance with paragraph 14.12.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

5.7.3 The Certificates of all insurance policies shall list the OWNER (with the address) as the Certificate Holder and shall name the OWNER as an additional insured.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

- 6.1 The CONTRACTOR will supervise and direct the Work efficiently and with his best skill and attention. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will be responsible to see that the finished Work complies accurately with the Contract Documents.
- 6.2 The CONTRACTOR will maintain on the Work at all times during its progress a competent resident Superintendent, who shall not be replaced without written notice to the OWNER except under extraordinary circumstances. The Superintendent will be the CONTRACTOR's representative at the site and shall have authority to act on behalf of the CONTRACTOR. All communications given to the Superintendent shall be as binding as if given to the CONTRACTOR.

Labor, Materials and Equipment:

- 6.3 The CONTRACTOR will provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. He will at all times maintain good discipline and order at the site.
- 6.4 The CONTRACTOR will furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, lights, heat, telephone, water and sanitary facilities, and all other facilities and incidentals necessary for the execution, testing, initial operation, and completion of the Work.
- 6.5 All materials and equipment will be new, except as otherwise provided in the Contract Documents. If required by the OWNER, the CONTRACTOR will furnish satisfactory evidence as to the kind and quality of materials and equipment.
- 6.6 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors, except as otherwise provided in the Contract Documents.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Substitute Materials or Equipment:

- 6.7 If it is indicated in the Specifications that the CONTRACTOR may furnish or use a substitute that is equal to any material or equipment specified, and if the CONTRACTOR wishes to furnish or use a proposed substitute, he will, promptly after the award of the Contract, make written application to the OWNER for approval of such a substitute certifying in writing that the proposed substitute will perform adequately the duties imposed by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. No substitute shall be ordered or installed without the written approval of the OWNER who shall be the sole judge of equality. Refer to General Requirement section 1.06 for additional details.

Concerning Subcontractors:

- 6.8 The CONTRACTOR will not employ any Subcontractor, other person or organization of the types referred to in paragraph 2.10 (whether initially or as a substitute) against whom the OWNER or the ENGINEER may have reasonable objection, nor will the CONTRACTOR be required to employ any Subcontractor against whom he has reasonable objection. It is the CONTRACTOR's responsibility to notify, and seek approval from, the OWNER of any additions or deletions to the required list of all Subcontractors and or other persons.
- 6.9 The CONTRACTOR will be fully responsible for all acts and omissions of his Subcontractors and of persons directly or indirectly employed by them and of persons for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between any Subcontractor and the OWNER or the ENGINEER or any obligation on the part of the OWNER or the ENGINEER to pay or to see to the payment of any moneys due any Subcontractor, except as may otherwise be required by law. The OWNER may furnish to any Subcontractor, to the extent practicable, evidence of amounts paid to the CONTRACTOR on account of specific Work done in accordance with the schedule of values.
- 6.10 The divisions and sections of the Specifications and the identifications of any Drawings shall not control the CONTRACTOR in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

6.11 The CONTRACTOR agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the OWNER. Every Subcontractor, by undertaking to perform any of the Work, will thereby be deemed to be bound by such terms and conditions.

6.12 All Work performed for the CONTRACTOR by a Subcontractor shall be pursuant to an appropriate agreement between the CONTRACTOR and the Subcontractor.

Patent Fees and Royalties:

6.13 The CONTRACTOR will pay all license fees and royalties and assume all costs incident to the use of any invention, design, process or device which is the subject of patent rights or copyrights held by others. He will indemnify and hold harmless the OWNER and the ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys fees) arising out of any infringement of such rights during or after completion of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.14 The CONTRACTOR will secure and pay for all construction permits and licenses and will pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of his Bid.

Laws and Regulations:

6.15 The CONTRACTOR will give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the CONTRACTOR observes that the Specifications or Drawings are at variance therewith, he will give the OWNER and ENGINEER prompt written notice thereof, any necessary changes shall be adjusted by an appropriate Modification. If the CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the OWNER and ENGINEER, he will bear all costs arising therefrom. However, it shall not be his primary responsibility to make certain that the Drawings and Specifications are in accordance with such laws, ordinances, rules and regulations.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Taxes:

- 6.16 The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the Work is to be performed.

Use of Premises:

- 6.17 The CONTRACTOR will confine his equipment, the storage of materials and equipment and the operations of his 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.
- 6.18 The CONTRACTOR will not load nor permit any part of the Work to be loaded with weights that will endanger the Work, nor will he subject any part of the Work to stresses or pressures that will endanger it.

Record Drawings:

- 6.19 The CONTRACTOR shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the OWNER and shall be delivered to him for the OWNER upon completion of the Project.
- 6.19.1 The CONTRACTOR shall be furnished with one paper set of all Contract Drawings which shall be used exclusively by the CONTRACTOR and his subcontractors for incorporating thereon the as-built information of all Contract work as the construction progresses.
- 6.19.2 This complete set of prints shall be maintained at the site at all times and the CONTRACTOR shall be responsible for having clearly, neatly, accurately, and promptly recorded thereon, as the Work is performed, the record of the Contract Work. Principal dimensions, elevations, locations (by station, offset and depth), and such other data as required shall be recorded for all work.
- 6.19.3 The marked-up prints will be reviewed periodically by the OWNER and shall be corrected immediately if found either inaccurate or incomplete.
- 6.19.4 At the completion of the project the set of marked-up prints shall be

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

submitted to the OWNER for final inspection and comment; the CONTRACTOR shall correct, amplify, and do all other work as may be required by the OWNER to complete the as-built information in a manner satisfactory to the OWNER. Once complete to the OWNER's satisfaction, the as-built information shall be input digitally into the master file provided in paragraph 4.4 by the CONTRACTOR.

The above is a condition of final payment. However should draft as-builts not be provided within one month after substantial completion, or if submitted within one month but are not in adequate detail or otherwise do not meet with the satisfaction of the Owner within 2 months of substantial completion, the final invoice will be reduced by $\frac{1}{4}$ of one percent of the final contract price, or \$10,000, whichever is greater.

- 6.20 The CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
- 6.20.1 All employees on the Work and other persons who may be affected thereby.
 - 6.20.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
 - 6.20.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.
 - 6.20.4 As between the CONTRACTOR and the ENGINEER and the OWNER, the CONTRACTOR shall have exclusive responsibility for the initiation and execution of measures necessary for the protection of persons and property. As between the CONTRACTOR and the ENGINEER and the OWNER the CONTRACTOR shall have exclusive responsibility for the means, methods, construction procedures, sequence of operations and every other aspect of the conduct of the Work. Nothing in the Contract Documents shall be construed as imposing upon the ENGINEER or OWNER any responsibility for project safety.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 6.20.5 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He will erect and maintain, as required by the conditions and progress of the Work all necessary safeguards for safety and protection. The CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them. The CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all Work is completed and the OWNER has issued a notice to the CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable.
- 6.20.6 The CONTRACTOR shall designate a responsible representative 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.

Emergencies:

- 6.21 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 ENGINEER or the OWNER, is obligated to act, at his discretion, to prevent threatened damage, injury or loss. He will give the OWNER prompt written notice of the cause of the incident leading to the emergency and also of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved. If the CONTRACTOR believes that additional Work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefor as provided in Articles 11 and 12.

Shop Drawings, Certifications, and Samples:

- 6.22 After checking and verifying all field measurements, the CONTRACTOR will submit to the OWNER for approval, in accordance with the accepted schedule of shop drawing submissions (see paragraph 2.6), the number of Shop Drawings as stated in the General Requirements, which shall have been checked by and stamped with the date of approval

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

of the CONTRACTOR and identified as the OWNER may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable the OWNER to review the information as required.

- 6.23 The CONTRACTOR will also submit to the OWNER for approval, with such promptness as to cause no delay in Work, all samples or certifications required by the Contract Documents. All samples will have been checked by and stamped with the date of approval of the CONTRACTOR, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.
- 6.24 At the time of each submission, the CONTRACTOR will in writing call the OWNER's attention to any deviations that the Shop Drawing, certification, or sample may have from the requirements of the Contract Documents.
- 6.25 The OWNER will review and approve with reasonable promptness Shop Drawings, certifications, and samples, but his review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The approval of a separate item as such will not indicate approval of the assembly in which the item functions. The CONTRACTOR will make any corrections required by the OWNER and will return the required number of corrected copies of Shop Drawings and certifications and resubmit new samples until approved. The CONTRACTOR shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by the OWNER on previous submissions. The CONTRACTOR's stamp of approval on any Shop Drawing, certification, or sample shall constitute a representation to the OWNER and the OWNER that the CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing, certification, or sample with the requirements of the Work and the Contract Documents.
- 6.26 No Work requiring a Shop Drawing, certification, or sample submission shall be commenced until the submission has been approved by the OWNER. A copy of each approved Shop Drawing and certification and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the OWNER.
- 6.27 The OWNER 's approval of Shop Drawings, certifications, or samples shall not relieve the CONTRACTOR from his responsibility for any deviations from the requirements of the Contract Documents unless the CONTRACTOR has in writing called the OWNER's

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

attention to such deviation at the time of submission and the OWNER has given written approval to the specific deviation; nor shall any approval by the OWNER relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings.

6.28 The CONTRACTOR shall note that the OWNER has not given approval to any item of equipment or material prior to submission of Shop Drawings, certifications or samples. This applies both to specified and alternate items. Therefore, use of specified items does not remove the necessity to submit for approval. The OWNER will not give oral or written approval to any equipment supplier, materialman, manufacturer's representative or vendor. The OWNER will not review or consider any submission prior to the issuing of a Notice to Proceed and will not consider or review any submission made directly by an equipment supplier, materialman, manufacturer's representative or vendor. Any such submittal will be forwarded to the CONTRACTOR without comment.

6.29 Clean Up:

The CONTRACTOR shall continuously keep rights-of-way, easement areas, storage areas, streets, roads, highways, and adjacent properties free from accumulations of waste materials, rubbish and windblown debris caused by his operations.

The CONTRACTOR shall daily broom clean paved surfaces and remove surplus materials, tools, construction equipment and machinery as each work area is completed and provide continuous maintenance of temporary paving during the period prior to permanent paving. All trench surfaces shall be maintained for traffic throughout the Contract time period.

Broom clean exterior paved surfaces; rake. Rake clean other surfaces of the grounds. Restore areas disturbed by construction.

Indemnification:

6.30 To the fullest extent permitted by law, the CONTRACTOR shall indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (1) 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 (2) is caused in whole or in part by any

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

negligent act or omission of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph 6.30.

- 6.31 In any and all claims against the OWNER or the ENGINEER or any of their agents or employees by any employee of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 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 Subcontractor under Workmen's Compensation Acts, Disability Benefit Acts or other employee benefit acts.

Operations and Maintenance Data:

- 6.32 No later than two (2) months after approval of Shop Drawings, one set of Approved Shop Drawings shall be furnished to the OWNER. In addition prior to fifty percent (50%) completion of this Contract, the CONTRACTOR shall secure and deliver the OWNER four (4) complete indexed files containing approved operation and maintenance manuals, and other data for Use and Occupancy, or for substantial completion. Indexed files containing approved operation and maintenance manuals, and other data shall be as follows:
- 6.32.1 Equipment function, normal operating characteristics, and limiting conditions for all equipment furnished.
 - 6.32.2 Detailed assembly, installation, alignment, adjustment, and checking instructions for all equipment furnished.
 - 6.32.3 Detailed operating instructions for start-up, calibration, routine and normal operation, regulation and control shutdown and emergency conditions for all equipment furnished.
 - 6.32.4 Detailed lubrication instructions and schedules for all equipment furnished, including identification of lubricant.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 6.32.5 Detailed guide to "trouble-shooting" for all equipment furnished.
 - 6.32.6 Detailed parts lists (including name and number), list of recommended spare parts (including name and number), and an exploded view of each equipment assembly for all equipment furnished.
 - 6.32.7 Detailed schedule of maintenance steps to be taken during periods of scheduled down-time for equipment maintenance for all equipment furnished.
 - 6.32.8 Detailed preventative maintenance procedures and schedules for all equipment furnished.
- 6.33 Non-availability of operating and maintenance manuals or inaccuracies therein may be grounds for cancellation and postponement of any scheduled inspection or testing by the OWNER until such time as the discrepancy has been corrected and/or retainage of sufficient monies to prepare same.
- 6.34 Each copy of the manual shall be assembled in one or more loose leaf binders, each with title page, typed table of contents, typed list of tables, typed list of figures, and heavy section dividers with copper reinforced holes and numbered plastic index tabs. Each manual shall be divided into sections headed by the equipment specification section number and title listed in these detailed specifications. Binders shall be 3-ring, hardback type, black in color, with transparent vinyl front cover suitable for inserting identifying cover and with a transparent vinyl pocket on the spine for label. All data shall be punched for binding; composition and printing shall be arranged so that punching does not obliterate any data. The cover and binding edge of each manual shall have the project number and title, specification division number and title, and manual title printed thereon, all as approved by the OWNER.
- 6.35 All copies of Shop Drawings and diagrams shall be reduced to either 8-1/2 by 11 inches or 11 inches in the vertical dimension and as near as practicable to 17 inches in the horizontal dimensions. Such sheets shall be folded to 8-1/2 by 11 inches. The manual and other data shall be printed on first quality paper, 8-1/2 x 11 inch size with standard 3-hole punching. Drawings and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches.
- 6.35.1 Binders shall be labeled Vol. 1, Vol. 2, etc., where more than one is

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

required. The table of contents for the entire set, identified by volume number, shall appear in each binder.

ARTICLE 7 - WORK BY OTHERS

- 7.1 The OWNER may perform additional Work related to the project by himself, or he may let other direct contracts therefor which shall contain general conditions similar to these. The CONTRACTOR will afford the other contractors who are parties to such direct contracts (or the OWNER, if he is performing the additional Work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of Work, and shall properly connect and coordinate his Work with theirs.
- 7.2 If any part of the CONTRACTOR's Work depends for proper execution or results upon the Work of any such other contractor (or the OWNER), the CONTRACTOR will inspect and promptly report to the OWNER in writing any defects or deficiencies in such Work that render it unsuitable for such proper execution and results. His failure so to report shall constitute an acceptance of the other Work as fit and proper for the relationship of his Work except as to defects and deficiencies which may appear in the other Work after the execution of his Work.
- 7.3 The CONTRACTOR will do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other Work. The CONTRACTOR will not endanger any Work of others by cutting, excavating or otherwise altering their Work and will only cut or alter their Work with the written consent of the OWNER.
- 7.4 If the performance of additional Work by other Contractors or the OWNER is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional Work. If the CONTRACTOR believes that the performance of such additional Work by the OWNER or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefor as provided in Articles 11 and 12.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

- 8.1 The OWNER will issue all formal and official communications to the CONTRACTOR either directly or via their Resident Project Representative.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 8.2 The OWNER will furnish the data required to the CONTRACTOR under the Contract Documents promptly and shall make payments to the CONTRACTOR promptly after they are due as provided in paragraph 14.4.
- 8.3 The OWNER's duties in respect of providing lands, etc. are set forth in paragraphs 4.1 and 4.2, and his duty to establish reference points is set forth in paragraphs 4.3 and 4.4.
- 8.4 In connection with the OWNER's right to stop Work or suspend Work, see paragraphs 13.7 and 15.1. Paragraph 15.2 deals with the OWNER's right to terminate services of the CONTRACTOR under certain circumstances.
- 8.5 OWNER's agents will provide day to day inspection of the Work.

Rejecting Defective Work:

- 8.6 The OWNER or the Resident Project Representative will have authority to disapprove or reject Work which is defective (which term is hereinafter used to describe Work that is unsatisfactory, faulty or defective, or does not conform to the requirements of the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in paragraph 13.2). They will also have authority to require special inspection or testing of the Work as provided in paragraph 13.5, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

- 8.7 In connection with the OWNER 's responsibility as to Shop Drawings, certifications, and samples, see paragraphs 6.22 through 6.29 inclusive.
- 8.8 In connection with the OWNER 's responsibility for Change Orders, see Articles 10, 11, and 12.
- 8.9 In connection with the OWNER 's responsibilities in respect of applications for payment, etc., see Article 14.

Resident Project Representative:

- 8.10 The OWNER will furnish a full-time Resident Project Representative with assistants (INSPECTORS) to assist the ENGINEER in carrying out his responsibilities at the site.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

The duties, responsibilities and limitations of authority of such Resident Project Representative and assistants shall be as set forth hereinafter.

8.10.1 General: The Resident Project Representative is the OWNER's agent, will act as directed by and under the supervision of the OWNER, and will confer with the ENGINEER regarding his actions when issues with the design arise. The Resident Project Representative's dealings in matters pertaining to the on-site Work shall in general be only with the ENGINEER and the CONTRACTOR; dealings with Subcontractors shall only be through or with the full knowledge of the CONTRACTOR.

8.10.2 Duties and Responsibilities: The Resident Project Representative shall:

8.10.2.1 Schedule - Receive the construction schedule prepared by the CONTRACTOR and distribute the schedule to the OWNER.

8.10.2.2 Conferences - Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with the OWNER and notify those expected to attend in advance. Maintain and circulate copies of records of the meetings.

8.10.2.3 Liaison:

8.10.2.3.1 Serve as the OWNER 's liaison with the CONTRACTOR working principally through the CONTRACTOR's field Superintendent. Alert the CONTRACTOR, through his field Superintendent, to the hazards involved in accepting and acting upon instructions from the OWNER or others, except such instructions transmitted through the OWNER.

8.10.2.3.2 Cooperate with the CONTRACTOR in his dealings with the various local agencies having jurisdiction over the Project in order to complete service connections to public utilities and facilities.

8.10.2.3.3 Assist in obtaining from the OWNER additional details or information, when required at the job site for proper execution of the Work.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 8.10.2.3.4 Assist CONTRACTOR in interactions with property owners impacted by the execution of the Work.
- 8.10.2.4 Approvals - Assist in obtaining from the CONTRACTOR a list of his proposed suppliers and Subcontractors.
- 8.10.2.5 Samples - Assist in obtaining field samples of materials delivered to the site which are required to be furnished, and keep record of actions.
- 8.10.2.6 Shop Drawings - Receive approved Shop Drawings and other submissions, record data received, maintain a file of the drawings and submissions, and check construction for compliance with them.
- 8.10.2.7 Review of Work, Inspections and Tests:
 - 8.10.2.7.1 Conduct on-site observations of the Work in progress for the OWNER as a basis for determining that the Project is proceeding in accordance with the Contract Documents.
 - 8.10.2.7.2 Verify that tests, including equipment and systems startup, which are required by the Contract Documents are conducted and that the CONTRACTOR maintains adequate records thereof. Observe, record and report to the OWNER appropriate details relative to the test procedures and startups.
 - 8.10.2.7.3 Accompany visiting representatives of public or other agencies having jurisdiction over the Project and record the outcome of these visits.
 - 8.10.2.7.4 Whenever he considers it necessary or advisable to insure the proper carrying out of the intent of the Contract Documents, the Resident Project Representative shall have authority to disapprove Work or materials as failing to comply with the Contract Documents, approved Shop Drawings, or samples.
- 8.10.2.8 Interpretation of Contract Documents - Transmit to the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CONTRACTOR the OWNER 's interpretation of the Contract Documents.

8.10.2.9 Modifications - Consider and evaluate the CONTRACTOR's suggestions for modifications in Drawings or Specifications and report them with recommendations to the OWNER.

8.10.2.10 Records:

8.10.2.10.1 Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and other submissions, reproductions or original Contract Documents including all Addenda, Change Orders and additional Drawings issued subsequent to the award of the Contract, the OWNER's interpretations of the Contract Documents, progress reports, and other Project related documents.

8.10.2.10.2 Keep a diary or log book, recording hours on the job site, weather conditions, list of visiting officials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures.

8.10.2.10.3 Record names, addresses and telephone numbers of all CONTRACTORS, Subcontractors and major material suppliers.

8.10.2.10.4 Maintain a set of Drawings on which authorized changes are noted, and deliver to the OWNER at the completion of the Project.

8.10.2.11 Reports:

8.10.2.11.1 Furnish the OWNER periodic reports as required of progress of the Project and the CONTRACTOR's compliance with the approved construction schedule.

8.10.2.11.2 Consult with the OWNER in advance of scheduled major tests or start of important phases of the Project.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 8.10.2.12 Payment Requisitions - Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submission and forward them with recommendations to the OWNER, noting particularly their relation to the Work completed and materials and equipment delivered at the site.
- 8.10.2.13 Guarantees, Certificates, Maintenance and Operation Manuals - During the course of the Work, assemble guarantees, certificates, maintenance operation manuals and other required data to be furnished by the CONTRACTOR and upon acceptance of the Project, deliver this material to the OWNER for his approval.
- 8.10.2.14 Completion:
 - 8.10.2.14.1 Prior to final inspection, submit to the CONTRACTOR a list of observed items requiring correction and verify that each correction has been made.
 - 8.10.2.14.2 Conduct final inspection in the company of the CONTRACTOR, the ENGINEER and the OWNER and prepare a final list of items to be corrected.
 - 8.10.2.14.3 Verify that all items on final list have been corrected and make recommendations to the OWNER concerning acceptance.
- 8.10.3 Limitations of Authority: Except upon written instructions of the OWNER, the Resident Project Representative:
 - 8.10.3.1 Shall not authorize any deviation from the Contract Documents.
 - 8.10.3.2 Shall not undertake any of the responsibilities of the CONTRACTOR, the Subcontractors, or the CONTRACTOR's field Superintendent.
 - 8.10.3.3 Shall not expedite the Work for the CONTRACTOR.
 - 8.10.3.4 Shall not advise on or issue directions relative to any aspect of the construction technique or sequence unless a specific technique or

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

sequence is called for in the Contract Documents.

- 8.10.3.5 Shall not authorize the OWNER to occupy the Project in whole or in part prior to final acceptance of the Work.
- 8.10.3.6 Shall not participate in specialized field or laboratory tests.

Limitations on OWNER 's Responsibilities:

- 8.11 Neither the OWNER's authority to act under this Article 8 nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the OWNER to the CONTRACTOR, any Subcontractor, any of their agents or employees or any other person performing any of the Work.
- 8.12 The OWNER will not be responsible for the construction means, methods, techniques, sequences or procedures, or the safety precautions and programs incident thereto, and he will not be responsible for the CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.
- 8.13 The OWNER will not be responsible for the acts or omissions of the CONTRACTOR, or any Subcontractors, or any of his or their agents or employees, or any other persons performing any of the Work.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative:

- 9.1 The ENGINEER shall be the OWNER's representative during the construction period as it regards issues dealing with design issues but will have limited participation of the inspection of the Work. The duties and responsibilities and the limitations of authority of the ENGINEER as the OWNER's representative during construction are set forth in Articles 1 through 19 of these General Conditions and shall not be extended without written consent of the OWNER and the ENGINEER. The ENGINEER shall also act as a neutral party to attempt to resolve disputes between OWNER and CONTRACTOR that the two parties are unable to resolve on their own.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Visits to Site:

- 9.2 The ENGINEER will make sporadic visits to the site to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. He will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. His efforts will be directed toward providing general assurance for the OWNER that the completed Project will conform to the requirements of the Contract Documents.

Clarifications and Interpretations:

- 9.3 The ENGINEER or OWNER will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of drawings or otherwise) as they may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If the CONTRACTOR believes that a written clarification and interpretation entitles him to an increase in the Contract Price, he may make a claim therefor as provided in Article 11.

Decisions on Disagreements:

- 9.4 The ENGINEER will be the initial interpreter of the terms and conditions of the Contract Documents and the judge of the performance thereunder. In his capacity as interpreter and judge he will exercise his best efforts to insure faithful performance by both the OWNER and the CONTRACTOR. He will not show partiality to either and shall not be liable for the result of any interpretation or decision rendered in good faith. Claims, disputes and other matters relating to the execution and progress of the Work or the interpretation of or performance under the Contract Documents shall be referred initially to the ENGINEER for decision, which he shall render in writing within a reasonable time.
- 9.5 Either the OWNER or the CONTRACTOR may demand arbitration with respect to any such claim, dispute or other matter that has been referred to the ENGINEER, except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16, such arbitration to be in accordance with Article 16. However, no demand for arbitration of any such claim, dispute or other matter shall be made until the earlier of (a) the date on which the ENGINEER has rendered his decision; or (b) the tenth day after the parties have presented their evidence to the ENGINEER if he has not rendered his written decision before that date. No demand for arbitration shall be made

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

later than thirty days after the date on which the ENGINEER rendered his written decision in respect of the claim, dispute or other matter as to which arbitration is sought, and the failure to demand arbitration within said thirty days' period shall result in the ENGINEER's decision being final and binding upon the OWNER and the CONTRACTOR. If the ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but shall not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned.

ARTICLE 10 - CHANGES IN THE WORK

- 10.1 Without invalidating the Agreement, the OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a Change Order, the CONTRACTOR will proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any change order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 11 or Article 12.
- 10.2 The OWNER may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order. If the CONTRACTOR believes that any minor change or alteration authorized by the OWNER, entitles him to an increase in the Contract Price, he may make a claim therefor as provided in Article 11.
- 10.3 Additional Work performed by the CONTRACTOR without authorization of a Change Order will not entitle him to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency as provided in paragraph 6.21 and except as provided in paragraphs 10.2, 13.2, and 13.6.
- 10.4 The OWNER will execute appropriate Change Orders covering changes in Work performed in an emergency as provided in paragraph 6.21 and any other claim of the CONTRACTOR for a change in the Contract Time or the Contract Price which is approved by the OWNER.
- 10.5 It is the CONTRACTOR's responsibility to notify his Surety of any changes affecting the general scope of the Work or change in the Contract Price and the amount of the applicable Bonds shall be adjusted accordingly. The CONTRACTOR will furnish proof of such adjustment to the OWNER.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

ARTICLE 11 - CHANGE OF CONTRACT PRICE

- 11.1 The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the CONTRACTOR shall be at his expense without change in the Contract Price.
- 11.2 The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price, shall be in writing delivered to the OWNER within fifteen days of the occurrence of the event giving rise to the claim. All claims for adjustments in the Contract Price shall be determined by the ENGINEER if the OWNER and the CONTRACTOR cannot otherwise agree on the amount involved. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.
- 11.2.1 The OWNER at any time without notice to any Surety may make changes in the Work of the Contract by making alterations therein, by making additions thereto, or by omitting Work therefrom, and no such action shall invalidate the Contract, relieve or release the CONTRACTOR from any guarantee under the Contract, affect the terms or validity of any bond, relieve or release any Surety, or constitute grounds for any claim by the CONTRACTOR for damages or loss of anticipated profits. All Work required by such alterations, additions, or omissions shall be executed under the terms of the Contract.
- 11.2.2 Other than in an emergency endangering life or property or pursuant to a Field Order, the CONTRACTOR shall not make any changes in the Work nor furnish any labor, equipment, materials, supplies, or other services in connection with any change except pursuant to, and after, receipt of a written authorization from the OWNER in the form of a Change Order or Modification. The CONTRACTOR shall not be entitled to any increase in the Contract price or extension of the Contract time, and no claim therefor shall be valid, unless such written authorization has been so issued to the CONTRACTOR.
- 11.2.3 The OWNER may authorize minor changes in the Work which do not alter the character, quantity, or cost of the Work as a whole. These changes may

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

be accomplished by a Field Order. The CONTRACTOR shall carry out such Field Orders Promptly and without any adjustment of the Contract price or Contract time.

11.3 The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.

11.3.2 By mutual acceptance of a lump sum.

11.3.3 By cost and a mutually acceptable fixed amount for overhead and profit.

11.3.4 If none of the above methods is agreed upon, the value shall be determined by the ENGINEER on the basis of costs and a percentage for overhead and profit. Costs shall only include labor (payroll, payroll taxes, fringe benefits, workmen's compensation, etc.), materials, equipment, and other incidentals directly related to the Work involved. The maximum percentage which shall be allowed for the CONTRACTOR's combined overhead and profit shall be as follows:

11.3.4.1 For all such Work done by his own organization, the CONTRACTOR may add up to ten percent (10%) of his actual net increase in cost, and

11.3.4.2 For all such Work done by Subcontractors, each Subcontractor may add up to ten percent (10%) of his actual net increase in costs for combined overhead and profit and the CONTRACTOR may add up to five percent (5%) of the Subcontractor's total for his combined overhead and profit, provided that no overhead or profit shall be allowed on costs incurred in connection with premiums for public liability insurance or other special insurance directly related to such Work.

In such case and also under paragraph 11.3.3 the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CONTRACTOR will submit in form prescribed by the ENGINEER an itemized cost breakdown together with supporting data.

11.4 The amount of credit to be allowed by the CONTRACTOR to the OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

11.5 VARIATIONS IN ESTIMATED QUANTITIES

11.5.1 When the quantity of a contract item is an estimated quantity and where the actual quantity of such pay item varies more than 25 percent above or below the estimated quantity stated in this contract, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 125 percent or below 75 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the ENGINEER shall, upon receipt of a written request for an extension of time within 10 days from the beginning of the delay ascertain the facts and make the adjustment for extending the completion date as in his judgment the findings justify.

11.5.2 When the quantity of a contingent contract item is an estimated quantity and where the actual quantity of such pay item varies more than 50 percent above or below the estimated quantity stated in this contract, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 150 percent or below 50 percent of the estimated quantity. If the quantity variation is such as to cause an increase in the time necessary for completion, the ENGINEER shall, upon receipt of a written request for an extension of time within 10 days from the beginning of the delay ascertain the facts and make the adjustment for extending the completion date as in his judgment the findings justify.

ARTICLE 12 - CHANGE OF THE CONTRACT TIME

12.1 The Contract Time may only be changed by a Change Order. Any claim for an extension

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

in the Contract Time, shall be in writing delivered to the OWNER within ten days of the occurrence of the event giving rise to the claim. All claims for adjustment in the Contract Time shall be determined by the ENGINEER if the OWNER and the CONTRACTOR cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

- 12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of the CONTRACTOR if he makes a claim therefor as provided in paragraph 12.1. Such delays shall include, but not be restricted to acts or neglect by any separate CONTRACTOR employed by the OWNER, fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.
- 12.3 All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party.

ARTICLE 13 - WARRANTY AND GUARANTEE, TESTS AND INSPECTIONS, CORRECTION,
REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

- 13.1 The CONTRACTOR warrants and guarantees to the OWNER that all materials and equipment will be new unless otherwise specified and that all Work will be of good quality and free from faults or defects and in accordance with the requirements of the Contract Documents and of any inspection, tests or approvals referred to in paragraph 13.2. All unsatisfactory Work, all faulty or defective work and all Work not conforming to the requirements of the Contract Documents or of such inspections, tests or approvals shall be considered defective. Prompt notice of all defects shall be given to the CONTRACTOR. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.
- 13.1.1 The work under the Contract, except as expressly excluded, and all of its subcontracts, severally and collectively, whether herein stipulated in each case or not, shall be guaranteed against faulty workmanship and/or material as specified below from date of acceptance of the work. The provisions of the guarantee and/or guarantees shall be incumbent on all parties of the Work, including the CONTRACTOR, each subcontractor, all material supply houses and all manufacturers whose products and/or equipment are

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

incorporated into the facilities.

- 13.1.2 Neither the Certificate of Substantial Completion, Final Certificate of Payment, nor any provisions in the Contract Documents, nor partial or entire use of occupancy of the premises by the OWNER shall constitute an acceptance of Work, materials or equipment not performed or installed in accordance with the Contract Documents, or relieve the CONTRACTOR or his Sureties of liability in respect to any warranties or responsibility for faulty materials or workmanship.
- 13.1.3 The CONTRACTOR shall guarantee all materials and equipment furnished and Work performed for a period of two (2) years from the date of Substantial Completion. The CONTRACTOR warrants and guarantees for a period of two (2) years from the date of Substantial Completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such repairs of any damage to other parts of the system resulting from such defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other work that may be necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Maintenance Bond shall remain in full force and effect through the guarantee period.

Tests and Inspections:

- 13.2 If the Contract Documents, laws ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the OWNER timely notice of readiness therefor. The CONTRACTOR will furnish the OWNER the required certificates of inspections, testing or approval. All such tests will be in accordance with the methods prescribed by the American Society for Testing and Materials or such other applicable organization as may be required by law or the Contract Documents. If any such Work required so to be inspected, tested or approved is covered without written approval of the OWNER, it must, if requested by the OWNER, be uncovered for observation at the CONTRACTOR's expense. The cost of all such inspections, tests and approvals shall be borne by the CONTRACTOR unless otherwise provided.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 13.3 Neither observations by the OWNER nor inspections, tests or approvals by persons other than the CONTRACTOR shall relieve the CONTRACTOR from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

Access to the Work:

- 13.4 The OWNER or ENGINEER and their representatives will at all times have access to the Work. The CONTRACTOR will provide proper facilities for such access and observation of the Work and also for any inspection, or testing thereof by others. Representatives of any federal, state, or other governmental agency having interest in, or jurisdiction over any of the Work shall at all times have access to the Work.

Uncovering Work:

- 13.5 If any Work is covered contrary to the written request of the OWNER, it must, if requested by the OWNER, be uncovered for his observation and replaced at the CONTRACTOR's expense.
- 13.6 If any Work has been covered which the OWNER has not specifically requested to observe prior to its being covered, or if the OWNER considers it necessary or advisable that covered work be inspected or tested by others, the CONTRACTOR, at the OWNER's request, will 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, material and equipment. If it is found that such Work is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. 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 if he makes a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the Work:

- 13.7 If the Work is defective, or the CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment, or if the CONTRACTOR fails to make prompt payments to Subcontractors or for labor, materials or equipment, the OWNER may order the CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

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 other party.

- 13.8 If required by the OWNER prior to approval of final payment, the CONTRACTOR will promptly, without cost to the OWNER either correct any defective work, whether or not fabricated, installed or completed, or if the work has been rejected by the OWNER, remove it from the site and replace it with non-defective work. If the CONTRACTOR does not correct such defective work or remove and replace such rejected work within a reasonable time, all as specified in a written notice from the OWNER, the OWNER may have the deficiency corrected or the rejected work removed and replaced. All direct or indirect costs of such correction or removal and replacement, including compensation for additional professional services, shall be paid by the CONTRACTOR, and an appropriate deductive Change Order shall be issued. The CONTRACTOR will also bear the expenses of making good all work of others destroyed or damaged by his correction, removal or replacement of his defective work.

Guaranty Period:

- 13.9 If, after the approval of final payment and prior to the expiration of two years after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any work is found to be defective the CONTRACTOR will, promptly without cost to the OWNER and in accordance with the OWNER's written instructions, either correct such defective work, or, if it has been rejected by the OWNER, remove it from the site and replace it with non-defective work. If the CONTRACTOR does not promptly comply with the terms of such instructions, the OWNER may have the defective work corrected or the rejected work removed and replaced, and all direct and indirect costs of such rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, will be paid by the CONTRACTOR.

Acceptance of Defective Work:

- 13.10 If, instead of requiring correction or removal and replacement of defective work, the OWNER (and, prior to approval of final payment, also the ENGINEER) prefers to accept it, he may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Documents, including appropriate reduction in the Contract Price, or, if the acceptance occurs after approval of final payment, an appropriate amount shall be paid by the CONTRACTOR to the OWNER.

Neglected Work by CONTRACTOR:

13.11 If the CONTRACTOR should neglect to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, the OWNER, after three days written notice to the CONTRACTOR may, without prejudice to any other remedy he may have, make good such deficiencies and the cost thereof (including compensation for additional professional services) shall be charged against the CONTRACTOR if the ENGINEER approves such action, in which case a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract Price. If the payments then or thereafter due the CONTRACTOR are not sufficient to cover such amount, the CONTRACTOR will pay the difference to the OWNER.

ARTICLE 14 - PAYMENTS AND COMPLETION

Schedule of Values:

14.1 Within ten days of the execution of the Agreement, the CONTRACTOR shall submit a schedule of values of that Work including quantities and unit prices, aggregating the Contract Price. This provision applies to lump sum contracts and to lump sum items in unit price contracts. This schedule shall be satisfactory in form and substance to the OWNER and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon approval of the schedule of values by the OWNER, it shall be incorporated into the form of application for payment furnished by the OWNER.

14.2 The date for presentation of monthly applications for progress payments to the OWNER shall be established at the preconstruction conference and will govern all such applications unless modified by the OWNER, which modification shall be made known by written notification to the CONTRACTOR at least twenty days prior thereto. At least ten days prior to the time of monthly presentation to the OWNER, the CONTRACTOR will submit to the Resident Project Representative, the completed application for payment covering Work completed as of the date of the application and supported by such data as the OWNER may reasonably require. The Work for which application for payment is

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

made must be complete, in place, and in accordance with the Contract Documents. No payment will be made for any unit on the schedule of values not complete. Nor will any payment be made for materials and equipment stored on the sites and not actually incorporated in the Work.

CONTRACTOR's Warranty of Title:

- 14.3 The CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by an application for payment, will have passed to the OWNER prior to the making of the application for payment, free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as liens), and that no Work, materials or equipment covered by an application for payment will have been acquired by the CONTRACTOR or by any other person performing the Work at the site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the CONTRACTOR or such other person.

Approval of Payments:

- 14.4 The OWNER will, within ten days after receipt of each partial payment estimate, either indicate in writing his approval of payment or return the partial estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within 30 days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate less the retainage.

- 14.4.1 The OWNER will pay ninety-five percent (95%) of the amount due the CONTRACTOR on account of the partial estimate. One half of retained amounts will be paid to the CONTRACTOR upon substantial completion of the entire Contract. The remaining retained amount (2.5%) will be paid to the CONTRACTOR at the time of final completion after the presentation of approved as-builts.

- 14.5 The OWNER 's approval of any payment requested in an application for payment shall constitute a representation by the OWNER, based on the on-site observations of the Work in progress as an experienced and qualified design professional and on his review of the application for payment and the supporting data, that the Work has progressed to

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

the point indicated, that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning project upon substantial completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in his approval), and that the CONTRACTOR is entitled to the payment of the amount approved. However, by approving any such payment the OWNER shall not thereby be deemed to have represented that he made exhaustive or continuous on-site inspections to check the quality or the quantity of the Work, or that he has reviewed the means, methods, techniques, sequences, and procedures of construction or that he has made any examination to ascertain how or for what purpose the CONTRACTOR has used the moneys paid or to be paid to him on account of the Contract Price.

- 14.6 The OWNER's approval of final payment shall constitute an additional representation by him that the conditions precedent to the CONTRACTOR's being entitled to final payment as set forth in paragraph 14.13 have been fulfilled.
- 14.7 The OWNER may refuse to approve the whole or any part of any payment, if, in his opinion, he is unable to reach such conclusions. He may also refuse to approve any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously approved, to such extent as may be necessary in his opinion to protect the OWNER from loss because:
- 14.7.1 the Work is defective,
 - 14.7.2 claims have been filed by Subcontractor, vendors or material suppliers, or there is reasonable evidence indicating the probable filing thereof,
 - 14.7.3 the Contract Price has been reduced because of Modifications,
 - 14.7.4 the OWNER has been required to correct defective Work or complete the Work in accordance with paragraph 13.11,
 - 14.7.5 of unsatisfactory prosecution of the Work, including failure to cleanup as required by paragraph 6.29.

Substantial Completion:

- 14.8 When the CONTRACTOR considers the entire Work ready for its intended use the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CONTRACTOR shall, in writing to the OWNER certify that the entire Work is substantially complete and request that the OWNER issue a certificate of Substantial Completion. Within fifteen days thereafter the OWNER and the CONTRACTOR and the ENGINEER shall make an inspection of the Work to determine the status of completion. If the OWNER does not consider the Work substantially complete, the OWNER will notify the CONTRACTOR in writing giving his reasons therefor. If the OWNER considers the Work substantially complete, the OWNER will prepare and deliver to the CONTRACTOR a certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a detailed list of each and every uncompleted item and a reasonable cost of completion.

14.8.1 At the time of delivery of the certificate of Substantial Completion the OWNER will deliver to the CONTRACTOR a written recommendation as to division of responsibilities pending final payment between the OWNER and the CONTRACTOR.

14.8.2 Within thirty days following the date of Substantial Completion the OWNER shall pay the CONTRACTOR in full less only two times such amount as is required to complete any then remaining uncompleted items on the list attached to the certificate of Substantial Completion and less half of the total retainage.

14.9 OWNER shall have the right to exclude the CONTRACTOR from the Work after the date of Substantial Completion, but the OWNER shall allow the CONTRACTOR reasonable access to complete or correct items on the list.

Partial Utilization:

14.10 Prior to final payment, the OWNER may request the CONTRACTOR in writing to permit him to use a specified part of the Project which he believes he may use without significant interference with construction of the other parts of the Project. If the CONTRACTOR agrees, he will certify to the OWNER and ENGINEER that said part of the Project is substantially complete and request the ENGINEER to issue a certificate of Substantial Completion for that part of the Project. Within a reasonable time thereafter the OWNER, the CONTRACTOR and the ENGINEER will make an inspection of that part of the Project to determine its status of completion. If the ENGINEER does not consider that it is substantially complete, he will notify the OWNER and the CONTRACTOR in writing giving his reasons therefor. If the ENGINEER considers that part of the Project to be

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, attaching thereto a tentative list of items to be completed or corrected before final payment and fixing the responsibility between the OWNER and the CONTRACTOR for maintenance, and utilities as to that part of the Project. The OWNER shall have the right to exclude the CONTRACTOR from any part of the Project which the ENGINEER has so certified to be substantially complete, but the OWNER will allow the CONTRACTOR reasonable access to complete or correct items on the tentative list.

Final Inspection:

- 14.11 Upon written notice from the CONTRACTOR that the Project is complete, the ENGINEER will make a final inspection with the OWNER and the CONTRACTOR and will notify the CONTRACTOR in writing of any particulars in which this inspection reveals that the Work is defective. The CONTRACTOR shall immediately make such corrections as are necessary to remedy such defects. The ENGINEER or OWNER will conduct a second inspection to determine whether all corrections identified during the initial final inspection have been completed.

Final Application for Payment:

- 14.12 After the CONTRACTOR has completed any such corrections to the satisfaction of the ENGINEER or OWNER and delivered all maintenance and operation instructions, schedules, guarantees, bonds, certificates of inspection and other documents, all as required by the Contract Documents, he may make application for final payment following the procedure for progress payments. The final application for payment shall be accompanied by such supporting data as the OWNER may require, together with complete and legally effective releases or waivers, satisfactory to the OWNER, of all liens arising out of the Contract Documents and the labor and services performed and the material and equipment furnished thereunder. In lieu thereof and as approved by the OWNER, the CONTRACTOR may furnish receipts or releases in full, an affidavit of the CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which the OWNER or his property might in any way be responsible, have been paid or otherwise satisfied, and consent of the Surety, if any, to final payment. If any Subcontractor or supplier fails to furnish a release or receipt in full, the CONTRACTOR may furnish a bond satisfactory to the OWNER to indemnify him against any lien.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Approval of Final Payment:

- 14.13 If, on the basis of his observation and review of the Work during construction, his final inspection and his review of the final application for payment, all as required by the Contract Documents, the ENGINEER is satisfied that the Work has been completed and the CONTRACTOR has fulfilled all of his obligations under the Contract Documents, he will, within ten days after receipt of the final application for payment, indicate in writing his approval of payment and present the application to the OWNER for payment. Otherwise, he will return the application to the CONTRACTOR, indicating in writing his reasons for refusing to approve final payment, in which case the CONTRACTOR will make the necessary corrections and resubmit the application. The OWNER will, within thirty days of presentation to him of an approved final application for payment, pay the CONTRACTOR the amount approved by the ENGINEER.
- 14.14 If, after Substantial Completion of the Work Final Completion thereof is materially delayed through no fault of the CONTRACTOR, the OWNER shall, without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance of Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in paragraph 5.1, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the OWNER prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

CONTRACTOR's Continuing Obligation:

- 14.15 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 the OWNER to the CONTRACTOR under the Contract Documents, nor any use or occupancy of the Project or any part thereof by the OWNER, nor any act of acceptance by the OWNER nor any failure to do so, nor any correction of defective work by the OWNER shall constitute an acceptance of work not in accordance with the Contract Documents.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Waiver of Claims:

14.16 The making and acceptance of final payment shall constitute:

- 14.16.1 A waiver of all claims by the OWNER against the CONTRACTOR other than those arising from unsettled liens, from defective work appearing after final payment or from failure to comply with the requirements of the Contract Documents or the terms of any special guarantees specified therein, and
- 14.16.2 A waiver of all claims by the CONTRACTOR against the OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend Work:

- 15.1 The OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to the CONTRACTOR which shall fix the date on which work shall be resumed. The CONTRACTOR will resume the Work on the date so fixed. 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 he makes a claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

- 15.2 If the CONTRACTOR is adjudged as bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or order of any public body having jurisdiction, or if he otherwise violates any provision of the Contract Documents, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his Surety seven days written notice, terminate the services of the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

CONTRACTOR and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the Work by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to the CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined and incorporated in a Change Order.

- 15.3 Where the CONTRACTOR's services have been so terminated by the OWNER, said terminations shall not affect any rights of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys by the OWNER due the CONTRACTOR will not release the CONTRACTOR from liability.
- 15.4 Upon seven days written notice to the CONTRACTOR, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Agreement. In such case, the CONTRACTOR shall be paid for all work executed and any expense sustained plus a reasonable profit for work performed up to the time of termination.

CONTRACTOR May Stop Work or Terminate:

- 15.5 If, through no act or fault of the CONTRACTOR, the Work is suspended for a period of more than ninety days by the OWNER or under an order of court or other public authority, or the OWNER fails to act on any application for payment within thirty days after it is submitted, or the OWNER fails to pay the CONTRACTOR any sum awarded by arbitrators within thirty days of its approval and presentation, then the CONTRACTOR may, upon seven days written notice to the OWNER terminate the Agreement and recover from the OWNER payment for all work performed up to the time of termination and any expense sustained plus a reasonable profit. In addition and in lieu of terminating the Agreement, if the OWNER has failed to act on an application for payment or the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon seven days notice to the OWNER stop the Work until he has been paid for all work performed up to the time of termination.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

ARTICLE 16 - ARBITRATION

16.1 All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to, the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided by mutual agreement by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.1.1 Arbitration hearings shall be held in the county in which the Project is located.

16.2 Notice of the demand for arbitration shall be filed in writing with the other party to the Agreement and with the American Arbitration Association. The demand for arbitration shall be made within the 30-day period specified in paragraph 9.10 where applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall it be made after institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.3 The CONTRACTOR will carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise agreed by him and the OWNER in writing.

ARTICLE 17 - ASSIGNMENT OF CONTRACT

17.1 The CONTRACTOR shall not assign the Contract or sublet it as a whole without the written permission of the OWNER, nor shall the CONTRACTOR assign any moneys due to him under the Contract, except to a bank or financial institution acceptable to the OWNER, and then only upon the granting by the OWNER of written permission so to do.

ARTICLE 18 - REMOVAL OF EQUIPMENT

18.1 In the case of termination of this Contract, before completion, from any cause whatever, the CONTRACTOR, if notified to do so by the OWNER, shall promptly remove any part or all of his equipment and supplies from the property of the OWNER, failing which the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

OWNER shall have the right to remove such equipment and supplies at the expense of the CONTRACTOR.

ARTICLE 19 - MISCELLANEOUS

- 19.1 Whenever any provision of the Contract Documents requires the giving of written notice, it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to him who gives the notice.
- 19.2 All Specifications, Drawings and copies thereof furnished by the OWNER shall remain his property. They shall not be used on another project, and with the exception of those sets which have been signed in connection with the execution of the Agreement, shall be returned to him on request upon completion of the Project.
- 19.3 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon the CONTRACTOR by paragraphs 13.1, 13.9 and 14.3 and the rights and remedies available to the OWNER and ENGINEER thereunder, shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or other provisions of the Contract Documents.
- 19.4 Should the OWNER or the CONTRACTOR suffer injury or damage to its person or property because of any error, omission or act of the other or of any of his employees or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.
- 19.5 The Contract Documents shall be governed by the law of the place of the Project.

END OF SECTION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SUPPLEMENTAL CONDITIONS

ARTICLE 1 - MARYLAND ROUTE 8 CONSTRUCTION

- 1.01 Nothing in these Supplemental Conditions shall take precedence over the actual Maryland State Highway Administration (MSHA) construction permit.
- 1.02 Due to seasonal traffic concerns, no construction will be allowed from station 288+50 to 404+50 during the months of May through September, inclusive
- 1.03 All backfill under any SHA Rt 8 right-of-way paved surface, or within 3-feet of a paved surface, shall be 'select' and shall be placed in 6 inch lifts. Material below the top one foot of backfill must exceed 92% of maximum density. Material in the top one foot must exceed 95% of maximum density. Select material so placed will be paid via the Contingent Backfill pay item.

ARTICLE 2 – AIRPORT CONSTRUCTION RESTRICTIONS

- 2.01 Reference is made to the FAA/MAA permit located in the Appendices of the Project Manual.
- 2.02 Construction activities within the 'red box' areas have the following restrictions:
 - a. All construction activities are restricted to between 9 p.m. and 5 a.m.
 - b. Airport is to be given 7 days written notice prior to construction activities within the 'red box'. Contact Bay Bridge Airport Manager – Linda Steiner – 410-643-4364.
 - c. No construction equipment is to be left within the 'red box' when no construction activities are being undertaken.

ARTICLE 3 – PUBLIC OUTREACH REQUIREMENTS

- 3.01 At the initiation of the project, a single public meeting will be required to be attended by the CONTRACTOR in order to present the CONTRACTOR's intended schedule, means and methods to the public and to hear of their concerns of traffic or other impacts. OWNER will supply the venue.
- 3.02 OWNER will use information provided at the regularly scheduled progress meetings to update a web-site maintained by the OWNER as to the CONTRACTOR's current and

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

intended work activities.

ARTICLE 4 - EXISTING STRUCTURES AND UTILITIES

- 4.01 The Contract Drawings show certain information concerning existing above and below ground structures and utilities including pipe, electrical cable, etc., which are existing or are proposed to be constructed by others within the limits of the work, or in close proximity to the work. The OWNER expressly disclaims any responsibility for the accuracy or completeness of said information, and CONTRACTOR will not be entitled to any extra compensation on account of the inaccuracy or incompleteness of such information, such information being shown only for the convenience of CONTRACTOR.
- 4.02 CONTRACTOR is hereby informed that the Public Utilities listed below are known to have installations in the area of this Contract:
- 4.02.1 Delmarva Electric Company – Power – Overhead and underground
 - 4.02.2 Verizon Telephone Company – Phone – Overhead and underground
 - 4.02.3 Atlantic Broadband - Cable Television – Overhead and underground
- 4.03 If CONTRACTOR, in preparing or submitting his Bid relies on subsurface information shown in the Contract Documents, he does so at his own risk. CONTRACTOR must verify the information given to his own satisfaction and shall be fully responsible for determining in the field the exact location of all such underground structures and utilities by means of test pits or other approved methods, and protecting them from damage, whether such structures and utilities are or are not shown on the Contract Drawings.
- 4.04 CONTRACTOR shall perform miscellaneous excavation work as necessary to perform his work. Miscellaneous excavation shall include the digging of test pits to locate underground utilities, piping, and associated items, or excavation for any special structure, outside the normal structural excavation. Test pits shall be dug by CONTRACTOR at CONTRACTOR's expense along the lines of the proposed work as shown on the Contract Drawings, in advance of the excavation, for the purpose of satisfying himself as to the location of underground obstructions or conditions. Additional test pits shall be dug by CONTRACTOR as requested by the ENGINEER, wherever directed, along the line of the proposed work or within the limits of the public

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

right-of-way. This additional work will be paid per the schedule of Contingent Unit Prices in the Proposal.

- 4.05 The CONTRACTOR is advised of the presence of underground fiber optic cable north of Sonny Schulz Drive in the Matapeake area. It is unclear if this utility responds to Miss Utility locates so the CONTRACTOR shall make direct contact with the utility as directed on the Drawings.

ARTICLE 5 - DISPOSAL OF CLEAN SPOIL

- 5.01 The OWNER will provide an area for the proper disposal of, or drying of for re-use, clean spoil generated during the work at its Greenberg Farm nature area should the CONTRACTOR desire to use it. This area is the farm located immediately north of Maryland Road. This area will be available to all three SKI Contractors.
- 5.02 Should the CONTRACTOR desire to use it, he will be responsible for developing and implementing all sediment and erosion control plans and any necessary permits. It is suggested that any interested Contractors share this responsibility.
- 5.03 In the case of conflicts amongst the three SKI Contractors, the STEP Contractor will be given preference as it is believed that contract will generate most of the spoil.
- 5.04 In using this site, CONTRACTOR agrees to comply with the sediment control plan and all directives issued by the MDE sediment control inspector at no cost to the OWNER.
- 5.05 OWNER will be the sole judge of what constitutes 'clean spoil'. OWNER reserves the right to refuse to allow disposal of any material to which there is a reasonable objection such as, but not limited to, trash contamination, excessive vegetative material, etc.
- 5.06 Neither paving nor concrete rubble may be disposed of at this site.
- 5.07 OWNER makes no representation as to how much spoil can be stored permanently at this site. It is the CONTRACTOR's responsibility to utilize his equipment to maximize the storage capacity of the site.

ARTICLE 6 – PRE-EXISTING ROAD/TRAIL DOCUMENTATION

- 6.01 CONTRACTOR shall digitally video record each road and trail prior to mobilization to document the road's or trail's condition, any above ground utilities, and any other features which may be disturbed during construction.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- 6.02 Copies of the recordings shall be provided to the ENGINEER prior to initiation of construction.

ARTICLE 7 - SUBSURFACE CONDITIONS

- 7.01 A sub-surface geo-technical investigation was completed along the area of Work by John D. Hynes & Associates, Inc. The soil boring information is included in Appendix B. Such boring results are only made available in order that CONTRACTOR may have access to the same information available to the OWNER. Any deduction, interpretation, or conclusion drawn therefrom by CONTRACTOR during the bid process as to the sub-surface or latent physical conditions will be entirely at the risk of CONTRACTOR and is not the responsibility of the OWNER.
- 7.02 A sub-surface existing facility investigation was completed at the wastewater treatment plant by Mid-Atlantic Utility Locating LLC. This information is included in Appendix B. Such results are only made available in order that CONTRACTOR may have access to the same information available to the OWNER. Any deduction, interpretation, or conclusion drawn therefrom by CONTRACTOR during the bid process as to the sub-surface or latent physical conditions will be entirely at the risk of CONTRACTOR and is not the responsibility of the OWNER.

END OF SECTION

SPECIFICATIONS

CONTRACT NO. SAN 16-03

DIVISION 1 - GENERAL REQUIREMENTS

01010	General Requirements
01151	Measurement and Payment
01590	Construction Facilities

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SECTION 01010 - GENERAL REQUIREMENTS

Introduction - The Southern Kent Island Sanitary Project is a failing septic system abatement project which will consist of three construction contracts:

- Contract SAN 16-01 – Septic Tank Effluent Pump Installation (to improved properties)
- Contract SAN 16-02 – Community Sewer Main Installation
- Contract SAN 16-03 – Transmission Main Installation

The work of this contract, **Contract No. SAN 16-03**, consists of the installation of an approximately 46,000 linear feet of 2-inch to 16-inch HDPE pressure sewer main. The vast majority of the work will be within SHA rights-of-way. A portion of the work must utilize horizontal directional drill methods. A crossing under US Rt 50/301 will also be required. Work will include the installation of division valves and air-release valves as well as stub-outs into the communities being served. Also included is the installation of a flow meter and a connection into the existing Kent Island Wastewater Treatment Plant.

PART 1 – GENERAL

1.01 CONTRACT DOCUMENTS

- A. The Contract Documents which comprise the entire agreement between Owner and Contractor consist of the following:
 - 1. Agreement
 - 2. Performance, Payment and Other Bonds
 - 3. General Conditions
 - 4. Supplemental Conditions
 - 5. Other portions of the Project Manual not specifically mentioned above including the specifications, funding agency inserts, and permits.
 - 6. Drawings, consisting of a cover sheet and sheets numbered G-1 through ESC-2 inclusive, total of 46 sheets.
 - 7. Addenda
 - 8. Contractor's Bid
 - 9. Documentation submitted by Contractor prior to Notice of Award
 - 10. Any Modification, including Change Orders, duly delivered after execution of Agreement

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

There are no Contract Documents other than those listed above. The Contract Documents may only be altered, amended or repealed by a Modification (as defined in Article 1 of the General Conditions).

1.02 GENERAL

- A. The work week will be restricted to Monday through Friday between 8 a.m. and 5 p.m. and will not exceed 40 hours, or extend beyond the above timeframe, without prior approval. Work within the travel portion of Md Rt 8 may be further restricted by the SHA permit.
- B. The Contractor shall provide all materials, labor, equipment, and services necessary for furnishing and installing all lines, sewer appurtenances, dimensions, grades, elevations and types as shown on the approved contract drawings or as directed by the Owner.
- C. The Contractor shall submit to the Owner samples of the various types of materials that are proposed for use in construction of the above mentioned work. These samples must be approved by both parties prior to the initiation of work. During the progress of the work, the Owner may require that a sufficient number of samples be tested to ascertain the size, type and quality of the actual materials that are being used in construction. The costs of such sampling shall be borne by the Contractor. Two calendar weeks are to be considered the normal turnover times for each agency's review.
- D. The CONTRACTOR shall submit certification as needed to the OWNER that all items are as specified, particularly as it regards 'Buy American Iron & Steel' provisions.
- E. All materials to be used shall be stored in an approved manner that will protect them from harmful exposure to the elements and the hazards of construction procedures.
- F. As-built drawings shall be the Contractor's responsibility. During the progress of the work, the Contractor shall maintain an accurate record of the locations of the piping with reference to job base lines, grades, and elevations. Show all changes made in the piping installation from the layout and/or materials shown on the approved plans or shop drawings. One set of complete as-builts shall be

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

submitted to the Owner prior to final acceptance of the project.

- G. Where maintenance of traffic is required, all signs, lights, barricades, etc., shall be erected and maintained by the Contractor in accordance with Part 4 of the SHA's Manual on Uniform Traffic Control.

1.03 SUMMARY OF WORK

- A. This Work is one of three contracts which in total will comprise the Southern Kent Island (SKI) Sanitary Project – Phase 1. In addition to this transmission main project, there is a Community Mains' contract which will be installing collection sewer mains and service connections in Phase 1 of the overall project. The third contractor will be installing Septic Tank Effluent Pump (STEP) assemblies to the existing homes in the Phase 1 service area. These STEP pumps will provide sufficient energy to pump the flow through the transmission main onto the wastewater treatment plant. (Note this transmission main contract is to accommodate all flows from all four phases of the SKI project. However the Community Mains and STEP work for Phases 2 through 4 will be via future construction contracts).
- B. The Work of this Project component is comprised of the construction of a sewer transmission main approximately 8 miles in length to connect the Southern Kent Island service area to the existing Kent Island Wastewater Treatment Plant. The transmission main will reside almost entirely in the Md Rt 8 (Romance Road) right-of-way (it will leave Rt 8 at Pier 1 Road as it approaches the wastewater treatment plant). The main will be predominately HDPE DR-11 (with some small sections of DR-9 where the main crosses from one side of the right-of-way to the other) and will predominately be 16-inch and 12-inch, with some 8-inch, 6-inch, and 4-inch at the southern extremities. Stubs from the main with diameters of 2-inch, 3-inch, 4-inch, and 6-inch will also be installed into the communities to be served terminating at or near the Md Rt 8 right-of-way line. Some ductile iron will be used to accomplish bends, reducers, as well as piping within the confines of the wastewater treatment plant.
- C. Portions of the Work, predominately the northern portion, will require HDD installation. There will also be required a 20-inch HDD casing placed under US Rt 50/301 highway to carry the transmission main. Work will also include installation of division valves and air release valves as well as seeding, paving restoration, maintenance of traffic, and related appurtenant work. Also included will be the connection(s) of the transmission main into the wastewater plant (3 tie-in points)

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

and the installation of a flow meter and vault adjacent to the wastewater treatment plant.

1.04 REFERENCED STANDARDS AND SPECIFICATIONS

- A. Where standards, codes or specifications are referred to, the reference is to particular standards, codes or specifications together with all of the latest amendments and errata applicable at the time the bids are taken. The specific codes referred to within these specifications are as follows:

AASHTO (American Association of State Highway and Transportation Officials)

ANSI (American National Standards Institute)

ASTM (American Society of Testing and Materials)

AWWA (American Water Works Association)

SCS (USDA Soil Conservation Service)

SHA (Maryland State Highway Administration)

1.05 GUARANTEES AND CERTIFICATES

- A. During the course of the Work and within 6 weeks after approval of Shop Drawings, Contractor shall collect and assemble 5 copies each of the guarantees, manufacturers' specification sheets and/or working drawings, parts lists including exploded views, recommended safety procedures, and recommended list of spare parts. Submit all copies, with an itemized listing, to the Owner.

1.06 ADDITIONAL COSTS RESULTING FROM SUBSTITUTE MATERIAL OR EQUIPMENT

- A. Comply with Article 6.7 of the General Conditions regarding substitute material or equipment. Additional costs resulting from installation of approved substitute material or equipment including alterations in connecting piping or conduit, changes or alteration to foundations, anchor bolts, control systems, or other additional costs, including any necessary re-engineering, attributed to use of the substitute material or equipment shall be the sole responsibility of the Contractor.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.07 SCHEDULES

A. Construction Schedule of Completion:

Within 30 days following Execution of the Agreement, the Contractor shall submit a Construction Schedule. No progress payment shall be approved until an acceptable Schedule is received from the Contractor.

The construction schedule should indicate the anticipated start and completion dates of the following minimum items of work: all Route 8 improvements (station to station), stubs (by street), air release vaults, casing under Rt 301/50, connection to wastewater plant, installation of flow meter, date of substantial completion, punch list activities, and other items of work.

The construction schedule shall include a two month projection of each crew the Contractor intends on working, where the Contractor intends on working (by station), and what portion of work the Contractor intends to accomplish. It shall be made presentable in both appearance and format, and updated monthly at the normally scheduled progress meeting.

Contractor is advised to refer to the Geotechnical information provided in Appendix B in reference to the probable water table issues during the spring months (February, March, and April) and consider this in developing the construction schedule. Groundwater at or to near the surface should be anticipated.

If the Contractor proceeds with work during this high ground water period, any excavation during high ground water conditions shall be at the Contractor's own risk. Contractor, at Contractor's expense, shall fully repair and restore any damage to existing infrastructure (road erosion, drainage ditches, culverts, etc.) or improper main installation (improper coupling installation, bedding, backfill, compaction, etc.) due to high ground water table. Owner shall require the Contractor to remove and reinstall mains due to improper installation and correct any damages caused by installation at time of high ground water table at no cost to the Owner.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Further, Owner reserves the right, upon 7 days' notice, to not compensate the Contractor for contingent backfill and/or contingent excavation below subgrade which may be necessary due to the high ground water issues during this three month period.

Any potential 'non-work period' is already factored into the contract duration and no time extensions or delay claims will be considered based upon water table issues.

Contractor is further advised to refer to the SHA permit in developing the schedule as well as the seasonal traffic restrictions detailed in Supplemental Condition 1.02.

If updated schedules are not received within the time prescribed, 10% of the succeeding progress payment, in addition to the normal contract retainage, will be withheld until such time as the Contractor furnishes the required submittals.

All change orders to the contract shall be incorporated in the Schedule in a manner which is consistent with the original logic.

Requested time extension indicated on the project schedule by those individual changes shall be approvable only if they impact directly on its critical sequence.

All contract change orders are subject to terms and conditions of Article 10, 11, and 12 in the General Conditions.

The completion date for construction shall be as specified in the Contract. The Contractor's Schedule may indicate a construction completion date prior to the completion time specified in the Contract. Any change in the Contract which extends the Contractor's completion date but does not exceed beyond the Contract completion date shall not be considered justification for additional time or monetary compensation claims by the Contractor.

If, in the opinion of the Owner, the Contractor is not prosecuting the work with such diligence as will ensure completion within the time specified, the Owner may require the Contractor to submit a supplemental Schedule. The cost associated with the submission of supplemental schedules will be paid by the Contractor. The supplemental schedule shall detail the specific operational changes to be instituted

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

to ensure the project will be completed within the time specified.

B. Other Schedules:

Other schedules shall be prepared with a level of detail to identify all submittals, major material and equipment delivery dates

A Payment Draw-Down schedule shall be submitted and revised in a similar manner with the monthly project schedule. If updated schedules are not received within the time prescribed, 10% of the succeeding progress payment, in addition to the normal contract retainage, will be withheld until such time as the Contractor furnishes the required submittals.

1.08 PERMITS

A. The Contractor shall obtain and pay for all permits, certificates of inspection, etc., not previously obtained by the Owner during the normal project review stages of the project. Permits, certificates of inspection, etc., pertinent to the Contractor's phase which are required for the actual construction by authorities having jurisdiction over this work shall be delivered to the Owner before the date of final acceptance of the job.

B. Permits obtained, or to be obtained, by Owner:

- a. MDE Construction Permit
- b. SHA Construction Permit
- c. Stormwater Management Notice of Intent (NOI)
- d. MDE Surface Water Withdrawal Permit (for optional water supply for hydrostatic testing)
- e. FAA (for work in the vicinity of the airport)

C. Permits to be obtained by Contractor (not intended to be all inclusive):

- a. Grading Permit
- b. Zoning Permit (for Contractor's construction trailer, if any)
- c. De-watering permit (if any)
- d. Sediment & Erosion Control (for lay-down yards, etc.)
- e. Other permits as required for the execution of the Work

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

PART 2 - EXECUTION

2.01 PROCEDURE

- A. Confer and verify with other contractors as to locations and extent of their work, to the end that interferences and deletions between trades are prevented and embedded or required items are installed in conjunction with the work under this contract.

2.02 WORK SEQUENCE

- A. Construct the Work in stages to provide for public convenience. Do not close off public use of facilities until completion of one stage of construction will provide alternative usage or reuse.
- B. Conduct construction operations to insure the least inconvenience to the general public.
- C. Any damage to the South Island Trail shall be repaired with bituminous concrete pavement, at least temporarily, within 7 days of backfill.

2.03 CONTRACTOR'S USE OF PREMISES

- A. Confine construction equipment, the storage of materials and equipment, and operations of workmen to within the permanent and temporary rights-of-way.
- B. Pipeline materials may be stored appropriately along the route of the Work provided such stored materials do not unduly restrict public use or infringe on private property, or impede the flow of drainage.
- C. Assume full responsibility for materials stored on site including materials for which the Owner has made payment. Purchase and maintain such additional amounts of insurance as is necessary to provide coverage against loss or damage to the materials.

2.04 CLEANING UP

- A. Continuously keep rights-of-way, storage areas, streets, roads, highways and

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

adjacent properties free from accumulations of waste materials, excess excavation, rubbish and windblown debris resulting from construction operations.

- B. Where daily work is in progress, daily broom or water clean paved surfaces and remove surplus materials, tools, construction equipment and machinery as each work area is completed. Provide maintenance of temporary paving during the entire construction period as directed by Owner prior to permanent paving in accordance with the State Highway Construction Permit and as detailed.

2.05 INITIAL OPERATION

- A. As this Work is only one of three components of the overall system necessary for its operation, initial operation will be dependent on the completion of two other projects. Refer to Section 3.16 System Start-up for additional details.

2.06 UNDERGROUND EXPLORATION FOR UTILITIES

- A. No underground exploration of utilities will be made for this project prior to the initiation of construction.
- B. The Contractor shall notify Miss Utility three working days prior to any excavation (1-800-257-7777) as well as any other local utilities not registered with Miss Utility.
- C. The Contractor shall make whatever exploration he deems necessary to determine the actual conditions and locations of underground utilities. "TEST PIT IF IN DOUBT".
- D. The Contractor shall be solely responsible for all damage to any marked underground or above ground utilities encountered in any manner during construction and will make immediate repairs to said damaged utilities.
- E. The Contractor shall notify the Maryland State Highway Administration and/or the Queen Anne's County Department of Public Works in writing for permission 3 days prior to excavating for location of existing utilities. Inspector required during digging.
- F. The Contractor shall test pit at least 1500-feet in advance of any construction activities to allow time to accommodate any conflicts such that progress is not

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

delayed.

2.07 EXISTING UTILITIES

- A. When crossing and/or working in the vicinity of existing utilities, it will be the Contractor's responsibility to properly support and maintain the operation of the utilities. Extreme care must be exercised in excavation and refill operation.
- B. The Contractor will correct at his own expense any damage caused to existing utilities, the proposed utility line and/or surrounding areas as a result of his operations.

PART 3 - SPECIAL REQUIREMENTS

3.01 PROJECTS COORDINATION

- A. The casing activity under Rt 301/50 must be coordinated with the State Highway Administration and/or the Transportation Authority.
- B. The Community Mains' contractor will have some activity within the southern extent of the Rt 8 right-of-way. The Transmission Main Contractor shall coordinate any activities within this portion of the Work to the extent possible but will be given preference should any conflicts arise.

3.02 SPARE PARTS FOR TRANSMISSION MAIN

- A. The Contractor shall furnish the spare parts listed below (AIS compliant) for the transmission main system. All costs associated with this shall be considered to be included in the lump sum bid for mobilization.

<u>Quantity</u>	<u>Description of Spare Part</u>
2	ARI D-025 S/S Air Release Valves
2	Division Valve Tee Keys
1	4-inch Romac Alpha Grip Coupling
1	6-inch Romac Alpha Grip Coupling
2	8-inch Romac Alpha Grip Coupling
2	12-inch Romac Alpha Grip Coupling

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

2	16-inch Romac Alpha Grip Coupling
1	4-inch x 12-inch Ford S/S Repair Clamps
1	6-inch x 12-inch Ford S/S Repair Clamps
2	8-inch x 12-inch Ford S/S Repair Clamps
2	12-inch x 15-inch Ford S/S Repair Clamps
3	16-inch x 15-inch Ford S/S Repair Clamps

3.03 LEGAL HOLIDAYS

- A. The Contractor shall not carry on regular construction activities on Saturdays, Sundays, or legal holidays recognized by the Owner without the written authorization of the Owner. Requests for working on Saturdays, Sundays, or legal holidays shall be submitted to the Owner at least seven (7) full days in advance.
- B. The following shall be legal holidays:
 - a. New Year's Day
 - b. Memorial Day
 - c. Independence Day
 - d. Labor Day
 - e. Thanksgiving Day
 - f. Day After Thanksgiving
 - g. Christmas Day
- C. If the Contractor is approved to work on these holidays, he will pay the applicable holiday wage rate of \$50/hour per inspector for inspection.

3.04 WEEKLY PAYROLL INFORMATION – DAVIS-BACON

- A. Submission of weekly payroll reports are a prerequisite to the Contractor receiving a progress payment. Payroll reports are to be submitted in accordance with the requirements of the Maryland Water Quality Revolving Loan Fund provisions contained herein.
- B. Weekly payroll information from the contractor and every subcontractor that provides any labor on the job must be submitted. A form needs to be submitted each week by the Contractor and each subcontractor from their first day on the job until the contract is concluded. Therefore, even if no labor was provided by a

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

particular subcontractor for a particular week, a report still needs to be filed stating "none". If the submission is incomplete no payment will be made towards the portion of the job whose report is missing.

- C. Any discrepancies between these contract documents and the funding insert referenced below shall be judged in favor of the insert. Refer to the funding insert entitled:

REQUIREMENTS AND CONTRACT PROVISIONS FOR THE PROJECT FINANCED THROUGH THE MARYLAND WATER QUALITY REVOLVING LOAN FUND AND THE MARYLAND DRINKING WATER REVOLVING LOAN FUND - DEPARTMENT OF THE ENVIRONMENT STATE OF MARYLAND, dated February 2016.

3.05 OVERTIME WORK

- A. The Contractor shall not schedule or carry out regular construction activities to result in a weekly work schedule in excess of 40 hours without the written authorization of the Owner. Requests for a work period in excess of 40 hours per week should be submitted to the Owner at least two (2) full days in advance of the start of the workweek.
- B. The Contractor shall reimburse the Owner for the added costs of inspection services and any other costs incurred by the Owner as the result of an overtime work schedule of the Contractor. The rate of overtime for inspection services is \$50 per hour per inspector.
- C. If and when the Owner orders the Contractor to perform work included in the contract outside of regular working hours for the purposes not covered by the contract, the Contractor shall be paid an extra to the contract price. The payment for such overtime ordered by the Owner shall be the applicable rate for overtime hours, minus the applicable rate for straight time hours. The Contractor shall not be entitled to extra compensation for overtime necessary to meet the Construction Schedule of Completion.

3.06 AS-BUILTS

- A. As-builts will be maintained and submitted to the Owner monthly for review. As-

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

builds of the transmission main should be described by stationing and elevation. Stubs should be referenced to two fixed points nearby. The as-built will provide this information in a plan view. As-builts for improvements constructed in any given month shall be presented to the Owner for review at the succeeding progress meeting. Refer to General Conditions for additional as-built requirements.

3.07 LOCATION AND BOUNDARIES OF WORK

- A. The Owner shall provide land for the work specified in these Contract Documents and shall provide suitable provisions for ingress and egress. The Contractor shall not enter on or occupy with men, tools, equipment, or materials any ground outside the property or right-of-way of the Owner without the written consent of the Owner of any such ground. Other Contractors and employees or agents of the Owner may, for all necessary purposes, enter upon the work and premises used by the Contractor and the Contractor shall conduct his work so as not to impede unnecessarily any work being done by others on or adjacent to the site.
- B. The work shall be constructed in the location shown on the Drawings with the exception that the Owner may minimize the areas of disturbance provided any such relocations do not interfere with the Contractor's progress. The Contractor shall be responsible for the alignment within the existing roads and rights-of-way. Owner will provide stakeout of easements. Bench marks are located as shown on the Drawings.
- C. The Contractor shall be responsible for constructing the work in accordance with siting requirements listed in COMAR 26.04.04.05.B.(2).
- D. The Contractor shall construct the work in the location shown on the Contract Drawings with the exception of a conflict with existing utilities. The Contractor shall locate said existing utilities, avoid and repair same upon impact with construction activities at no additional cost to the Owner.
- E. All water and sewer pipelines and appurtenances shall maintain a minimum horizontal separation of 10 linear feet and a minimum vertical clearance of water over sewer of one foot. Refer to "Water Main Deflection Detail" for sewer over water.
- F. Cut-sheets for all pipeline work shall be submitted to the Owner two weeks in

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

advance of the work.

3.08 SHOP DRAWINGS

A. Definition:

Shop drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material and other data prepared by the Contractor, his subcontractors, suppliers or manufacturers which illustrate the manufacturer, fabrication, construction and installation of the work, or portion, thereof.

B. Costs:

All costs necessary for compliance with the requirements of this section of the specifications shall be borne by the Contractor.

C. Detailed Shop Drawings:

1. Detailed shop drawings, data and literature for fabricated materials or equipment to be incorporated in the work shall be submitted to the Engineer for preliminary review, and to the Owner for final approval, for general compliance with the Contract Documents before fabrication. The Contractor shall obtain and check manufacturer's shop drawings, certified prints and other pertinent data for conformance with all requirements of the Plans and Specifications and in ample time to permit satisfactory progress of the work. After completion of such checking and verification by the Contractor, the Contractor shall sign or stamp such drawings, which stamp shall state as follows:

Checked by: _____
(Contractor's Name)

Signed by: _____
(Checker's Name)

2. The Contractor's signature or stamp shall appear on each copy of each submission.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3. All data, drawings and correspondence from subcontractors, manufacturers or suppliers shall be routed through the Contractor. The Engineer shall review only such data and details as are transmitted to him by the Contractor. All correspondence from the Contractor to the Engineer shall refer to the appropriate section of these Specifications containing the subject matter of the inquiry.
4. Once approved by the Engineer, the Engineer shall stamp the drawings in a manner similar to that shown above and submit the drawings to the Owner for approval and signature.
5. All shop drawings shall be in conformity with all requirements of the plans and specifications. All shop drawings except diagrams, brochures, schedules and illustrations shall be to an appropriate scale, no smaller than 1/4 inch = 1.0 foot, and shall give all dimensions necessary for installation and incorporation in the work. All shop drawings shall be accurate and complete, showing outline and section views, details, materials, accessories, appurtenances and related items. Shop drawings showing piping and conduit systems shall incorporate sufficient views to show all fittings and specialties including locations and spacing of hangers and supports.

D. Shop Drawing Submittal:

1. The Contractor shall submit to the Engineer twelve (12) copies of all shop drawings and submittal data for each and every element of the Work. At least thirty (30) calendar days are to be allowed for the Engineer's review following the date of receipt of each submittal/shop drawing. Six (6) processed copies will be returned to the Contractor.
2. Upon review and approval by the Engineer of the above drawings, lists, samples, and other data, the same shall become part of the Contract, and the fabrications furnished shall be in conformity with the same; however, the review of the above drawings, lists, specifications, samples or other data shall in no way release the Contractor from his responsibility for the proper fulfillment by any fabrication, or the requirements of his Contract.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3. Corrections or comments made on the shop drawings during the Engineer's review do not relieve the Contractor from compliance with the requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for conforming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; and in performing his work in a safe manner. If the shop drawings deviate from the Contract Documents, the Contractor shall advise the Engineer of the deviations, in writing accompanying the shop drawings, including the reasons for the deviations, and shall request a deviation from the Contract Documents. All such deviations must be approved in writing by the Owner.
 4. The shop drawings are intended to be utilized by the Contractor for additional fabrication, assembly and erection data. The shop drawings do not change or supersede the Plans and Specifications except in specific cases when the Contractor requests in writing and receives confirmation in writing for deviation from the Plans and Specifications. The Contractor's request for a change shall give, in detail, the specific changes requested by the Contractor and, if accepted by the Engineer, can not be construed to include acceptance of any change except the changed details specifically requested and accepted.
 5. The Contractor will also submit to the Engineer for review all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, and pertinent catalog numbers and the use for which intended.
- E. Shop Drawing Approval:
1. The Contractor's attention is specifically directed to the fact that no work shall be fabricated, nor equipment or materials ordered, nor any construction performed, prior to acceptance by the Engineer of shop drawings applicable thereto.
 2. Construction performed in violation of these requirements will not be accepted until applicable shop drawings have been submitted and

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

accepted. If the Owner so directs, the Contractor shall disassemble and remove any such construction performed prior to acceptance of shop drawings applicable thereto, and the Contractor will be allowed neither additional compensation nor extension of contract time. If any equipment or materials are ordered by the Contractor prior to submission and acceptance of shop drawings, he does so at his own risk.

3. It shall be the responsibility of the Contractor to make all the necessary changes in other items, which result from deviations or changes requested by the Contractor and accepted by the Engineer, so that all items perform the requirements and intent of the Contract Documents.
 4. **Contractor's attention is directed to the Maryland Water Quality Revolving Loan Fund provisions as it regards Use of American Iron and Steel. Any shop drawing of a component made in whole or part of iron and/or steel must be accompanied with 'certification asserting that all manufacturing processes occurred in the US' in accordance with the insert's provisions. If the Contractor intends to submit for a waiver, the waiver request should be sent as soon as possible to avoid the delay of the shop drawing approval.**
- F. Shop Drawings Format:
1. Shop drawings shall be of standardized sizes to enable the Engineer to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches; (c) 11 inches by 8 1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein, may be returned for resubmittal without being reviewed.
 2. All copies shall have a clear space next to the Contractor's signature/stamp, large enough (i.e. 3" by 5") to contain the Engineer's review stamp.

3.09 EQUIPMENT AND INSTALLATION

- A. Every item of equipment, unless otherwise specifically approved by the Owner, shall be the product of a domestic manufacturer experienced in the design,

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

construction and operation of equipment for the purpose required, and who shall have furnished such equipment long enough to be able to show a record of successful operation.

- B. Ample room for erecting, repairing, inspecting, adjusting and operating all equipment and machinery shall be provided. The design, construction, and installation of all equipment and machinery shall conform to and comply with the latest safety and building codes and regulations.
- C. Inasmuch as the drawings are generally diagrammatical and are drawn to a small scale, it is not possible to indicate on the drawings all fittings or offsets in piping, or all valves, traps or other specialties required. Where field conditions necessitate a rearrangement, the Contractor shall prepare, and submit for approval, drawings of the proposed rearrangement. The Contractor shall carefully investigate all conditions affecting the various aspects of the work and shall arrange his work accordingly, furnishing such fittings, traps, valves and specialties as may be required to meet such conditions.

3.10 BORROW PITS OR WASTE AREAS

- A. The Contractor's attention is directed to the fact that the approval by the Soil Conservation District for the construction of this project does not extend to off-site borrow pits, stockpile areas or waste areas. Prior to commencing any grading operations, the Contractor shall make application to, and secure a permit from, the Queen Anne's County Department of Planning and Zoning for the operation and grading of any and all borrow pits, stockpile areas or waste areas situated in Queen Anne's County that will be used in conjunction with the project. The permit shall include, but not be limited to, the approval of the Queen Anne's County Soil Conservation District. A copy of said permit shall be provided to the Owner upon request.
- B. In the event that the Contractor utilizes borrow pits, stockpile areas or waste areas located outside of Queen Anne's County, the location of such sites shall be designated at the time of contract award and the Contractor shall be solely responsible for complying with the applicable laws and regulations of such other county or political jurisdiction.
- C. All costs associated with the creation, maintenance, and closure of all borrow pits,

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

stockpile areas, or waste areas, will be borne by the Contractor.

3.11 DUST CONTROL

- A. Where ordered by the Owner, the Contractor shall spread calcium chloride, or use another approved method, for dust control. The material shall be supplied and stored on the project site in 100 pound bags and shall conform to the requirements of AASHTO Designation M144.
- B. Calcium chloride shall be spread at approximately 2 pounds per square yard of disturbed area, if and as required and directed by the Owner.

3.12 BASIC EROSION CONTROL

- A. All soil erosion and sediment controls are to be installed in accordance with the regulations as set forth in the Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas, U.S. Department of Agriculture, Soil Conservation Service as well as the Queen Anne's County Erosion and Sediment Control Ordinance.
- B. In order to minimize transport of earth materials into natural water courses during construction of the project, the Contractor shall undertake any or all of the following measures as directed by the Owner or a representative of the Department of the Environment's Enforcement Division.
 - 1. Provide temporary stone check dams (3/4" washed gravel) when pumping water from the trenches. All de-watering shall be via a silt bag or other approved method.
 - 2. Remove existing natural or man made earth cover only when actually ready to begin and complete the work requiring it.
 - 3. Replace or provide new, natural, or man made cover immediately after completing work requiring it.
 - 4. All temporary stockpile areas shall be protected by silt fence.
 - 5. Major outfall areas shall be protected by stone check dams prior to initiating

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

excavation activities as shown on the Contract Drawings.

3.13 MAINTENANCE OF TRAFFIC

- A. The Contractor shall maintain all trench surfaces in accordance with the State Highway Administration's Construction Permit and its associated Maintenance of Traffic Plan throughout the Contract time period. Correct all settlement and repair trench surfaces on a minimum weekly basis.
- B. Maintenance of trench surfaces within Pier 1 Road shall also comply with the requirements of the State Highway Construction Permit even though it is a County road.

3.14 MATERIAL TESTING

- A. The Owner will pay for all pavement, concrete and soil compaction testing with the exception of any retesting required due to failure of the pavement, concrete or soil compaction to meet the Contract requirements. The cost of the retesting shall be the responsibility of the Contractor.
- B. All other testing required by the Contract shall be the responsibility of the Contractor.

3.15 SEWER SYSTEM START-UP AND OPERATION BY CONTRACTOR

A. Purpose and Scope

The purpose of the start-up and operation by the Contractor is to assist in the start-up of the sewer system upon the completion and connection to demonstrate that the entire system is constructed in accordance with the Contract Documents and will operate on a continuous basis (with prescribed care). As is noted previously in these General Requirements, this Work is but one of three components necessary for the system to operate. As such the Contractor is reliant on these other two components to be operational prior to start-up. It is conceivable the Contractor could be substantially complete and demobilized prior to start-up. No additional compensation will offered should that be the case.

The Contractor shall provide all operational planning and expertise, supervision,

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

manpower, maintenance, tools, equipment, spare parts, facilities, incidental materials, periodic reports, and services to operate the transmission system for the prescribed period in accordance with the conditions stipulated herein.

B. Readiness to Operate:

When the Contractor has substantially completed the work he shall notify the Owner in writing. Prior to his request, the Contractor will satisfy the Owner during a joint inspection, and by other means if required, that all transmission facilities are complete and ready to operate. All equipment and systems shall have been completed and tested prior to such inspection and all manufacturers' certificates and operating and maintenance manuals shall have been delivered to the Owner and accepted as satisfactory.

C. Plan of Operation:

Once all three components of the Southern Kent Island Sanitary Project have reached substantial completion, connections to the existing homes in the service area will commence by the STEP system installer. The Contractor will be notified two weeks in advance of the system's pending start-up. The Contractor shall ensure all division valves along the transmission main are open and all air release valves are operational and odor control components (if any) are in place, all division valves into the Phase 1 service area stubs are open (unless otherwise directed by the Owner), and ensure all division valves on the stubs to service Phase 2 through 4 are closed. Additionally all new valves installed within the wastewater treatment plant are in their normal positions as shown on the plans. Contractor shall submit documentation to the Owner that the system is ready to convey flow.

D. Date of Start-Up:

For the purpose of establishing the contractual requirement date for Start-up and Operation by the Contractor, the date on which system start-up commences shall be the date on which the first property is placed in service by the STEP contractor.

E. Operating Period:

The Contractor shall provide required manpower and operate the sewer system

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

continuously 7 days a week, 24 hours per day during the start-up period (note the intent being the manpower is available within 1-hour notice, not continuously on-site). Contractor shall operate the system until such times as the daily flow reaches 50,000 gallons per day (approximately 33% of the existing homes in the Phase 1 service area), or for a period of 6 months, whichever occurs first. Any leaks or other component failure will restart the '6-month' clock. The Contractor shall submit to the Owner a current phone listing of said personnel. Maintenance personnel shall respond within one (1) hour of notification.

END OF SECTION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SECTION 01151 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 MEASUREMENT OF QUANTITIES

- A. All work completed under the Contract shall be measured by the Owner's agents according to the standards of weights and measures recognized by the U.S. Bureau of Standards and in the units corresponding to those bid items as presented on the bid form.
- B. The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.
- C. Unless otherwise specified, measurements for area computations will be made on the surface. Pay measurements for area computations will not exceed the neat dimensions shown on the Contract Drawings, unless otherwise ordered in writing by the Owner.
- D. Structures will be measured according to neat lines shown on the Contract Drawings or as altered to fit field conditions. No payment will be made for length, width, or depth, in excess of that shown on the Contract Drawings or specified in the Specifications for any construction, unless otherwise approved by the Owner in writing.
- E. All items which are measured by the linear foot, such as pipe, will be measured parallel to the base or foundation upon which such structures are placed (i.e. from station to station), unless otherwise shown on the Contract Drawings or specified.
- F. In computing volumes of excavation, the average end area method, based on horizontal measurements, or other acceptable methods, will be used.
- G. The term "each", when used as an item of payment, will mean complete payment for the Work described in the Contract.
- H. The term "lump sum", when used as an item of payment, will mean complete payment for the Work described in the Contract, including all necessary fittings and accessories.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- I. Bid prices for bid items shall include furnishing all materials, equipment, and labor for the scope of work in this contract, and all appurtenant work to complete the work as shown or described. All hauling and disposal of excess, unsuitable excavated material or non-reusable removed material shall be included in the prices bid. Bid prices shall include excavation, backfill of trenches or subgrade and sub-base preparation with suitable materials either removed from the excavation or excess suitable materials from the project site; furnishing, placing, compaction, dewatering, sheeting, shoring and bracing, locating existing utilities or storm drains; unclassified excavation, removal, storage, re-hauling and replacement of all material encountered during excavation; disposal of unsuitable material or excess material; wetting or drying borrow for proper placement and compaction; maintenance or protection of excavation or subgrade; furnishing and placing pipe, structures, and appurtenances; support and protection of adjacent property, utilities, and structures encountered; and restoration in-kind in case of damage; maintain storm water pipe and catch basins; and removing all debris after final restoration; traffic and pedestrian control, restoration, sediment erosion control; layout, stake out, as built surveys; and coordination of grades for positive drainage, and all other appurtenant work as shown or specified.

1.02 SCOPE OF PAYMENT

- A. The Contractor will receive and accept compensation provided for in the Contract as full payment for furnishing all materials, labor, tools, and equipment and for performing all Work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the Work or the prosecution thereof, subject to the provisions of the General and Supplemental Conditions.
- B. If any unit price in the Bid Schedule requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Specifications.

PART 2 - GENERAL

2.01 CLEARING AND GRUBBING

- A. No measurement will be made.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. No additional payment will be made. All costs for clearing and grubbing shall be included in the unit price(s) bid for sewer pipelines and other associated items requiring excavation, backfill, and restoration.

2.02 EXCAVATION FOR STRUCTURES

- A. No measurement will be made.
- B. No additional payment will be made. All costs for excavation for structures will be included in the bid price for items requiring excavation.

2.03 FINISH GRADING, SEEDING

- A. No measurement will be made.
- B. No additional payment will be made. All costs for finish grading and seeding shall be included in the unit price(s) bid for pipelines and other associated items requiring excavation, backfill, and restoration. No additional payment will be made for return trips by the Contractor for maintenance of the restoration as directed by the Owner.

2.04 CONCRETE CURB AND CONCRETE SIDEWALK

- A. No measurement will be made.
- B. No additional payment will be made for curb and sidewalk repair or replacement. All costs for repair or replacement of concrete curb and sidewalk shall be included in the unit price(s) bid for pipeline work.

2.05 SEDIMENT AND EROSION CONTROL

- A. No measurement will be made.
- B. No additional payment will be made. All costs for sediment and erosion control shall be included in the lump sum and unit price(s) bid. This includes temporary seeding and mulching and maintenance and replacement of control measures as require throughout the duration of the job.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

2.06 TRENCH EXCAVATION AND BACKFILL

- A. No measurement will be made.
- B. No additional payment will be made. All costs for trench excavation and backfill with native material will be included in the unit prices bid for pipelines and other items requiring trench excavation.
- C. Backfill with select material when so directed will be paid at the Contingent Backfill bid item price as bid

2.07 PIPE BEDDING MATERIAL

- A. No measurement will be made as no bedding is required.
- B. Should situations be encountered that require bedding, item will be paid under the Contingent Excavation bid item.

2.08 PIPE FITTINGS

- A. No measurement will be made.
- B. No additional payment will be made. All costs for pipeline fittings will be included in the unit price(s) bid for pipeline.

2.09 CONTINGENT BACKFILL MATERIALS

- A. Shall be measured by multiplying the actual width, up to the maximum payable width, times the length of backfill where select borrow is required and approved by the Owner. Depth shall not be greater than as measured from the bottom of the trench to the bottom of the base course of paving restoration. Widths greater than the accepted line of excavation will not be included in the measurement for payment. Payable trench widths are as follows:

<u>Trench</u>	<u>Maximum Payable Trench Widths</u>
Transmission Mains (8 inch or less)	3 feet
Transmission Mains (greater than 8 inch)	4 feet

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Payment will be made at the fixed price per cubic yard for the material used as backfill when ordered by the Owner. No payment will be made for Contingent Backfill material placed as a result of native material becoming unsuitable due to acts of the Contractor.
- C. When trench excavation depths exceed 5 feet such that a trench box is utilized, payable trench widths shall be increased by 2 feet.
- D. Payment includes costs of disposal of all waste soil.
- E. All select material shall be SHA certified and documentation of same will be required prior to placement.
- F. Owner reserves the right to not compensate Contractor for this bid item during the spring months – refer to General Requirements section 1.07.A.

2.10 CONTINGENT EXCAVATION BELOW SUBGRADE AND PLACEMENT OF STONE BEDDING

- A. Shall be measured by multiplying the actual width, up to the maximum payable width, times the length of the additional area excavated and replaced with stone bedding as required due to unsuitable material as ordered by the Owner. Depth shall be as measured from the bottom of the pipe bedding (as specified) to the bottom of the trench excavation. Widths greater than the accepted line of excavation will not be included in the measurement for payment. Payable trench widths are as follows:

<u>Trench</u>	<u>Maximum Payable Trench Widths</u>
Transmission Mains (8 inch or less)	3 feet
Transmission Mains (greater than 8 inch)	4 feet

- B. Payment will be paid at the fixed unit price per cubic yard for the material removed and replaced with stone bedding when ordered by the Owner. No payment will be made for contingent excavation below subgrade and stone bedding if said excavation is a result of native subgrade becoming unsuitable due to acts of the Contractor.
- C. When trench excavation depths exceed 5 feet such that a trench box is utilized,

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

payable trench widths shall be increased by 2 feet.

- D. Payment includes costs of disposal of all waste soil.
- E. Owner reserves the right to not compensate Contractor for this bid item during the spring months – refer to General Requirements section 1.07.A.

2.11 THRUST BLOCKS AND ENCASEMENT

- A. No measurement will be made.
- B. No additional payment will be made. All costs for encasement and for concrete thrust blocks will be included in the unit price(s) bid for the Transmission Mains.

2.12 PAYABLE WIDTHS FOR MEASURING PAVEMENT RESTORATION

- A. Maximum payable trench widths for measuring pavement restoration within the paved limits of road right-of-way shall be as given for contingent backfill materials plus two foot regardless of the use of a trench box.
- B. An exception to the above rule would be when the trench is along the unpaved shoulder or an existing curb and gutter of the road in which case the payable trench width will be the actual width of pavement restored.
- C. Payment widths for entrance and exit pits will be the actual squared dimensions, plus two feet from the edge of excavation.
- D. There will be no payment for pavement restoration that is required, at the direction of the OWNER, for damage caused by the negligent actions of the CONTRACTOR.

PART 3 - SEWER PAYMENT ITEMS (Base Bid)

ITEM S-1, MOBILIZATION

- A. Mobilization shall consist of initiating the Contract, and may include such portions of the following as are required at the beginning of the project: setting up the Contractor's general plant; field offices; project signs; shops; storage area; sanitary and other facilities as required by the Contract Documents (by local or state law, or

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

by regulation); providing access to the site; obtaining necessary permits and licenses, and payment of fees; protecting existing materials; installing sediment and erosion control measures (if not covered by a separate bid item); providing required insurance and bonds; and providing spare parts.

- B. Payment for Mobilization will be made at the lump sum price bid. The lump sum price bid for mobilization shall be limited to a maximum of five (5%) percent of the total base bid.

The provisions for payment for this item supersede any provisions elsewhere in the Contract Documents for including the costs of these initial services and facilities in the various items scheduled in the bid.

- C. The price bid for mobilization, less retainage, shall be payable to the Contractor in accordance with the following schedule:
1. Fifty percent (50%) of the lump sum price bid for the item "Mobilization" shall be payable to the Contractor as part of the Contractor's first progress payment request.
 2. The remaining fifty percent (50%) of the lump sum price bid for the item "Mobilization" shall be payable to the Contractor upon his successful completion of five percent (5%) of the awarded contract work. For purposes of this item, five percent (5%) of the work shall be considered completed when the total of payments earned, exclusive of the amount bid for this item and any payments for materials stored, as shown on the monthly certificates of the quantities of work done, equals or exceeds five percent (5%).

ITEM S-2, SEDIMENT & EROSION CONTROL

- A. The work shall include the furnishing, installation, maintenance and repair throughout contract period, and removal of all sediment and erosion control devices in accordance with Contract Documents.
- B. Payment will be made at the lump sum price bid as a percentage of the work completed.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

ITEM S-3, TRAFFIC CONTROL

- A. The lump sum price shall include, but not be limited to, maintenance of traffic, preparation and revision as necessary of an approved traffic control plan, traffic manager, temporary concrete barriers (if necessary), traffic control signs, flags, cones, etc., and temporary paving for maintenance of traffic and all incidentals to maintain traffic at all times during installation in accordance with Contract Documents, Queen Anne's County, and SHA requirements.
- B. The contractor shall submit to the Owner for approval a phased traffic control plan including all construction items and elements complete with associated timelines for each phase of the project. A meeting will be held prior to the initiation of construction with the Contractor, the Owner, and SHA to review, discuss, and refine the construction traffic control plan. Additional meetings may be required as necessary.
- C. Payment will be made at the lump sum price bid as a percentage of the work completed.

ITEM S-4, 2" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Measurement for payment of 2-inch pressure sewers installed via Open Trench technique will be made along the finished trench surface over the centerline of the pipeline to the limits shown on the Contract Drawings. Measurement will extend through valves, structures, and fittings.
- B. Payment will be made at the unit price bid per linear foot for 2-inch pressure sewers, complete in place, including all 2-inch bends, couplings, stainless steel stiffeners, any other 2-inch inch component (with the exception of division valves, air release valves, and cleanouts), test pitting, saw cutting and removal of existing pavement, clearing and grubbing, excavation and hauling of excess or unsuitable material, excavation support, dewatering, native or select material backfill (as directed), compaction, testing, and road surface restoration base (for paved areas), and any temporary paving which may be required via the SHA construction permit.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- C. Surface restoration other than grass restoration is not included but the placement of initial road base material is included. Contractor is to place base material to its full depth upon backfilling. Additional material as may be required subsequent to the initial placement of base material due to traffic (but not inadequate initial compaction) will be paid via the Contingent CR-6 MOT bid item.
- D. Damage to, and restoration of, the South Island Trail will be incidental to the unit cost and is to be restored at the Contractor's cost in accordance with the "Rt 8 Trail Section" detail.
- E. Damage to, and restoration of, any driveways will be incidental to the unit cost and are to be restored 'in-kind' at the Contractor's cost.
- F. Payment shall include the transport and proper disposal or storage of all rejected excavated material unsuitable for backfill and, if available, providing suitable, previously dried native backfill material in trench excavations above subgrade as ordered by the Owner. Select backfill material, when necessary, will be paid under a contingent item.

ITEM S-5, 2" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Measurement for payment of 2-inch pressure sewers installed via Horizontal Directional Drill (HDD) technique will be made along the finished trench surface over the centerline of the pipeline to the limits shown on the Contract Drawings. Measurement will extend through valves, structures, and fittings. Payment will only be made for the portion of the pipe that will function as transmission main. Any pipe in ground used to accomplish HDD installation, such as pipe installed to reach the depth of cover or to rise from depth of cover, will not be included for payment. Payment will also include the cost of entry and exit pits, backfilling of entry and exit pits with native material, tracer wire and/or marking tape, and all other incidental items needed for the pipes installation.
- B. Payment will be made at the unit price bid per linear foot for 2-inch pressure sewers - HDD, complete in place, including all 2-inch bends, couplings, adaptors, connectors, stainless steel stiffeners, any other 2-inch inch component (with the exception of division valves, air release valves, and cleanouts), test pitting, saw cutting and removal of existing pavement, clearing and grubbing, excavation and hauling of excess or unsuitable material, excavation support, dewatering, native or select material backfill (as directed), compaction, testing, and road surface

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

restoration base (for paved areas), and any temporary paving which may be required via the SHA construction permit.

- C. Payment includes any necessary realignment horizontally or vertically as required by field conditions, obstructions or utilities encountered.
- D. Surface restoration other than grass restoration is not included but the placement of initial road base material is included. Contractor is to place base material to its full depth upon backfilling. Additional material as may be required subsequent to the initial placement of base material due to traffic (but not inadequate initial compaction) will be paid via the Contingent CR-6 MOT bid item.
- D. Damage to, and restoration of, the South Island Trail will be incidental to the unit cost and is to be restored at the Contractor's cost in accordance with the "Rt 8 Trail Section" detail.
- E. Damage to, and restoration of, any driveways will be incidental to the unit cost and are to be restored 'in-kind' at the Contractor's cost.
- G. Payment shall include the transport and proper disposal of any rejected drilling fluid and the transport and proper disposal or storage of all rejected excavated material unsuitable for backfill from entrance and exit pits and, if available, providing suitable, previously dried native backfill material in trench excavations above subgrade as ordered by the Owner. Select backfill material, when necessary, will be paid under a contingent item.
- H. Only the limits as shown on the plan's profile will be paid under this bid item rate without prior approval of the Owner. Pipe placed via HDD in excess of that shown on the plan's profile without prior approval will be reimbursed at the Open Trench unit rate.
- I. This bid item applies to both DR-11 pipe and DR-9 pipe (which is required when crossing across Route 8). **Note should the contractor elect or be allowed to open-trench the Route 8 crossings, payment for this work will still be paid at this HDD rate to reflect the additional cost of traffic control, etc.**

ITEM S-6, 3" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Particulars for the measurement for payment of 3-inch pressure sewers will be as

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

for Bid Item S-4 above.

ITEM S-7, 3" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Particulars for the measurement for payment of 3-inch pressure sewers will be as for Bid Item S-5 above.

ITEM S-8, 4" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Particulars for the measurement for payment of 4-inch pressure sewers will be as for Bid Item S-4 above.

ITEM S-9, 4" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Particulars for the measurement for payment of 4-inch pressure sewers will be as for Bid Item S-5 above.

ITEM S-10, 6" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Particulars for the measurement for payment of 6-inch pressure sewers will be as for Bid Item S-4 above.

ITEM S-11, 6" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Particulars for the measurement for payment of 6-inch pressure sewers will be as for Bid Item S-5 above.

ITEM S-12, 8" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Particulars for the measurement for payment of 8-inch pressure sewers will be as for Bid Item S-4 above.

ITEM S-13, 8" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Particulars for the measurement for payment of 8-inch pressure sewers will be as for Bid Item S-5 above.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

ITEM S-14, 12" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Particulars for the measurement for payment of 6-inch pressure sewers will be as for Bid Item S-4 above.

ITEM S-15, 12" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Particulars for the measurement for payment of 12-inch pressure sewers will be as for Bid Item S-5 above.

ITEM S-16, 16" HDPE TRANSMISSION SEWER MAIN – OPEN TRENCH

- A. Particulars for the measurement for payment of 16-inch pressure sewers will be as for Bid Item S-4 above.

ITEM S-17, 16" HDPE TRANSMISSION SEWER MAIN - HDD

- A. Particulars for the measurement for payment of 16-inch pressure sewers will be as for Bid Item S-5 above.

ITEM S-18, WASTEWATER TREATMENT PLANT CONNECTION

- A. Measurement of WWTP connection will be on a lump sum basis of all work shown on the plans required within the WWTP fenced compound (including in-kind pavement restoration), less the components listed as Alternate Bid Item A-1.
- B. Payment for the connection will be made at the lump sum price bid on the basis of percentage complete in place, including piping, coring and sealing, fittings, excavation, excavation support, dewatering, backfill, surface restoration base & finish course and testing.

ITEM S-19, TRANSMISSION MAIN AIR RELEASE VALVE

- A. Measurement for air release valves will be on the basis of the number installed.
- B. Payment will be the same regardless of the size main served.
- C. Payment for air release valves will be made at the unit price bid for each air release valve, complete in place, including clearing and grubbing, excavation,

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

excavation support, dewatering, bedding material, backfill, valve vault manholes, frames and covers, fittings, vent with support, surface restoration base, and testing.

ITEM S-20, 3" DIVISION VALVE

- A. Measurement for 3-inch division valves will be on the basis of the number installed.
- B. Payment will be made at the unit price bid for each 3" division valve, complete in place, including valve box, etc. (in accordance with the detail provided on the drawings).

ITEM S-21, 4" DIVISION VALVE

- A. Particulars for the measurement for payment of 4-inch division valves will be as for Bid Item S-20 above.

ITEM S-22, 6" DIVISION VALVE

- A. Particulars for the measurement for payment of 6-inch division valves will be as for Bid Item S-20 above.

ITEM S-23, 8" DIVISION VALVE

- A. Particulars for the measurement for payment of 8-inch division valves will be as for Bid Item S-20 above.

ITEM S-24, 12" DIVISION VALVE

- A. Particulars for the measurement for payment of 12-inch division valves will be as for Bid Item S-20 above and will also include 12 x 16 reducers and connectors (in accordance with detail) for 12-inch valves installed on 16-inch mains (2 necessary per valve).

ITEM S-25, 6" CLEANOUT ASSEMBLIES

- A. Measurement of the Cleanout Assemblies will be on a lump sum basis of all work shown on the plans.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Payment for the assemblies will be made at the lump sum price bid complete in place, including tee and piping, fittings, excavation, excavation support, dewatering, backfill, surface restoration and testing.
- C. Required division valve will be paid via 6" Division Valve bid item.

ITEM S-26, 2" CHEMICAL FEED

- A. Measurement of the future Chemical Feed connection will be on a lump sum basis of all work shown on the plans (refer to approximately station 411+78).
- B. Payment for the connection will be made at the lump sum price bid on the basis of percentage complete in place, including tap and piping, fittings, excavation, excavation support, dewatering, backfill, surface restoration and testing.
- C. Required division valve will be paid via 3" Division Valve bid item.

ITEM S-27, FLOW METER & VAULT

- A. Measurement of 12-inch flow meter will be on the basis of the number installed.
- B. Payment for the flow meter be made at the unit price bid for each flow meter, complete in place (in accordance with the detail provided on the drawings), including meter, sump pump with alarm, meter vault, manholes, frames and covers, conduit and wires from the meter to the telemetry point landing (10-foot of telemetry wire to extend beyond end of conduit) as well as conduit and wires for the power to the vault sump pump, fittings, clearing and grubbing, excavation, excavation support, dewatering, bedding material, backfill, surface restoration base and testing.
- C. Note it is not within the scope of work to integrate the flow meter outputs into the WWTP's existing SCADA system.

ITEM S-28, RT 50/301 CROSSING

- A. Measurement of highway crossings will be along the centerline of the 24-inch DR-9 casing pipeline between the limits shown on the drawings.
- B. Payment for the highway crossing will be at the unit price per linear foot bid.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Payment shall include any 24-inch DR-9 casing pipe, any 12-inch DR-11 carrier pipe within the casing pipe, any 'spiders' or other method required on the carrier pipe, clearing and grubbing, excavation, excavation support, dewatering, bedding material, internal pipe supports, backfill and all other work incidental to the crossing.

ITEM S-29, PAVEMENT MILLING

- A. The work under this item shall include, but not be limited to, furnishing all labor, materials, and equipment necessary for milling existing pavement to a depth as indicated on the drawings, or as required by permit, or as otherwise approved by Owner including saw-cutting pavement edges, scarifying to required depth, hauling, and the disposal of millings to an approved site. Also includes surface cleaning, dust control, clean-up, replacement of any items damaged by the Contractor during the milling operation, and any and all accessory and incidental work.
- B. The measurement under this item will be made horizontally along the top surface width and length and paid on a square yard basis for areas authorized for milling by the Owner.

ITEM S-30, BASE COURSE BITUMINOUS PAVING

- A. The work under this item shall include, but not be limited to, all labor, materials, and equipment necessary to install the 'superpave' 19.0 mm base course including:
 - a. Select material sub-base compaction and preparation.
 - b. Aggregate base compaction and preparation, fine grading, and test rolling.
 - c. Furnishing, placement, and compaction of 'superpave' base at correct grade and location.
- B. Work shall be inspected and approved by Owner and/or SHA inspector.
- C. Contractor shall coordinate with Owner to allow 48 hours' notice in order to have select material, aggregate base material, and paving compaction tested at Owner's expense (any re-tests necessary will be at Contractor's expense).
- D. Payment will be made at the fixed unit price per ton for this item as evidenced by

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

load tickets.

ITEM S-31, SURFACE COURSE BITUMINOUS PAVING

- A. The work under this item shall include, but not be limited to, all labor, materials, and equipment necessary to install the 'superpave' 9.5 mm surface course including:
 - a. Tack coat on base paving.
 - b. Furnishing, placement, and compaction of 'superpave' surface at correct grade and location.
 - c. Replacement of any traffic markings necessary to restore markings to their original condition.
- B. Work shall be inspected and approved by Owner and/or SHA inspector.
- C. Contractor shall coordinate with Owner to allow 48 hours' notice in order to have compaction tested at Owner's expense (any re-tests necessary will be at Contractor's expense).
- D. Payment will be made at the fixed unit price per ton for this item as evidenced by load tickets.

ITEM S-32, CONTINGENT CR-6 MAINTENANCE OF TRAFFIC

- A. Measurement of material placed in open trenches for the maintenance of traffic will be by the volume of material utilized. Volume will be documented via load tickets. No payment will be made without a load ticket.
- B. Initial material placed on top of the trench or other excavation in accordance with the trench detail is to be included in the pipeline cost. This bid item is for material necessary to be placed due to traffic impacts on the trench. No payment will be made for material necessary to be placed due to inadequate initial compaction.
- C. This bid item will also be used as the restoration of any unpaved roads, subsequent to the material placed in the trench.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

ITEM S-33, CONTINGENT NON-REINFORCED CONCRETE

- A. This item of work shall consist of furnishing and placing non-reinforced concrete as ordered by the Owner at all areas of the work in addition to that shown on the Drawings, specified or included in other pay items.
- B. Measurement under this item will be made on the basis of the actual number of cubic yards of additional unreinforced concrete poured as ordered by the Owner and measured in place.
- C. Payment for work completed under this item will be made at the fixed unit price for contingent non-reinforced concrete which shall constitute full payment for all formwork, concrete, extra excavation, excavation support, dewatering, pouring, curing, stripping of forms and incidentals required to complete the work.

ITEM S-34, CONTINGENT BACKFILL WITH SELECT MATERIAL

- A. The work under this item shall include providing select material fill in trench excavations above subgrade as ordered by the Owner or when shown as necessary on the plans. Work shown on the Drawings, specified, or included under other pay items will not be paid under this item.
- B. Measurement under this item will be made on the basis of the actual depth and length as measured by the size of the excavation for a payable width as defined in Part 2 of this section as it regards contingent items.
- C. Payment for work completed under this item will be made at the fixed unit price for trench backfill with select material which shall include the furnishing, placing, compaction to specified limits, and incidentals required to complete the work.
- D. Payment shall include the transport and proper disposal or storage of all rejected material unsuitable for backfill.

ITEM S-35, CONTINGENT SHEETING LEFT-IN-PLACE IN TRENCH

- A. Measurement of sheeting left-in-place at the direction of the Owner will be the material actually left-in-place. Each wood sheeting member will have its nominal dimension measured and the sum total of all sheeting members converted to thousand board feet.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Payment for contingent wood sheeting left-in-place will be in accordance with fixed unit price per thousand board feet (MBF), for wood sheeting actually left-in-place. No payment will be made for sheeting not directed by the Owner to be left-in-place.

ITEM S-36, CONTINGENT EXCAVATION BELOW SUBGRADE AND PLACEMENT OF STONE BEDDING

- A. The work under this item shall include the excavation of unsuitable materials below subgrade in trench excavations and replacement with stone bedding as ordered by the Owner. Work shown on the Drawings, specified, or included under other pay items will not be paid under this item.
- B. Measurement under this item will be made on the basis of the actual depth and length as measured by the size of the additional excavation and stone bedding for a payable width as defined in Part 2 of this section as it regards contingent items.
- C. Payment for work completed under this item will be made at the fixed unit price per cubic yard for excavation, excavation support, dewatering, furnishing, placing, compaction and incidentals required to complete the work.
- D. Payment shall include the transport and proper disposal of all rejected material unsuitable for backfill.

ITEM S-37, CONTINGENT TEST PITTING

- A. This item of work shall consist of test pitting when and if directed by the Owner.

ITEM S-38, CONTINGENT SILT FENCE (or Filter Logs)

- A. The work under this item shall include the labor, materials, and equipment necessary to install and maintain, until told to remove, the silt fence or Filter Logs in accordance with applicable sediment control regulations. This item applies only to those areas not specified or illustrated in the contract documents.
- B. The measurement under this item will be on a per linear foot basis.
- C. Payment will be made at the fixed unit price for this item.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

ITEM S-39, CONTINGENT DUCTILE IRON FITTINGS

- A. This item of work shall be to reimburse for ductile iron fittings required by realignments necessitated by field conditions and not shown on the plans.
- B. Payment will be made at the fixed unit price for this item per Ton.

PART 4 – ALTERNATE SEWER PAYMENT ITEMS (Alternate Bid Item)

ITEM A-1, AUXILLARY WWTP CONNECTION

- A. Measurement of the Auxiliary WWTP connection will be on a lump sum basis of all work shown on the plans required, in addition to the items that constitute Bid Item S-18, to connect the transmission main to the Influent Pump Station Effluent Header. Work consists of removing the existing bolted header cap and installing each of the following components; a 12-inch wye, a 12-inch 45 degree bend, a 12-inch 90 degree bend, a 12-inch spool piece, a 12-inch check valve, a 12-inch plug valve and a 12-inch x 20-inch reducer.
- B. Payment for the connection will be made at the lump sum price bid on the basis of percentage complete in place, including piping, fittings, excavation, excavation support, dewatering, backfill, surface restoration base & finish course and testing.

END OF SECTION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SECTION 01590 - CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work of this Section includes, but is not limited to:
 - 1. Project Identification Signs
- B. Applicable Standard Details:
 - 1. Construction Site Sign Detail – refer to Maryland Funding Insert – page 30

PART 2 – PRODUCTS - Not Used

PART 3 - EXECUTION

3.01 PROJECT IDENTIFICATION SIGNS

- A. The Contractor shall provide and maintain project signs. The signs shall be erected at a location of high public visibility as directed by the Engineer. The Contractor shall obtain all permits therefore, secure permission for such locations and pay all costs attendant to signs, which cost shall be included in the Contract Price.
- B. The Contractor shall provide the following sign:
 - 1. One State of Maryland Department of the Environment Construction Site Sign. Refer to Maryland Revolving Fund Insert.
- C. Remove signs upon completion of construction.

END OF SECTION

SPECIFICATIONS

DIVISION 2 - SITE WORK

02100	Clearing and Grubbing
02220	Excavation for Structures
02221	Trenching
02485	Finish Grading and Seeding
02575	Paving Restoration
02610	Pressure Sewer Pipe
02615	High Density Polyethylene Pipe System
02652	Pressure Sewer Testing
02800	Directional Drilling

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02100 - CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Work of this Specification includes, but is not limited to:

1. Clearing
2. Grubbing
3. Stripping and stockpiling topsoil
4. Debris disposal

B. Related Work specified elsewhere:

1. Specification 02220 - Excavation for Structures
2. Specification 02221 - Trenching
3. Specification 02485 - Finish Grading and Seeding

C. Definitions:

1. Clearing is defined as the removal of trees, brush, down timber, rotten wood, rubbish, any other vegetation, and objectionable material at or above original ground elevation not designated to be saved; clearing also includes removal of fences, walls, guard posts, guard rail, signs, and other obstructions interfering with the proposed work.
2. Grubbing is digging for the removal from below the surface of the natural ground of stumps, roots and stubs, brush, other organic materials' debris, footers, slabs, post bottoms, ground anchors and similar manmade objects.

1.02 JOB CONDITIONS

A. The Contractor may clear and grub (if applicable) only those obstructions within the permanent and construction rights-of-way which prevent or discourage the utility construction activities.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Obstructions specifically designated to be saved or restored will be marked by the Engineer in the field.
- C. It is the intent of these specifications to maintain minimal disturbance to the existing site and restore construction areas to pre-existing conditions.

1.03 SUBMITTALS

- A. Burning Permits:
 - 1. Submit two copies of each on-site burning permit if such permits are required by local jurisdictional authorities.
- B. Permits for Disposal of Debris:
 - 1. Arrange for disposal of debris resulting from clearing and grubbing to locations outside the Owner's property and obtain written agreements with the owners of the property where the debris will be deposited if not a permitted landfill or rubble fill.
 - 2. Submit two copies of the agreement with each property owner releasing the County from responsibility in connection with the disposal of the debris.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Temporary Fencing:
 - 1. Undamaged picket snow fence, 4' high, formed of wooden slats, tightly woven with wire cable or orange plastic 'safety fencing', 4' high.
 - 2. Soil-set fence posts, studded "T" type, 6' high.
- B. Wood Tree Guards:
 - 1. Wood posts: 2" x 4"
 - 2. Wood stringers: 2" x 2"

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- C. Wrapping Materials:
 - 1. Burlap: AASHTO M182, Class 1
 - 2. Krinkle-kraft waterproof paper: 4" width
- D. Tree Wound Dressing: Antiseptic and waterproof, asphalt base.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Mark areas to be cleared, the areas to be grubbed, and items to be saved with stakes, flags, paint or plastic colored ribbon.
- B. Protect benchmarks, utilities, existing trees, shrubs and other landscape features designated for preservation with temporary fencing or barricades.
- C. No material shall be stored or construction operation carried on within 4-feet of any tree to be saved or within the tree protection fencing.
- D. When a private enclosure fence encroaches on the work area, notify the property owner at least 5 days in advance of the clearing/grubbing operations to permit the owner to remove it, construct a supplemental fence, or make such other arrangements as may be necessary for security purposes; in failure of the property owner to reasonably proceed with the work required to secure his property, carefully remove the fence, in whole or in part, and neatly pile the materials onto the owner's property.
- E. Install sediment & erosion control measures as shown on the approved plans or as required by Maryland Department of the Environment personnel.

3.02 UTILITY RELOCATIONS

- A. Inform utility companies, individuals and others owning or controlling facilities or structures within the limits of the work which have to be relocated, adjusted or reconstructed in sufficient time for the utility to organize and perform such work in conjunction with or in advance of the Contractor's operations.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.03 CLEARING

- A. Confine clearing to within the permanent and construction rights-of-way or property.
- B. Fell trees in a manner that will avoid damage to trees, shrubs, and other installations which are to be retained.
- C. Where stumps are not required to be grubbed, flush-cut with ground elevation.

3.04 GRUBBING

- A. Grub areas within the construction limits to remove roots and other objectionable material to a minimum depth of 8".
- B. Remove all stumps within the cleared areas.

3.05 STRIPPING AND STOCKPILING TOPSOIL

- A. Strip topsoil to whatever depth it may occur from areas to be excavated, filled, or graded and stockpile at a location approved by the County for use in finish grading.
- B. The topsoil is the property of the Owner and shall not be used as backfill.

3.06 DEBRIS DISPOSAL

- A. Trees, logs, branches, brush, stumps, and other debris resulting from clearing and grubbing operations shall become the property of the Contractor and shall be legally disposed of.
- B. Do not deposit or bury on the site debris resulting from the clearing and grubbing work.
- C. Debris may be burned on-site if local ordinances allow open-air burning, if required permits are obtained, and if burning operations are conducted in compliance with local ordinances and regulations.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.07 RESTORATION

- A. Repair all injuries to bark, trunk, limbs, and roots of remaining plants by properly dressing, cutting, tracing and painting, using approved arboricultural practices and materials.
- B. Replace trees, shrubs and plants designated to be saved which are permanently injured or die during the life of the Contract as a result of construction operations with like species.
- C. Remove protective fences, enclosures and guards upon the completion of the project.
- D. Restore fences, guard posts, guard rail, signs and other interferences to the condition equal to that existing before construction operations.

3.08 CLEARING WITHIN CRITICAL AREA

- A. **Prior to the removal of any tree, which is 4-inches or greater in diameter at breast height, within the Critical Area (defined as 1,000-feet from any tidal water), the County must be notified so that the trees to be removed can be inventoried for future mitigation. If unclear if within the Critical Area, the County will make that determination.**
- B. **Inventory of trees so removed will be maintained by the County and shall be by road name and pipe station.**
- C. **County will assume the cost of all mitigation responsibility.**

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02220 - EXCAVATION FOR STRUCTURES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work of this Specification includes, but is not limited to:

Excavation and Backfill for Structures
Dewatering
Sheeting and Shoring
Site Grading

- B. Related work specified elsewhere:

1. Specification 02100 - Clearing and Grubbing
2. Specification 02221 - Trenching
3. Specification 02485 - Finish Grading and Seeding

1.02 QUALITY ASSURANCE

- A. Testing Agency:

Compaction testing shall be performed by an independent soils testing laboratory hired by the County. If the results of any test indicate a non-compliance with the requirements of the Drawings the Contractor shall, at the Contractor's expense, correct the condition. The Contractor shall be responsible for the cost of any retesting required due to failure and to show compliance with compaction requirements.

- B. Referenced Standards:

American Society for Testing and Materials (ASTM):

C33 Specification for Concrete Aggregates
D698 Tests for Moisture-Density Relations of Soils Using 5.5 Lb. Rammer and 12" Drop
D1194 Test for Bearing Capacity of Soil for Static Load on Spread Footings
D1556 Test for Density of Soil-in-Place by the Sand-Cone Method

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.03 JOB CONDITIONS

- A. The locations shown for utility facilities are approximate. Proceed with caution in the areas of utility facilities and expose them by hand or other excavation methods acceptable to the utility owner. Contact Miss Utility at least 5 working days prior to beginning excavation.
- B. Erect sheeting, shoring, and bracing as necessary for protection of persons, improvements, and excavations.
- C. Furnish and maintain barricades, signs and markings for excavated areas.
- D. Select and install a system of dewatering to accomplish groundwater control in excavations.
- E. Preserve, protect and maintain operable existing drainage ways, drains and sewers.

1.04 SUBMITTALS

- A. Certificates:

Submit a Certificate of Compliance, together with supporting data, from the materials supplier attesting that the composition analysis of backfill materials meet specification requirements.

Submit certified compaction testing results from the soils testing laboratory.

PART 2 - PRODUCTS

2.01 MATERIALS FOR BACKFILLING, EMBANKMENT OR FILLS

- A. Well-graded soil aggregate mixture consisting of Groups SW, SC, and SP soils of the Unified Soils Classification.
- B. Total content of gravel or rock fragments larger than 1/2" shall not exceed 20% by weight of the mass.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- C. Backfill shall not contain topsoil, organic matter, debris, cinders, or frozen material.

2.02 PERVIOUS MATERIAL

- A. Natural, clean, free-draining sand or gravel conforming to the requirements of ASTM C33 except:

Material passing a No. 100 sieve not to exceed 8%

Material passing a No. 200 sieve not to exceed 5%

2.03 SOURCE OF MATERIALS

- A. Use materials for fill if they meet the requirements specified herein. If sufficient material meeting these requirements is not available from required excavation, obtain requisite material from other sources.
- B. Use only material which has been approved as to quality, location of source and zone of placement in the fill.
- C. The County has the right to reject material at the job site by visual inspection, pending sampling and testing.

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Excavate to the neat lines or set back lines for mixed face conditions and grades indicated on the Drawings.
- B. Excavate in sequence and stages which will not subject permanent or temporary structures, installations, or surfaces to unstable conditions.
- C. Excavate as required to provide sufficient working space to permit placing, inspection, and completion of the structures.
- D. Shape excavations accurately to the cross-sections and grades indicated.
- E. Support the sides of excavations as specified.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- F. Keep excavations free from water.
- G. Where excess excavation is required to remove unsuitable material, carry footings down to rest on undisturbed soil or rock having a minimum safe bearing capacity of 2,000 pounds per square foot determined by testing soil in accordance with ASTM D1194.
- H. Haul excavated materials to fill, stockpile or disposal locations.

3.02 BLASTING

- A. No blasting will be permitted.

3.03 BACKFILLING STRUCTURES

- A. Do not commence backfilling around any structure until such structure has been examined and approved by the County.
- B. Do not place backfill until the requirements for concrete curing and waterproofing have been complied with and, if required, until the test cylinders for the particular structure indicate that the concrete has attained the compressive strength specified.
- C. When backfilling against structures and where applicable, place backfill material in equal lifts and to similar elevations on opposite sides of structures in order to equalize opposing horizontal pressures. Place material in uniform increments over fill area.
- D. Protect structures from damage by construction activity, equipment, and vehicles. Repair or replace damaged structures to the satisfaction of the owner.
- E. Lift Thickness Limitations: Place fill in 6" layers of uniform thickness for the entire width so that each layer can be uniformly compacted.
- F. Adjust moisture content of the material to within the specified limits by disking or harrowing, if excessively wet; by wetting and thoroughly mixing, if excessively dry. Any fill in place that is disturbed by adjustment of moisture shall be re-compacted to the specified range of compaction before placement of the next lift of backfill.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- G. Leave sheeting and shoring in place as long as possible, compatible with the placing and compacting of backfill.

3.04 DISPOSAL OF EXCAVATED MATERIAL

- A. Surplus excavated materials shall become the property of the Contractor and removed from the project site.

3.05 EMBANKMENT AND FILLS

- A. Do not place fill on any part of the embankment foundation until such areas have been examined and approved.
- B. Do not place fill on frozen surface.
- C. Place embankment fill in layers of 6" thickness for entire width so that each layer can be uniformly compacted.
- D. Avoid accumulation of large pieces of material at one location. Fill voids and interstices with fine materials.
- E. Maintain embankments and fills in a stable well drained condition.
- F. Compact embankment materials of fills within 5' of structures using lightweight compactors. Do not over stress the structures.
- G. Construct the finished subgrade to vary not more than 1/2" above or 1" below the elevation shown.
- H. Complete embankment slopes to vary not more than 6" from the slope line shown.

3.06 COMPACTION

- A. Compact each layer of material to 95% of the maximum density at optimum moisture content as determined by ASTM D698, Method D.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Compaction Testing: Conduct compaction tests at locations as directed by the County during backfilling operations. Determine compaction by the testing procedure contained in ASTM D1556.

3.07 ROUGH GRADING

- A. Rough grade to uniform finish contours. Form the bases for terraces, banks and paved areas.
- B. Grade areas to be paved to depths required for placing sub base and paving materials.
- C. Grade embankments and fills to smooth compact surface.
- D. The minimum degree of finish for all graded areas shall be that ordinarily obtained from blade grader operations.

3.08 SHORING, SHEETING AND BRACING

- A. Install shoring, sheeting and bracing to comply with federal, state and local code requirements. Responsibility for the safety of the work, personnel and structures rests solely with the Contractor.
- B. Carry the boom of the support system to depth below the main excavation, adequate to prevent ground movement.
- C. Follow the excavation closely with sheeting and shoring placement. Do not allow the maximum height of the unsheeted excavations to exceed five feet in predominantly clayey soils and three feet in sandy soils.
- D. Perform excavation for the installation of sheeting carefully to minimize the formation of voids.
- E. If unstable material is encountered during excavation, take measures to contain it in place and prevent ground displacement.
- F. Have sufficient quantity of material on hand at all times for sheeting, shoring, bracing and other operations for the protection of the work and for use in case of accident or emergency.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.09 SURFACE DRAINAGE

- A. Intercept and divert surface drainage away from the excavation by the use of dikes, curb walls, ditches, pipes, sumps or other means.
- B. Design surface drainage systems so that they do not cause erosion on or off the site, or cause unwanted flow of water.
- C. Remove the surface drainage system when no longer required.
- D. Remove debris and restore the site or sites to original condition.

3.10 DRAINAGE AND DEWATERING OF EXCAVATED AREAS

- A. Provide and maintain ditches to collect surface water and seepage which may enter the excavations and divert the water into a sump so that it can be pumped into drainage channels.
- B. Install a dewatering system to keep excavations dry and free of water. Dewatering system must discharge into an approved de-silting structure as shown on the Contract Drawings.
- C. Maintain continuous and complete effectiveness of the installation at all times.
- D. Maintain water level below subgrade until concrete work or backfill, or both, have been completed to offset uplift pressures.
- E. Dispose of precipitation and subsurface water clear of the work. Comply with provisions of the Sediment and Erosion Control Plan Rules and Regulations.
- F. Contractor shall obtain all necessary permits for dewatering and its discharge. During dewatering operations, water discharged to a watercourse must be clear and free of silt, mud and other deleterious materials. Construct and maintain settling ponds to prevent stream degradation. Comply with the requirements for dewatering or discharging to a watercourse as required by Federal, state or local codes.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- G. Backfill drainage ditches, sumps, and settling basins when no longer required with granular material, or other material as approved by the County.
- H. Structures have been designed against uplift due to groundwater when their construction is complete. It shall be the Contractor's responsibility to prevent uplift of the uncompleted structure.

3.11 FINISHING

- A. On completion of the work, clean ditches and channels and finish the site in a neat and presentable condition. Slope areas to provide positive drainage.
- B. Place topsoil and seed all areas disturbed by construction as specified in Specification 02485, Finish Grading and Seeding, unless otherwise indicated.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02221 - TRENCHING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work of this Specification includes, but is not limited to:

Trench excavation, backfill and compaction
Support of excavation
Pipe bedding requirements
Control of excavated material
Rough grading
Restoration of unpaved surfaces

- B. Related work specified elsewhere:

Specification 02100 - Clearing and Grubbing
Specification 02220 - Excavation for Structures
Specification 02485 - Finish Grading and Seeding
Specification 02575 - Paving Restoration

- C. Applicable Standard Details:

Pipe Bedding and Concrete Encasement

1.02 QUALITY ASSURANCE

- A. Testing Agency:

Compaction testing shall be performed by an independent soils testing laboratory hired by the County. If the results of any test indicate a non-compliance with the requirements of the Drawings or the State Highway Administration construction permit, the Contractor shall, at the Contractor's expense, correct the condition and pay for any necessary re-testing.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

B. Referenced Standards:

American Society for Testing and Materials (ASTM):

- D698 Tests for Moisture-Density Relations of Soils
- D1556 Test for Density of Soil-in-Place by the Sand-Cone Method
- D2922 Test for Density of Soil and Soil Aggregate in Place by Nuclear Methods

C. Compaction Testing:

The approved independent soils testing laboratory shall conduct up to five compaction tests for each 1,000 linear feet of pipeline during backfilling operations, or as required by the State Highway Administration construction permit.

Determine compaction in areas other than state highways and shoulders by the testing procedure contained in ASTM D1556 or ASTM D2922.

1.03 SUBMITTALS

A. Certificates:

Submit, prior to delivery of the material to the job site, a Statement of Compliance from the materials supplier, together with supporting data, attesting that the composition analysis of pipe bedding and select material backfill materials meet specification requirements. A gradation analysis by an approved laboratory shall be submitted prior to the initial use of the material and additional tests may be requested per each 1000 yards of material if so directed or if there is an obvious change in the quality or appearance of the material. Should a change in source of materials be made during construction, submit a new Statement of Compliance from the new source for approval before the material is delivered to the job site.

Submit certified compaction testing results from the soils testing laboratory.

B. Compaction Equipment List:

Submit a list of all equipment to be utilized for compacting, including the equipment manufacturer's lift thickness limitations for each backfill material employed.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

C. Agreements with Property Owners:

Prior to storing or disposing of excavated materials on private property, submit a copy of the written agreement with the property owner.

1.04 JOB CONDITIONS

A. Control of Traffic:

Employ traffic control measures in accordance with Section 814, Standard Specifications for Construction and Materials, Maryland Department of Transportation, State Highway Administration, July 2008, or its latest revision.

Site specific traffic control requirements may be issued by the State Highway Administration for any particular project and if so would take precedence.

B. Protection of Existing Utilities and Structures:

Take all precautions and utilize all facilities required to protect existing utilities and structures. Contact "Miss Utility" (1-800-257-7777) at least 5 working days in advance of intent to excavate and give the location of the job site. Request cooperative steps of the Utility and suggestions for procedures to avoid damage to its lines.

Advise each person in physical control of powered equipment used in excavation work of the type and location of utility lines at the job site, the assistance to expect, and procedures to follow to prevent damage.

Immediately report to the Utility and the County any break, leak or other damage to the lines or protective coatings made or discovered during the work and immediately alert the occupants of premises of any emergency created or discovered.

Provide free and safe access to Utility personnel at all times for purposes of maintenance, repair and inspection. Provide support to utility personnel as needed.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

PART 2 - PRODUCTS

2.01 PIPE BEDDING MATERIAL

- A. No bedding is typically required.
- B. Should undisturbed trench bottom be unsuitable such that 'contingent excavation below subgrade' bid item is necessary, stone shall consist of ¾ inch washed gravel conforming to the following gradation requirements:

<u>Sieve</u>	<u>Percent Passing</u>
1-1/2"	100
1"	90 - 100
2"	25 - 60
No. 4	0 - 10
No. 8	0 - 5

2.02 BACKFILL MATERIAL

- A. Borrow for Select Backfill:
 - 1. The uses, classification, characteristics, and definitions of terms for borrow materials obtained shall be in accordance with the requirements of AASHTO M 57, modified: M 145 modified, and M 147 modified. Materials having a dry weight less than 90 pounds per cubic foot, materials with liquid limits in excess of 50, and materials containing detrimental quantities of frozen material, rubbish, boulders in excess of 6 inches, or organic material such as leaves, roots, grass or sewage shall be excluded from use.
 - 2. The method of testing materials shall be in accordance with the requirements of AASHTO T 88 modified; T 89 modified; T 90 modified; and T 99 method C modified.
 - 3. Select backfill shall meet the following gradation:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

<u>Sieve</u>	<u>Percent Passing</u>
2"	95 - 100
1"	85 - 100
3/8"	50 - 85
No. 4	35 - 65
No. 10	25 - 50
No. 40	15 - 30
No. 200	5 - 15

Note: The fraction passing the No. 200 sieve shall not be greater than two-thirds of the fraction passing the No. 40 sieve. The fraction passing No. 40 sieve shall have a liquid limit not greater than 25 and a plasticity index not greater than 6, when tested according to AASHTO T 89 modified and T 90.

2.03 RIP RAP STONE

- A. Field stone or rough unhewn quarry stone of approximate rectangular shape; hard and angular and of such quality that it will not disintegrate on exposure to water or weathering.
- B. 6" minimum thickness, measured perpendicular to face, with no face dimension less than the thickness of the stone.
- C. Not less than 70% of the individual pieces weighing a minimum of 150 lbs; not more than 10% of the individual pieces weighing less than 100 lbs.

2.04 GAB (Graded Aggregate Base)

- A. GAB shall meet the following gradation requirements:

<u>Sieve</u>	<u>Percent Passing</u>
2"	100
1-1/2"	95 - 100
3/4"	70 - 92
3/8"	50 - 70
No. 4	35 - 55

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

No. 30	12 - 25
No. 200	0 - 8

2.05 MARKING TAPE

- A. ASTM D2103, ASTM D882, ASTM D2578, ASTM D671
- B. 6" wide, 5.0 mil thick, 50 gauge, metal detectable.
- C. Open trench constructed sewer pipelines shall be identified with green labeled as "sewer".

2.06 TRACER WIRE

- A. All open trench and horizontally drilled pipe runs shall include tracer wires. Open trench wire shall be 8-gauge un-coated single strand copper. Horizontally drilled wire shall be in accordance Specification sections 02800 – 3.06.
- B. Wire shall be run to grade at all cleanouts, division valves, etc. in order to allow for tracer equipment to connect to the wire. Wire shall provide a continuous loop along the entire length of pipe.

PART 3 - EXECUTION

3.01 MAINTENANCE AND PROTECTION OF TRAFFIC

- A. Coordinate the work to ensure the least inconvenience to traffic and maintain traffic in one or more unobstructed lanes unless closing the street is authorized or in accordance with the approved State highway administration Maintenance of Traffic plan.
- B. Maintain access to all streets and private drives.
- C. Provide and maintain signs, flashing warning lights, barricades, markers, and other protective devices as required to conform with construction operations and to keep traffic flowing with minimum restrictions.
- D. Comply with state and local codes, permits and regulations.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- E. When working within the Maryland State Highway Administration right-of-way, the Contractor shall maintain and protect the traffic as outlined in the applicable SHA construction permit or as directed by SHA.

3.02 CUTTING PAVED SURFACES

- A. Where excavation includes breaking a paved surface, saw cuts in a neat uniform fashion forming straight lines parallel with the centerline of the trench. Cut offsets at right angles to the centerline of the trench. Saw cut concrete, bituminous surfaces, and other hard surfaces. No paving shall be broken except that which has been previously cut.
- B. Protect edges of cut pavement during excavation to prevent raveling or breaking; square edges prior to pavement replacement.

3.03 TRENCH EXCAVATION

- A. Topsoil Stripping and Stockpiling:

Strip topsoil encountered during trench excavation to its full depth and stockpiled for reuse.

- B. Depth of Excavation:

Pressure Pipelines:

Excavate trenches to plan profile depths as indicated on the Drawings.

Excavate to the grade shown for the invert of the pipe. Shape trench bottom to the shape of the lower quadrant of the pipe and to support pipe evenly along the barrel. Provide recesses for the joints or bells of the pipe.

Where unsuitable bearing material is encountered in the trench bottom, continue excavation until the unsuitable material is removed, solid bearing is obtained or can be established, or concrete cradle can be placed. If no concrete cradle is to be installed, refill the trench to required pipeline grade with pipe bedding material.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Where the Contractor, by error or intent, excavates beyond the minimum required depth, backfill the trench to the required pipeline grade with pipe bedding material at his expense.

Refer to section 3.07 of this specification for more detail on bedding.

C. Width of Excavation:

Excavate trenches, including laterals, to a width necessary for placing and jointing the pipe and for placing and compacting bedding and backfill around the pipe. (Complying with all safety regulations)

Shape trench walls completely vertical from trench bottom to at least 24" above the top of the pipe.

For pressure pipeline fittings, excavate trenches to a width that will permit placement of concrete thrust blocks. Provide native earth surfaces for thrust blocks that are perpendicular to the direction of thrust and are free of loose or soft material.

D. Length of Open Trench:

Excavation of all trenches shall be fully completed at least 20 feet in advance of the pipe laying operations. No trench shall be left open over night.

3.04 SUPPORT OF EXCAVATION

- A. Support excavations with sheeting, shoring, and bracing or a "trench box" as required to comply with Federal and State laws and codes. Install adequate excavation supports to prevent ground movement or settlement to adjacent structures, pipelines or utilities. Damage due to settlement because of failure to provide support or through negligence or fault of the Contractor in any other manner, shall be repaired at the Contractor's expense.
- B. Withdraw shoring, bracing, and sheeting as backfilling proceeds unless otherwise directed by the County.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.05 CONTROL OF EXCAVATED MATERIAL

- A. Keep the ground surface, within a minimum of 2' of both sides of the excavation free of excavated material.
- B. Provide temporary barricades to prevent excavated material from encroaching on private property, walks, gutters, and storm drains.
- C. Maintain accessibility to all fire hydrants, valve pit covers, valve boxes, curb boxes, and other utility controls at all times. Keep gutters clear or provide other satisfactory facilities for street drainage. Do not obstruct natural water courses. Where necessary, provide temporary channels to allow the flow of water either along or across the site of the work.
- D. Do not place or store excavated material on private property without a written agreement signed by the property owner.
- E. In areas where pipelines parallel or cross streams, ensure that no material slides, is washed, or dumped into the stream course. Remove cofferdams immediately upon completion of pipeline construction.

3.06 DEWATERING

- A. Keep excavations dry and free of water. Dispose of precipitation and subsurface water clear of the work. Contractor is responsible to get any necessary permits.
- B. Maintain pipe trenches dry until pipe has been jointed, inspected, and backfilled, and concrete work has been completed. Prevent trench water from entering pipelines under construction.
- C. Intercept and divert surface drainage away from excavations. Maintain storm drainage facilities, gutters, and natural surface water courses open and in operation. Provide and install temporary facilities to maintain excavations free of water as required. Design surface drainage systems so that they do not cause erosion on or off the site, or cause unwanted flow of water. When mechanical equipment is utilized to control water conditions, provide and maintain sufficient standby units on site.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- D. Comply with Federal and State requirements for dewatering to any watercourse, prevention of stream degradation, and erosion and sediment control. Comply with the Sediment and Erosion Control Plan.
- E. The Contractor shall perform dewatering activities ahead of trenching and excavation activities in order to maintain a dry excavation as specified herein.

3.07 PIPE BEDDING REQUIREMENTS

- A. Type I Bedding:

Trenches shall be excavated so as to provide a uniform and continuous bearing and support for the pipe on solid and undisturbed ground. Any part of the trench excavated below specified grade shall be filled with approved materials and compacted.

- B. Shape recesses for the joints or bell of the pipe by hand. Assure that the pipe is supported on the lower quadrant for the entire length of the barrel.

3.08 PIPE LAYING

- A. Lay pipe as specified in the appropriate Section of these Specifications for pipeline construction.

3.09 THRUST RESTRAINT

- A. Provide pressure pipe with concrete thrust blocking at all bends, tees, valves, and changes in direction, in accordance with Standard Buttress dimensions.

3.10 BACKFILLING TRENCHES

- A. **Refer to the Drawings for where suitable native material may be used (typically adjacent to the South Island Trail) or where select material must be used (typically within 3-feet of the edge of any paved surface and under all paved roadway surfaces). Any select material to be used will be paid under the Contingent Backfill bid item.**

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. After pipe installation and inspection, backfill trenches from trench bottom or from the top of pipe bedding material, whichever is greater, to 12" above the crown of the pipe with specified backfill material hand placed and carefully compacted with hand-operated mechanical tampers in layers of suitable thickness to provide specified compaction around and under the haunches of the pipe. Backfill and compact the remainder of the trench with specified backfill material.
- C. The Contractor shall refill, re-compact, and maintain all excavations in proper condition at the direction of the County throughout the life of the Contract and guarantee period.
- D. Backfill above the pipe lining in non-traffic bearing areas shall consist of suitable, dry, native material compacted to 85% modified Proctor maximum dry density or select material compacted to 90% modified Proctor maximum dry density, or as required by the State Highway Administration construction permit.
- E. Backfill above the pipe in, or within 3-feet of, the existing paved limits shall consist of select material compacted to 85% modified Proctor maximum dry density or select material compacted to 92% modified Proctor maximum dry density for lifts below the top foot of backfill, 95% modified Proctor maximum dry density for the top foot of backfill, or as required by the State Highway Administration permit. In lieu of a laboratory determination of the maximum attainable dry density, a dry density of 120 pounds per cubic foot shall be assumed.
- F. No backfill shall be installed on frozen surfaces, nor shall frozen materials, snow, or ice shall be placed as backfill.
- G. Exposed Joints for Testing:

Testing shall be as specified in the Specifications 02652.
- H. Lift Thickness Limitations:

Backfill material shall not be placed in lifts exceeding one foot.

Notwithstanding the specified requirements for trench backfill compaction, trenches that settle below the surrounding grade prior to final completion shall be filled to surrounding grade level with appropriate materials.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

I. Unsuitable Backfill Material:

Where the County deems backfill material to be unsuitable and rejects all or part thereof due to conditions prevailing at the time of construction, remove the unsuitable material and replace with select material or suitable native material (which has been previously excavated and dried).

3.11 TRACER WIRE & MARKING TAPE

- A. An inert polyethylene tape having a metallic core shall be placed in the trench at a depth of 18 inches below grade during backfill along the entire length of the trench. Green tape shall be used to mark the sewer lines.
- B. An uncoated copper wire shall be placed along the invert of the trench, shall extend to grade at any features that come to grade (i.e. division valves, cleanouts, etc.) and shall be tested at the completion of the job to ensure the wire provides a 'continuous loop' to allow the entire pipe run to be located from connecting to any one point of the tracer wire. Should the wire not be a continuous loop, Contractor shall take whatever actions as necessary to correct at no expense to the County.
- C. Refer to section 2.05 and 2.06 of this specification for more information of the tape and wire to be used.

3.12 DISPOSAL OF EXCAVATED MATERIAL

- A. Excavated material remaining after completion of backfilling shall remain the property of the Contractor, removed from the construction area, and legally disposed of at no cost to the County. The County, at its sole discretion, may provide a site for the disposal of clean material.

3.13 ROUGH GRADING

- A. Rough grade areas disturbed by construction to a uniform finish. Form the bases for terraces, banks, lawns and paved areas.
- B. Grade areas to be paved to depths required for placing sub-base and paving materials. Rough grade areas to be top-soiled and seeded to 3" below indicated finish contours.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.14 RESTORATION OF SURFACES

- A. Trench surface for paved and non-paved areas shall be restored to original conditions, or better, or as indicated in the State Highway construction permit.
- B. All surfaces not within the travel portion of the road or shoulders, or any surface that exists as grass, is to be restored to grass in accordance with Specification 02485, Finish Grading and Seeding.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02485 - FINISH GRADING AND SEEDING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work of this Specification includes, but is not limited to:

Placing topsoil
Soil conditioning
Finish grading
Seeding
Maintenance
Termite control

- B. Related work specified elsewhere:

1. Specification 02100 - Clearing and Grubbing
2. Specification 02220 - Excavation for Structures
3. Specification 02221 - Trenching

1.02 QUALITY ASSURANCE

- A. Soil and soil supplement testing shall be performed by a Soils Testing Laboratory engaged and paid for by the Contractor and approved by the County.

- B. Collect soil samples under the direction of the County.

- C. Reference Standards:

1. Maryland Department of Transportation - Standard Specifications for Construction and Materials, latest version and as Amended.
2. Maryland State Board of Agriculture, "Seed Regulations", as Amended.
3. Requirements of Turf Grass Law and Regulations, Publication No. 41.
4. Maryland Standard Method of Procedure.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.03 SUBMITTALS

A. Certificates:

1. Prior to use of placement of material, submit a Statement of Compliance from the materials suppliers, together with supporting data, attesting that the composition of the following products meet specification requirements.
 - a. Topsoil analysis - State pH, texture, and organic content.
 - b. Fertilizer analysis - content and percent of each.
 - c. Lime analysis - content and percent of each.
 - d. Seed mixture(s) - State percentage of mixtures, purity, germination and maximum weed seed content of each grass mixture.
2. If soil tests are performed to justify decreased liming and fertilizer rates, submit certified soil sample analyses, including laboratory's recommended soil supplement formulation.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Seed:

1. Deliver seed fully tagged and in separate packages according to species or seed mix.
2. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. All topsoil stripped from the site and stockpiled may be reused provided the following requirements are met:
1. Have a pH of between 6.0 and 7.0; contain not less than 2% nor more than 10% organic matter as determined by AASHTO T194.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

2. Fertile friable loam, sand loam, or clay loam which will hold a ball when squeezed with the hand, but which will crumble shortly after being released.
 3. Free of clods, grass, roots, or other debris harmful to plant growth. Free of pests, pest larvae, and matter toxic to plants.
- B. Any topsoil provided shall be weathered surface soils (A Horizon), or amended unweathered topsoil (B Horizon), or blend of both, free from hard fragments and stones larger than 1" across the greatest dimension, objectionable salts, noxious weeds and plants, partially disintegrated debris, or other materials inferior to the surface soils or that would be toxic or harmful to plant growth.

Grading Analysis:

<u>Sieve</u>	<u>Minimum Percent Passing</u>
2"	100
1/2"	90
1/4"	80
#10	70

2.02 SEED

- A. Fresh, clean, dated material from the last available crop and within the date period specified, with a date of test not more than 9 months prior to the date of sowing.
- B. Percentage of pure seed present shall represent freedom from inert matter and from other seeds distinguishable by their appearance.
- C. All seeds will be subject to analysis and testing.
- D. Seed shall be certified by the Maryland State Board of Agriculture and shall conform to requirements of Maryland Turf Grass law and Regulations, Publication No. 41.
- E. Seed mix shall be in accordance with the Standard Specifications.
- F. Seeding shall be accomplished in accordance with the approved Erosion & Sediment Control plan and the Sequence of Construction.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

2.03 FERTILIZER

- A. Liquid formulations may be used in lieu of dry formulations, provided the rate of application is adjusted to apply the same quantities of nitrogen, phosphorus and potassium per unit area as specified for dry formulations.
- B. Fertilizer, in accordance with the Standard Specifications, is to be applied in accordance with the approved Erosion & Sediment Control plan.
- C. Contractor may submit soils samples to an approved laboratory for fertilizing recommendations. Recommendations shall be submitted to the County for review and decision relating to modifying the application rate as shown in the section below entitled SEEDING REQUIREMENTS.

2.04 LIME

- A. All lime shall conform to, and be placed in accordance with the application rates shown, within the approved Erosion & Sediment Control plan.

2.05 INOCULANT

- A. Inoculate leguminous seed before seeding with nitrogen fixing bacteria culture prepared specifically for the species.
- B. Do not use inoculant later than the date indicated by the manufacturer.
- C. Protect inoculated seed from prolonged exposure to sunlight prior to sowing.
- D. Reinoculate seed not sown within 24 hours following initial inoculation.

2.06 EROSION CONTROL FABRIC

- A. Shall be a knitted construction of yarn with uniform openings interwoven with strips of biodegradable paper, furnished in rolls with 4 mil opaque polyethylene base as protection for outdoor storage.
- B. Fabric 0.2 pound per square yard.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

2.07 JUTE MATTING

- A. Shall be heavy weight, minimum 0-9 pound per square yard, jute mesh with 1" opening.

2.08 FABRIC/MATTING ANCHORS

- A. Staples for fastening fabric to ground shall be minimum 11 gauge wire, "U" shaped, with a 1" crown and 6" legs.

2.09 MULCHING MATERIALS

- A. Hay: This type of mulch shall meet the requirements of the SHA Standard Specification.
- B. Straw: This mulch shall consist of thoroughly threshed wheat, rye or oat straw.
- C. Mulch Binder: Mulch shall be restrained from movement by such methods as crimping, asphalt binders, cellulose binders, or other methods as approved by the Soil Conservation Service.

PART 3 - EXECUTION

3.01 PLACING TOPSOIL

- A. Place topsoil and spread over the prepared subgrade to obtain the required depth and grade elevation.
- B. Final compacted thickness of topsoil not less than 3 inches (three inches).
- C. Roller weighing over 120 pounds per foot of width shall not be used for compaction.
- D. Hand rake topsoil and remove all materials unsuitable or harmful to plant growth.
- E. Do not place topsoil when the subgrade is frozen, excessively wet, or extremely dry; do not handle topsoil when frozen or muddy.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- F. Material unsuitable for finish grading which accumulates during spreading and raking shall be removed and legally disposed of off site by Contractor.
- G. Finish surface of topsoil shall be smooth, even and true to lines and grades with no ponding areas.

3.02 TILLAGE

- A. After seed bed areas have been brought to proper compacted elevation, thoroughly loosen to a minimum depth of 5" by disking, harrowing, or other approved methods.
- B. Do not work top-soiled areas when frozen or excessively wet.

3.03 FINISH GRADING

- A. Remove unsuitable material larger than 2" in any dimension.
- B. Uniformly grade surface to the required contours or as directed without the formation of water pockets.
- C. Rework areas which puddle by the addition of topsoil and fertilizer; re-rake.
- D. Distribute starter fertilizer at the rates indicated in the Standard Specifications.
- E. Incorporate starter fertilizer into the upper 1" of soil.

3.04 SEEDING REQUIREMENTS

- A. All areas disturbed during construction shall be seeded and mulched in strict accordance with the requirements of the Queen Anne's County Soil Conservation District and these specifications, to include seed bed preparation and all incidental work and material to complete the operation. The Contractor shall be responsible to maintain the disturbed area until it has acquired a thick stand of grass and is completely stable to resist erosion.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.05 MULCHING

- A. Mulching shall be performed in accordance with SHA Standard Specification.

3.06 MAINTENANCE

- A. Contractor shall be responsible for maintenance of seeded work.
- B. Maintenance includes watering, weeding, initial mowing, cleanup, edging, and repair of washouts or gullies.
- C. Keep seeded areas wet, close to the saturation point, to a depth of 3" for a period of 10 days following seeding or sodding.
- D. Those areas which do not show a prompt catch or grass within 10 days of seeding or sodding shall be reseeded or re-sodded until complete grass catch occurs.
- E. When the grass reaches an average height of 2-1/2", cut to a height of 1-1/2"; irregularities or depressions which show up at this time shall be leveled and reseeded.
- F. Contractor's maintenance shall continue until all areas are grassed and free from bare spots or off-color areas, and all work under this Contract is complete and accepted.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02575 - PAVING RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work of this Specification includes, but is not limited to:

Temporary Paving
Permanent Paving
Shoulder Restoration
Curb and Sidewalk Restoration

- B. When temporary pavement is required or placed, materials and placement shall be as specified herein except where otherwise required by jurisdictional requirements. Initial placement of temporary pavement shall be incidental to the placing of the pipe. Additional material subsequent to the initial placement shall be reimbursed via the 'CONTINGENT CR-6 MAINTENANCE OF TRAFFIC' bid item.

Contractor shall be responsible to maintain the temporary pavement in a condition acceptable to the engineer until permanent pavement is placed. Should temporary pavement become defective and create an emergency, the contractor shall commence repair to rectify the situation within one hour after notification by the Engineer or the Engineer may arrange to have the work performed by others and deduct the costs thereof from monies owed the contractor.

- C. Related work specified elsewhere:

Specification 02221 - Trenching
Specification 03310 - Concrete Work

- D. Applicable Standard Details:

Roadway Trench Repair – Temporary
Roadway Trench Repair – Permanent – Tar & Chip

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.02 QUALITY ASSURANCE

- A. Use only materials which are furnished by a bulk bituminous concrete producer regularly engaged in production of hot-mix, hot-laid bituminous concrete and is listed in the current SHA Standard Specifications.
- B. Referenced Standards: Maryland State Highway Administration (MSHA) Standard Specifications for Construction and Materials, July 2008, or its current version.
- C. The applicable MSHA Permit for this contract supersedes these technical specifications should conflicts arise.

1.03 TESTING

- A. Obtain a minimum of one 6" diameter core sample for each 1,000 linear feet of permanent paving, or fraction thereof, for test of depth of bituminous material courses.
- B. Take core samples at locations as directed by the County or MSHA after final compaction rolling.
- C. Bituminous or concrete courses deficient more than 1/4-inch from the specified depth in any one sample, or uniformly more than 1/8-inch in three or more samples, shall be removed and replaced to the correct depth.
- D. Refill and compact test holes with material acceptable to, and under the direction of, the County or MSHA.

1.04 SUBMITTALS

- A. Certificates:

Submit a Statement of Compliance, together with supporting data, from bituminous and aggregate suppliers attesting that the materials provided conform to the State specifications.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.05 JOB CONDITIONS

A. Control of Traffic:

Take measures to control traffic during repaving operations. Do not allow traffic on repaved areas until authorized by the County or MSHA. Employ traffic control measures in accordance with the Standard Specifications for Construction and Materials, Maryland Department of Transportation, July 2008, or its current version, or as directed via the MSHA construction permit.

B. Restore existing paving outside the limits of the work, which is damaged by the Contractor's operations, to its original condition.

PART 2 - PRODUCTS

2.01 CONCRETE

A. See Specification 03310

2.02 BITUMINOUS PAVING MATERIALS AND AGGREGATES

A. Refer to Maryland Department of Transportation, State Highway Administration, Standard Specifications for Construction and Materials, July 2008, or its current version. All bituminous materials and aggregates used in paving and resurfacing are designated in these Specifications by, and shall conform to, the applicable portions of the State Specifications.

1. Aggregate Base and Subbase, Section 501.
2. Bituminous Surface Treatment, Section 503.
3. Stabilized Shoulders, Section 601.
4. Bituminous Concrete Shoulders, Section 504, 505, and 508.
5. Bituminous Tack Coat, Section 904.02.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

PART 3 - EXECUTION

3.01 TEMPORARY PAVING

- A. Place temporary paving immediately upon completion of trench backfilling. Unpaved trenches shall not remain unpaved longer than ten working days after backfilling.
- B. Shape and compact subgrade material, then place and compact crushed stone base course to the required thickness plus extend to the level of the original pavement surface.
- C. Place temporary paving material. Compact to required minimum thickness with trench roller having minimum 300 pounds per inch-width of compaction roll.
- D. Continuously maintain temporary paving to the satisfaction of the County and the State and local road departments.

3.02 PERMANENT PAVING

- A. No permanent paving shall be performed until approved by the County. All paving disturbed shall be restored to its original or better condition.
- B. Trim existing paving to remove damaged areas via saw cut. Cut straight joint lines and right angles offsets.
- C. Remove temporary paving material. Apply AC-20 joint sealer to cut edges of bituminous paving. Construct permanent base and surface courses to the required compacted thicknesses shown on the Drawings or as noted in the MSHA construction permit.
- D. Maintain permanent paving to the satisfaction of the County and the local and State road departments.
- E. For County roads, repair with triple surface treatment to consist of: 1st course, 45 lbs. #7 stone per sq. yd. on ½ gallon of CRS-2P asphalt; 2nd and 3rd courses, 35 lbs. MD #7 stone per sq. yd. on ½ gallon of CRS-2P asphalt (per course).

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.03 SHOULDER RESTORATION

- A. Restore shoulders to original or better condition or as directed by MSHA construction permit

3.04 DRIVEWAYS

- A. Trim concrete and bituminous driveway surfaces to remove damaged areas. Saw cut straight joint lines parallel to the centerline of the trench. Cut offsets at right angles to the trench centerline.
- B. Restore existing concrete driveways trenched through with a 6" layer of concrete reinforced with 6 x 6 W1.4/W1.4 wire mesh.
- C. Restore existing blacktop driveways trenched through in kind or with minimum 3" bituminous wearing course over 3" layer of stone crushed aggregate in accordance with Section 501 & 504 of Maryland Department of Transportation, Standard Specifications for Construction and Materials, July 2008, or its current version.
- D. Restore earth driveways with a 6" layer of select backfill material.
- E. Restore stone or gravel driveways in kind.
- F. Restore brick driveways with like bricks placed on a 4" thick wet sand bed. Place bricks in like pattern and spacing.

3.05 CONCRETE CURB AND SIDEWALK REPAIRS

- A. Replace curbs and sidewalks damaged by construction to match existing. Reconstruct curbs and sidewalks to the first expansion joint on either side of the damaged portion. Install expansion joint material.
- B. Reconstruct sidewalks to 4" thickness of concrete, reinforced with 6 x 6 W1.4/W1.4 wire mesh, placed on a 4" base of compacted select material (2RC) crushed aggregate. Driveways are to be as above but with a minimum of 6" thickness of concrete.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02611 - PRESSURE SEWER PIPE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work of this Specification includes, but is not limited to:

1. Sanitary sewer pressure pipelines
2. Cleanouts
3. Division Valves
4. Air Release Valves

B. Related work specified elsewhere:

Specification 02221 - Trenching, Backfilling & Compacting
Specification 02615 - HDPE Pipe
Specification 02651 - Sewer Testing

C. Applicable Standard Details

Pipe Bedding & Concrete Encasement
Buttress for Caps and Horizontal Bends
Buttress for Tees
Buttress for Quarter Bends
Division Valve Box
Valve Box and Cover
Sewer Service Tracer Wire
Pressure Sewer Air Release Valve
Pressure Sewer Cleanout Assembly
Pressure Sewer End of Line Cleanout Assembly

1.02 QUALITY ASSURANCE

A. Reference Standards:

American National Standards Institute (ANSI):

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- A21.4 Cement-Mortar Lining for Cast-Iron and Ductile-Iron Pipe and Fittings
- A21.11 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
- A21.51 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for water or other liquids

American Society for Testing and Materials (ASTM):

- D1785 Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
- D2241 Poly Vinyl Chloride (PVC) Plastic Pipe (SDR-35)
- D2466 Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40
- D2564 Solvent Cements for Poly Vinyl Chloride (PVC) Pipe and Fittings

American Water Works Association (AWWA):

- C600 Installation of Ductile Cast-Iron Pipe and Appurtenances

- B. Materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvent, paint thinner, or acid solder will be rejected.

1.03 SUBMITTALS

- A. Certificates:

Submit each manufacturer's certification attesting that the pipe, pipe fittings, joints, joint gaskets and lubricants meet or exceed specification requirements.

- B. **Submit manufacture's certification that any iron or steel products meet the provisions of Buy American Iron & Steel (AIS).**

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery and Handling:

Do not place materials on private property without written permission of the property owner. During loading, transporting and unloading, exercise care to prevent damage to materials. Do not drop pipe or fittings. Avoid shock or damage at all times.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Take measures to prevent damage to the exterior surface or internal lining of the pipe.

B. Storage:

All pipe and fittings shall be stored in accordance with the manufacturer's recommendations. Do not stack pipe higher than recommended by the pipe manufacturer. Store gaskets for mechanical and push-on joints in a cool, dry location out of direct sunlight and not in contact with petroleum products.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PRODUCTS & FITTINGS

- A. Buried ductile iron pipe shall be manufactured in accordance with ANSI/AWWA C-151/A21.51, latest edition, and shall be minimum thickness Class 51.
- B. Where restrained joints are not required mechanical joints shall be provided. Joints shall be in conformance with the applicable requirements of ANSI/AWWA C-111/A21.11, latest edition. Joints shall be assembled in accordance with the manufacturer's recommendations.
- C. Pipe and fitting shall have the standard internal and external asphaltic coating approximately 1 mil thick.
- D. Pipe and fitting may have an internal cement lining in accordance with the latest revision of ANSI/AWWA C-104/A21.4.
- E. All fasteners for ductile iron pipe, fittings, and valves shall be 304 stainless steel.
- F. All below ground fittings and specials shall be cast iron with mechanical joint with a 250 psi pressure rating and marked in conformance with ANSI/AWWA C-110/A21.10, latest edition. Ductile iron fittings will be an acceptable alternate. They shall be mechanical joint with a 350 psi pressure rating conforming to ANSI/AWWA C-153/A.21.53 and C-111/A21.11. Wall thickness shall be equal to Class 56 ductile iron pipe.
 - a. Provide flanged fittings for tie in at wastewater treatment plant.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- G. Retainer glands for HDPE pipe shall be model 2000PV megalug by EBBA Iron or approved equal. Provide AIS complaint stainless steel inserts with all retainers.
- H. All ductile iron pipe & fittings shall be manufactured in the United States. Pipe and fitting shall be as manufactured by U.S. Pipe, or approved equal.
- I. Couplings shall be made by ROMAC, Alpha model if restrained, Macro model if not, or approved equal (must designate to be AIS complaint when ordered).

2.02 HIGH DENSITY POLYETHELENE PIPE (HDPE) SEWER PIPE – PRESSURE SEWER.

Refer to Specification 02615

2.03 DIVISION VALVES

- A. Resilient Wedge Valves:
 - 1. Division valves shall be installed as shown on the Drawings.
 - 2. Valves shall be resilient wedge type suitable for service in sewage under both vacuum and/or pressure as manufactured by Mueller Company, or approved equal (must designate to be AIS complaint when ordered).
 - 3. Valves shall be constructed and rated in accordance with ANSI Specifications B16.34-1977 Class 150 where applicable (i.e. flanges, body wall thickness and body pressure rating).
 - 4. Valves shall be fabricated with a carbon steel body, bronze stems.
 - 6. Mechanical joint connections with transition to PVC gaskets shall be provided.
 - 7. Valves with greater than 5 foot of cover shall have an operating nut extension installed to a depth between 2 and 3 feet from grade. Extensions shall be manufactured, not field cut, with a stainless steel set screw at the base and a centering o-ring at the top. Extension shall operate freely and shall not bind against the valve box wall.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

B. Invert Eccentric Plug Valves

1. Plug valves shall be installed as shown on the Drawings.
2. Valves shall be of the non-lubricated eccentric type with resilient faced plugs and shall be furnished with end connections as shown on the Drawings. Flanged valves shall be faced and drilled to the ANSI 125/150 pound standard. Mechanical joint ends shall be to the AWWA Standards C-111, grooved ends per AWWA C-606. Screwed ends shall be to the NPT standard. Plug valves shall be as manufactured by DeZurik, Inc., or approved equal. Valves must meet Buy American Iron & Steel provisions.
3. Bodies shall be of ASTM A126 Class B cast iron. Bodies shall be furnished with a 1/8-inch welded overlay seat of not less than 90% pure nickel. Seat area shall be raised, with raised surface completely covered with weld to insure that the plug face contacts only nickel. Screwed in seats shall not be acceptable.
4. Plugs shall be of ASTM A126 Class B cast iron. The plug shall have a cylindrical seating surface eccentrically offset from the center of the plug shaft. The interface between the plug face and body seat, with the plug in the closed position, shall be externally adjustable in the field with the valve in the line under pressure. Plug shall be Chloroprene (CR) or resilient facing suitable for application.
5. Bearings shall have sleeve type metal bearings and shall be of sintered, oil impregnated permanently lubricated type 316 ASTM A743 Grade CF8M. Non-metallic bearings shall not be acceptable.
6. Shaft seals shall be of the multiple V-ring type and shall be externally adjustable and repackable without removing the actuator or bonnet from the valve under pressure. Valves utilizing O-ring seals or non-adjustable packing shall not be acceptable.
7. Pressure ratings shall be 175 psi. Every valve shall be given a hydrostatic and seat test with the results being certified.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

8. Manual valves shall have gear actuators and hand wheels as indicated on the Drawings. Valves shall be equipped with gear actuators. All gearing shall be enclosed in a cast iron housing and be suitable for running in a lubricant with seal provided on all shafts to prevent entry of dirt and water into the actuator. The actuator shaft and the quadrant shall be supported on permanently lubricated bronze bearings. Actuators shall clearly indicate valve position and the adjustable stop shall be provided to set closing torque and to provide adjustment to compensate for change in pressure differential or flow change. All exposed nuts, bolts, washers shall be zinc plated. Actuators shall be as manufactured by DeZurick, Inc., or approved equal.

2.04 VALVE BOXES

- A. 12" valves and smaller: domestic cast iron, two-piece, sliding type.
- B. Cast iron lid.
- C. Valve boxes shall be cast iron, sliding type, with 5-1/4 inch shaft and extra deep lid having the word "SEWER" cast thereon. All valve boxes shall be adjustable within the limits necessary to provide for the setting depths required and shall be as manufactured by the Tyler Union, or approved equal. Valve boxes with more than three sections shall have an exterior PVC sleeve around the full length of the box to maintain alignment.
- E. Valve boxes shall have a concrete collar poured around the valve box top at finish grade. The collar is to have a minimum of 18" diameter (i.e. a 6 inch annular collar), 6 inches thick, with two stands of 10-gauge wire reinforcing, and be tightly bonded to the cast iron box.
- F. Valve box bottoms shall be fitted with Valve Box Adaptor II rubber centering ring, as manufactured by Adaptor, Inc., or approved equal.

2.05 COMBINATION SEWAGE AIR-RELEASE AND AIR-VACUUM VALVE ASSEMBLY FOR WASTEWATER

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Valve:

- A. Assembly shall include a single valve with a combination air-release valve and air-vacuum valve designed specifically for wastewater application. Valve shall be equipped with a single 1.5" flushing connection and a single stainless steel 1" drain line and ball valve. The valve and connection shall be piped into a compact assembly which shall include a HDPE tee fitted with a HDPE to threaded stainless steel transition fitting, followed by a 2-inch stainless steel ball valve followed by a 2-inch stainless steel cam-lock assembly. A nylon tie shall be inserted in the cam lock handles of the installed cam-lock to secure the handles in the locked position. Ball valve, pipe, and cam-lock must meet AIS provisions.
- B. The valve shall be specifically designed to operate with liquids carrying solid particles and waste as seen in wastewater. The valve body and all interior metal components shall be constructed of SAE 316 stainless steel.
- C. Valve to be constructed with conical/funnel-shaped bodies and long float stems so that operating mechanisms and orifice openings are kept free from contact with sewage during purging of air. Valve shall not permit re-entry of air whenever loss of pressure occurs.
- D. Valve shall have a working pressure rating of 3 – 250 PSI.
- E. Valve shall be equipped with a nylon E.P.D.M.+St.St. rolling seal/diaphragm assembly and shall have a spring loaded joint between the stem and foamed polypropylene upper float.
- F. Valve shall be A.R.I. Flow Control Access Ltd. Model D-025 – composite plastic 250 PSI.

Manhole:

- A. Precast reinforced concrete risers, eccentric cones, and bases shall be in conformance with ASTM C-478. Joints between riser sections shall be fitted with an O-ring rubber gasket, meeting the requirements of ASTM C-443. Installation of risers shall

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

be in accordance with manufacturer's recommendations under the supervision of the County.

- B. Precast reinforced concrete base and riser sections shall be as manufactured by Atlantic Concrete Products Company, Baystar Precast Company, Gillespie and Son, Inc., or approved equal. Any rebar used must meet AIS provisions.
- C. Interior and exterior joint spaces of all manhole risers shall be filed prior to application of exterior waterproofing. The interior joint shall be mortared. The exterior joint may be mortared or filled with a joint filler compound. Said compound shall be Pioneer 301 as manufactured by Daubert Chemical Company, or approved equal.
- D. Lifting holes in the walls of precast reinforced concrete risers will be allowed but shall be plugged with rubber stoppers and grouted flush with the face of the manhole wall after installation of the riser sections. No more than two lifting holes shall be cast in the walls of each riser for the purpose of handling.
- E. The exterior surface of all precast manholes shall receive a minimum two coat application of a 68% solids coal tar type protective coating. The total average dry film thickness shall measure 24 mils with no single measurement to be less than 20 mils. Surfaces shall be prepared in accordance with the manufacturer's instructions, and coatings applied in the field in a manner acceptable to the County. The coating material shall be Bitumastic Super Service Black as manufactured by Koppers, Inc., or Tar-Jet Superblack XX-32-B-22 as manufactured by Pennsbury Coatings Corporation, or approved equal.
- F. All pipe to manhole connections in the precast manhole shall be made by means of an integrally cast flexible connector which shall be Lockjoint flexible manhole sleeve as manufactured by Interpace Corporation, or A-Lok flexible manhole gasket as manufactured by A-Lok Corporation, or approved equal.
- G. All concrete for manhole base slabs and cradles, encasements, blocking, etc. shall have a minimum compressive strength of 5,000 psi at 28 days.
- H. Manhole steps shall be made of 3/8 inch diameter steel reinforcing bars ASTM A-615 – Grade 60 encased in polypropylene plastic. Manhole steps shall be cast in place

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

during manufacture of precast reinforced concrete manholes. Embedment length shall be suitable for minimum 5-inch thick precast riser walls. Manhole steps shall be OSHA approved and as manufactured by M.A. Industries, Inc. or ICM, Inc., or approved equal. Manhole steps shall be spaced 12-inches apart. The maximum spacing from the top of the manhole to the first step shall not exceed 16-inches.

- I. Frames & covers for manholes shall be set by the Contractor as the work progresses. The frame shall be bedded in mortar. Frames and covers shall be East Jordan Iron Works 1580 with 'Queen Anne's County' cast into the lid. Refer to standard specification for iron casting ASTM A48 for Class 35.

2.06 TRACER WIRE & MARKING TAPE – OPEN TRENCH CONSTRUCTION

- A. All open trench pipe runs shall have a single strand 8-gage un-coated copper wire run along with the pipe to aid in future locates. Wire shall be run to grade at all cleanouts, division valves, etc. in order to allow for tracer equipment to connect to the wire. Wire shall provide a continuous loop along the entire length of pipe.
- B. Marking tape, in accordance with Specification 02221 shall be installed at a depth of 18 inches within the trench.
- C. Refer to Specification 02800 for tracer wire requirements when using horizontal directional drilling construction.

2.07 CONNECTORS

- A. Nuts, bolts, washers, tie rods, and any other connectors shall only be 304 stainless steel to resist corrosion. Any connector must meet the provisions of Buy American Iron and Steel or be covered by the Nationwide waiver.

2.08 CHECK VALVES

- A. This Section includes requirements for providing check valves as indicated in accordance with the Contract Documents.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. All materials and installation shall be in accordance with the latest revisions of the following codes, standards and specifications, except where more stringent requirements have been specified herein.
 - 1. American National Standards Institute (ANSI)
 - a. B16.1 – Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800
 - 2. American Society for Testing and Materials (ASTM)
 - a. ASTM A126 – Gray Iron Castings for Valves, Flanges and Pipe Fittings
 - 3. American Water Works Association (AWWA)
- C. Check valves shall be designed for either a minimum working pressure of 100 psi or the maximum pressure of the pipe in which the valve is to be installed, whichever is higher. Swing check valves shall be provided, unless otherwise specified or shown.
- D. Swing check valves shall have heavy ASTM A126 Class B cast iron or ASTM A216 Class WCB cast steel body, with bronze or stainless steel ring, a non-corrosive stainless steel pivot shaft, and outside adjustable lever and weight.
- E. The valve shall be tight seating, and shall operate without hammer and shock through an oil cushion chamber or adjustable spring mechanism. The seat ring shall be renewable and shall be securely held in place by a threaded join.
- F. Valves shall be as manufactured by M&H Valve (if AIS compliant), or equal.

PART 3 - EXECUTION

3.01 EXCAVATION AND PIPE BEDDING

- A. Perform trench excavation to the line and grade indicated on the Contract Drawings and as specified in Specification 02221.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. When conditions warrant and with prior approval, provide pipe bedding as specified in Specification 02221. Place aggregate in a manner to avoid segregation, and compact to the maximum practical density so that the pipe can be laid to the required tolerances. Assure that the pipe is supported on the lower quadrant for the entire length of the barrel.

3.02 PIPE INSTALLATION

- A. All pipe, valves, fittings, and buttresses shall be installed as specified in AWWA standards C-906-90, the pipe manufacturer's recommended methods and as stated herein, unless otherwise specified by the County.
- B. All pipe, valves and fittings shall be thoroughly cleaned and shall be entirely free from grease or oil and substantially free from blacking, dirt, sand, rust, slag or fluxing materials.
- C. All sanitary sewer pressure pipes, fittings and valves to be connected by standard mechanical joints shall be installed by experienced pipe layers to the satisfaction of the County. Prior to making up joints the bells, pipe ends and rubber gaskets shall be thoroughly washed with soapy water. A cast iron gland shall be slid over the pipe and followed by a rubber gasket, thoroughly soaped, with its tapered side facing the bell. The pipe shall then be inserted fully into the bell. The rubber gasket shall be forced into position with the finger until it is flush with the face of the bell, the gland shall be slid against the face of the rubber gasket and the bolts inserted finger tight. Nuts shall be tightened with a torque wrench as specified by the manufacturer and AWWA. Bolts shall be drawn up evenly on alternate side, beginning at the top, keeping the gland parallel to the face of the bell at all times. In the event the use of ratchet wrenches is permitted, extreme care shall be taken to tighten the nuts to the specified tension without over tightening. Bell hole excavation may be required to allow proper wrench movement.
- D. Pipe and fittings shall be moved to the trench, carefully lowered, and set to line and grade. Pipe shall be laid on the subgrade. No blocking will be permitted. No pipe or fitting shall be installed until sufficient trench has been completely excavated to satisfy the County that no unforeseen obstructions of any kind are likely to be encountered. Where it is necessary to raise or lower the pipes due to obstructions or other causes, the County shall be notified and the change in grade shall be effected in

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

accordance with details which will be furnished by the County. Said field adjustments will need County approval prior to construction.

- E. Joint deflections shall not exceed maximum deflections stated by the manufacturer for the specified joint and pipe sizes. No pipe shall be cut, nor cut pipe installed, except at the specific direction of the County. In cutting, the ends shall be cut at right angles to the axis and the edges filed to a smooth taper. Special care shall be exercised by the contractor to prevent damage to any pipe.
- F. Before placing in the trench each pipe or fitting shall be carefully cleaned of any foreign substance which may have collected therein and shall be kept clean at all times thereafter. No pipe shall be laid upon a foundation into which frost has penetrated, nor at any time when the County deems there to be a danger of the formation of ice or the penetration of frost at the bottom of the excavation. All requirements regarding the minimum length of open trench and promptness of refilling shall be observed. The open ends of all pipe and fittings in the trench shall be closed to the satisfaction of the County before leaving the work for the night and for all holidays or other times of interruption to the work.
- G. Any excessive settlement of the pipe requiring repairs shall be the sole responsibility of the Contractor (within the limits of the guarantee) and he shall make and do all required work as may be necessary to accomplish the required repairs and return the site to proper condition and appearance.
- H. Fittings and valves shall be placed along the force mains where shown on the drawings or where designated by the County in accordance with the requirements as provided elsewhere in these specifications.
- J. All fittings shall be firmly buttressed with concrete against undisturbed earth and/or mechanically restrained. See Buttress Standard Details.
- K. All open trenches, are to have tracer wire place in the invert of the trench and marking tape above the pipe as detailed in Section 2.05 of this specification and Specification 02221 - Trenching.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3.03 WYE BRANCHES AND TEES

- A. Install wye branches or pipe tees at locations indicated on the Contract Drawings concurrently with pipe laying operations. Use ductile iron fittings as specified.

3.04 CRADLES AND ENCASEMENT

- A. Provide concrete cradles and encasement for pipeline where indicated on the Contract Drawings, or as directed by the County, and in accordance with the Concrete Cradle and Encasement Detail.

3.05 THRUST RESTRAINT

- A. Provide concrete thrust blocking or restrained joints for pressure pipeline at all valves, tees, bends, caps, plugs, and changes in direction in accordance with the Buttress Details.
- B. Pour concrete thrust blocks against undisturbed earth.
- C. Locate thrust blocks to contain the resultant force and so pipe and fitting joints will be accessible for repair.
- D. Furnish and install, tie rods, clamps, set screw retainer glands, or restrained joints as indicated on the Contract Drawings.
- E. Protect metal restrained joint components against corrosion by applying a bituminous coating.

3.06 DEFLECTION

- A. When it is necessary to deflect pipes from a straight alignment horizontally or vertically, do not exceed limits given by the manufacturer.

3.07 BACKFILLING TRENCHES

- A. Backfill pipeline trenches only after acquiring as-built measurements and examination of the pipe laying by the County.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Backfill trenches as specified in Specification 02221.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02615 - HIGH DENSITY POLYETHELENE PIPE SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all labor, materials, tools and equipment necessary for the complete and satisfactory installation of the sanitary force main piping, valves, fittings and appurtenances at the locations shown on the drawings and in accordance with the contract Documents and approved installation details. The Contractor shall be permitted to either open cut or directionally drill the HDPE pipe as a method of installation unless a preferred method is indicated on the particular project's plans or specifications.

1.02 INSPECTIONS AND FIELD TESTS

- A. The Owner may inspect all materials before and after installation for compliance with the contract requirements. When specific material tests are called for in the referenced standards and specification, the Owner shall have the option of requiring that any or all of these tests be preformed for materials furnished at the place of manufacture by the manufacturer at no cost.
- B. The Contractor shall schedule all field tests with the Owner at least 48 hours in advance, and shall conduct all testing in the presence of the Owner.
- C. All pipe shall be hydrostatically pressure tested once installed by the contractor. The pipeline under test shall be filled with water to eliminate all air from the system pressurized at the highest point under test. The pipe shall be tested to the pressure rating of the pipe. Details for the pressure test are as provided in Section 3.02 of this Specification.
- D. All equipment used in testing shall be provided by the Contractor and shall be subject to the approval of the Owner. Where devices such as meters, timers, gauges, recorders, charts, plugs, caps, blind flanges, corporation stops or bulkheads are required to develop, maintain and measure test pressures the devices shall be furnished and installed by the contractor at no cost to the Owner.
- E. All piping shall be adequately braced and supported during all testing so that no movement, displacement or damage will result from the application of the test pressure. Relief devices in the various systems shall be capped or plugged during the tests.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- F. Should test show any visible leakage, displacement or damage, regardless of the results of the test, the Contractor shall repair the leakage, displacement or damage and retest the system as required to the satisfaction of the Engineer and Owner, at no additional cost.
- G. Repairs to the various systems shall be made with new materials. When it is necessary to replace any piece of pipe, fitting, valve, etc., the replacement shall be of the same material and thickness as the defective piece.
- H. At the option of the Owner, the pipe may be tested for deflection after each 400± feet of pipe has been installed. Testing shall be performed by the Contractor by passing a 10% undersized from the inner diameter Go/No-Go mandrel through the pipeline. Any section not passing the mandrel test shall be pulled or excavated and replaced.
- I. All HDPE pipelines shall be pigged for sediment removal and general deflection. Pig shall have a minimum outside diameter ½ inch less than the inside diameter of the pipe being pigged.

1.03 SUBMITTALS

- A. Shop drawings shall be submitted for, but not limited to, the following materials, and shall include the following information:
 - 1. All Pipe fittings: Product information and dimensions; SDR, pressure class and operating pressure rating; storage, handling and installation recommendations, manufacturer's recommended testing procedures, and jointing methods and procedures.
 - 2. Pipe couplings and appurtenances, including stiffener rings and MJ adaptors for connecting the different pipe materials shown on the drawings; for connecting pipes with different outside diameters; or for connecting pipes, fittings or valves with different end conditions.
 - 3. Other items to be used in the work that are not specifically identified above shall be subject to shop drawing review at the option of the Owner.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.04 MANUFACTURER'S CERTIFICATES

- A. Certificates of Compliance shall be submitted for all pipe and fittings stating the item supplied is in accordance with the requirements specified herein.
- B. Certified test results shall be submitted for the following materials at the Owner's request: High density polyethylene (HDPE) pressure pipe and fittings.
- C. **Submit manufacture's certification that any iron or steel products meet the provisions of Buy American Iron & Steel (AIS).**

1.05 PIPING

- A. The entire piping system shall be constructed using high density polyethylene pipe and ductile iron fittings unless otherwise shown on the drawings or where it is necessary to transition to another material.
- B. Miscellaneous piping systems which may not be described specifically by any section of this specifications shall be of the type of pipe and fittings as shown on the drawings and shall be in accordance with the Owner's Standards.
- C. The Contractor shall verify all dimensions, so that all of the pipe work performed will fit together properly and will conform to the arrangement as shown on the drawings. In selecting laying lengths of fittings, the Contractor shall be guided by the dimensions shown. Flanges shall be at right angles to the axis of the opening, and openings shall be at the exact angle specified.

1.06 FITTINGS

- A. All fittings shall be of the type indicated on the drawings or specified and shall be meet or exceed the pressure rating of the pipe.

1.07 REFERENCES AND STANDARDS

- A. ANSI/AWWA C906-90 AWWA Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 Inches through 63 Inches, for Water Distribution.
- B. ASTM D 1248-84 Specification for Polyethylene Plastics Molding and Extrusion Materials.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- C. ASTM D3035-93 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.
- D. ASTM D3350-93 Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.
- E. ASTM F714-94 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

PART 2 PRODUCTS

2.01 GENERAL

- A. All pipe and fittings shall be new, of the nominal pipe sizes and materials indicated on the drawings or specified.
- B. If the Contractor wishes to use a pipe material that is specified but not shown on the drawings, it shall be his responsibility to design and submit shop drawings for approval, indicating all pipe details. The Contractor shall not be entitled to any extra compensation for such design, shop drawings and their approval, or revisions to the arrangements and details shown on drawing necessary to accommodate the use of pipe materials not shown. All such designs prepared by the Contractor shall be as required and approved by the Owner. Fittings provided for connection to existing piping shall be compatible with the existing piping and with the new piping.
- C. The Contractor shall demonstrate to the full satisfaction of the Owner that his personnel are adequately skilled in making joints specified, prior to installation of any piping.
- D. Some materials or products are specified on the drawings. In case of conflict between drawings and the specifications regarding the product or materials specified, the Owner shall determine which shall govern.

2.02 HDPE PRESSURE PIPE AND FITTINGS

- A. Polyethylene plastic pipe and fittings for sizes 4-inches and larger shall be supplied on accordance with AWWA C-906-90 and ASTM D-3350-06. All pipe shall conform to IPS, O.D. dimensions.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Polyethylene plastic pipe shall be PE4710, Type 2 (high density), Class C (black), Category 4 (extra high molecular weight), Grade P34, polyethylene as specified by ASTM 1248-84 and shall have a cell classification of PE 345464C as specified by ASTM D3350-84. Minimum dimensions and workmanship shall be as specified by ASTM D714-90.
- C. Polyethylene plastic pipe shall be PE 4710, as manufactured by Performance Pipe, or approved equal.
- D. Pipe Schedule: HDPE pipe shall be SDR 11 with a minimum pressure rating of 160 psi unless directed otherwise by the particular project's plans or specifications. Utilize SDR 9 pipe where indicated on the Drawings.
- E. Pipe Fittings and Joints:
 - a. The pipe, fittings and specials shall be from the same manufacturer. All fittings and specials shall have the same pressure rating as the pipe.
 - b. Joints for the pipe fittings and specials shall be by butt fusion joining. Joints shall be made in accordance with the pipe manufacturer's recommendations.
 - c. All pipe and fitting joints shall be fully restrained from movement due to thermal expansion/contraction forces.
 - d. The Contractor shall be permitted to arc the pipe in lieu of utilizing fittings for bends. The minimum bending radius and other pipe installation requirements shall be as specified in Part 3, EXECUTION, of this specification.

2.03 COUPLINGS/MECHANICAL JOINT ADAPTER

- A. Couplings between HDPE and different pipe materials or between HDPE with different outside diameters shall be provided by Contractor.
- B. Unless otherwise shown or called for on the drawings, couplings shall be the restraining type and shall consist of an epoxy coated and lined steel or ductile iron sleeve ring, ductile iron end rings and a rubber gasketed seal. Couplings shall be capable of restraining the HDPE pipe from pull out due to thermal effects. **All hardware shall be stainless steel.** All steel components shall be factory coated

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

with a 14 mil fusion bonded epoxy coating and lined in accordance with AWWA C219.

- C. Couplings shall be designed for buried service and shall be rated for the same working pressure as the pipe. Couplings shall be either Alpha or Macro model, depending on the need for restrain or not, as manufactured by Romac, Inc., or approved equal. Specify the need for the coupling to meet AIS when ordering.
- D. Couplings shall include stainless steel ring stiffeners as specified herein.
- E. HDPE mechanical joint adapters for making connections to mechanical joint fittings and valves shall be provided. The adapter shall provide for a restrained joint.

2.04 RING STIFFENERS

- A. Stainless steel stiffener rings sized for the inside diameter of the pipe shall be furnished for all HDPE at all compression type couplings and non-fused joints. Ring stiffeners shall be as manufactured by Coupling Systems, Inc. or equal. Rings shall be off sufficient length to extend beyond coupling gasket and follower gland.

2.05 DETECTION TAPE AND WIRE

- A. Detection tape used for pipe installed by open-cut methods shall be installed directly above the force main as specified in Specification 02221 - Trenching – Section 2.05.
- B. A tracer wire used for pipe installed by open-cut methods shall be installed along the invert of the trench as specified in Specification 02221 - Trenching – Section 2.06.

PART 3 EXECUTION

3.01 HDPE PIPING AND FITTINGS

- A. HDPE pipe may be installed either by trench methods or by directionally drilling, unless otherwise called for on the drawings.
- B. All directional drilling of pipelines shall be in accordance with Specification 02800 DIRECTIONAL DRILLING.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- C. All pipelines installed using the trench method shall be installed in accordance with the typical trench for HDPE pipe installation.
- E. Allowable minimum bend radii shall be in conformance with the pipe manufacturer's recommendation. Bends in PE pipe shall not be permitted to occur closer than 10 diameters from any fitting or valve. Bending of coiled pipe against the coil shall not go beyond straight. Polyethylene pipe that becomes kinked during handling or installation shall not be used, and care should be taken to ensure that kinking does not develop after installation.
- F. The pipe shall generally be laid to the inverts shown on the drawings. Where conflicts occur existing utilities, the top of the proposed pipe shall be laid at least 1 foot below the bottom or above the crown of the existing utility as required.
- G. Contractor shall maintain a drill log to show actual in-place depths at intervals of 50-feet which are to be turned over to the County at the end of the job.
- H. Field cutting and fusion bonding of HDPE pipe and fittings shall be done in accordance with the manufacturers recommended procedures.
 - a. Joints shall be made either pipe end to pipe end, pipe end to fitting, or between a saddle fitting and pipe by heat-fusion methods. These methods involve preparation of surfaces, heating of surfaces to proper fusion temperatures, and bringing the surfaces together in a prescribed manner to effect the fusion bond as described in ASTM D2657 and in accordance with the pipe manufacturer's recommendations.
 - b. Special tools to provide proper heat and alignment shall be used for heat-fusion connections. Detailed written procedures and visual aides provided by the pipe manufacturer shall be supplied to the inspector prior to heat fusing any pipe. The information shall include specific recommendations for time, temperature, and pressure required to make joint as well as criteria used to evaluate the quality of a fusion bonded joint.
 - c. Upon request by the Owner, the manufacturer shall provide fusion training services to the Contractor. When requested, both installers and inspectors shall be trained by the manufacturer or his authorized representatives.
 - d. Mechanical connections of polyethylene pipe to pipe or fittings of other materials, or pipe or fittings of different dimensions shall be by means of

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

restrained mechanical couplings designed for joining polyethylene pipe to other piping material unless otherwise shown on the drawings. The Contractor shall submit drawings of mechanical connections during the shop drawing phase for review and approval.

- e. All piping shall be fully restrained. No unrestrained mechanical or compression joints are allowed unless proper thermal expansion/contraction restraint anchors are provided. The design of these anchors shall be the responsibility of the Contractor and subject to the review and approval of the Owner.
- f. Polyethylene pipe, tubing, and fittings shall be stored in a way that prevents damage due to crushing or piercing, excessive heat, harmful chemicals, or exposure to sunlight for prolonged periods. The manufacturer's recommendations regarding storage shall be followed.
- g. Handling of HDPE pipe during installation shall be performed with care to prevent scratches, nicks, and gouges in the conduit.
- h. Practices such as dragging coils of pipe or tubing over rough ground and installing by pulling through auger or bore holes containing sharp-edged material is prohibited. Uncoiling and other handling shall be done without kinking. If pipe is cut or kinked beyond the manufacturer's recommendation, the damaged portion shall be removed, discarded, and replaced.

3.02 CONCRETE THRUST BLOCKS

- A. The Contractor shall provide concrete thrust blocks on all non-fused (or otherwise unrestrained) bends, tees, plugs and caps in accordance with the drawings and Standard Details.
- B. Contractor shall provide concrete anchors at all locations where HDPE segments of pipe terminate at non-flanged, non-threaded or non-fusion bonded valves, fittings or couplings to resist thermal expansion and constriction.

3.03 EXISTING UTILITIES

- A. When crossing and/or working in the vicinity of existing utilities, it will be the Contractor's responsibility to properly support and maintain the operations of the utilities. Extreme care must be exercised in excavation and refill operations.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Test pit all utilities at least 1500 feet ahead of pipe laying activities to determine any potential conflicts with the Drawings and to propose solutions.

3.04 TESTING

- A. Refer to Specification Section 02652

3.05 DEFECTS TO BE MADE GOOD

- A. If, at any time, before the completion of the contract, any broken pipes, or any defects are found in the buried piping or in any of their appurtenances, the Contractor shall cause the same to be removed and replaced by proper material and workmanship, without extra compensation for the labor and materials required, even though such injury or damage may not have been due to any act, default, or negligence on the part of the Contractor; provided however, that should such defective work result from inherent flaws in the material furnished by the Owner, materials to replace same will be furnished by the Owner. All materials shall be carefully examined by the Contractor for defects just before placing any found defective shall not be placed in the line.

3.06 PIPE INSTALLATION – GENERAL

- A. Contractor shall adhere to the manufacturer's recommended installation procedures.
- B. All pipe, fittings, valves and accessories shall be carefully lowered into the trench using suitable equipment in such manor as to prevent damage to pipe and fittings. Under no circumstances shall the pipe or accessories be dropped or dumped into the trench. HDPE pipe installed by open trench methods shall be in accordance with the detail shown on the drawings.
- C. The pipe and accessories shall be inspected for defects prior to installation. Any defective, damaged, or unsound material shall be repaired or replaced as directed by the Owner.
- D. All foreign matter or dirt shall be removed from the interior of the pipe before installation. Pipe shall be kept clean by means approved by the Owner during and after installation.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- E. When pipe laying is not in progress, the open ends of the installed pipe shall be closed to prevent entrance of debris into the line. If water enters the trench, the Contractor shall prevent pipe from floating. Any pipe that has floated shall be removed from the trench and the bedding restored. No pipe shall be laid when the trench conditions or the weather are unsuitable for proper installation as determined by the Owner.
- F. The pipe shall be cut in accordance with the manufacturers recommended procedures. Cuts shall be neat and workmanlike manner without damage to the pipes as to have a smooth end at right angles to the axis of the pipe.
- G. HDPE pipe shall be installed in prepared trench bottoms that provide continuous support and are uniform and free from rocks, stones, and debris.

3.07 BACKFILLING PIPE TRENCHES

- A. Trenches shall be backfilled as shown on the drawings and in accordance with Specification 02221.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 02652 – PRESSURE SEWER TESTING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work of this Specification includes, but is not limited to:

Hydrostatic testing pressure pipelines
Deflection testing plastic pipelines

- B. Related work specified elsewhere:

Specification 02611 - Pressure Sewer Pipe
Specification 02800 – Horizontal Directional Drill

1.02 QUALITY ASSURANCE

- A. Test Acceptance:

1. No test will be accepted until the results are below the specified maximum limits.
2. The Contractor shall determine and correct the causes of test failure and retest until successful test results are achieved. The Contractor shall be responsible for the cost of all retesting.

1.03 SUBMITTALS

- A. Submit the following prior to start of testing:

1. Testing procedures
2. List of test equipment
3. Testing sequence schedule
4. Provisions for disposal of flushing and test water
5. Certification of test gauge calibration
6. Deflection mandrel drawings and calculations

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.04 JOB CONDITIONS

- A. Do not allow personnel in manholes during pressure testing.

PART 2 - PRODUCTS

2.01 HYDROSTATIC TEST EQUIPMENT

- A. Hydro pump
- B. Pressure hose
- C. Water meter
- D. Test connections
- E. Pressure relief valve
- F. Pressure gauge – 4-inch, calibrated to 1 psi.

PART 3 - EXECUTION

3.01 PIPELINE PREPARATION

- A. Backfill trenches in accordance with Specification 02221 - Trenching.
- B. Provide pressure pipeline with concrete reaction support blocking.
- C. Clean pipelines by propelling a snug fitting pig through the pipeline with water or air from the upstream access to the downstream access.

3.02 PRESSURE TEST OF HDPE PIPE

- A. Pressure and leakage tests shall be conducted in accordance with the pipe manufacturer's recommended procedures.
- B. Any defective work which shows up while conducting tests or before conditional acceptance, shall be replaced or repaired by the Contractor at his own cost and expense. Any leaks occurring after conditional acceptance but before final acceptance due to either blown joints or cracked pipe or fittings, shall be repaired by the Contractor.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
COMMUNITY PRESSURE MAINS INSTALLATION

- C. All water used in testing shall be from an approved source. The length of the pipe under test shall be filled with water, with care being taken to eliminate all air from the pipeline. Air testing shall not be used. The Contractor shall be responsible to supply all water required for testing. The County has secured a surface water appropriation permit for this use should the contractor desire. Point of withdrawal must be 9700 Romancoke Road and source of water is Eastern Bay. Method to use the water is subject to County review and approval, as well as are all conditions within the MDE permit.

- D. Pressure testing shall be conducted on sections not greater than 10,000 linear feet of sewer main between valves. After properly filling the line and expelling any air, a pressure test shall be conducted. The test pressure shall be 125 psi. For the next period of time, which is called expansion test time, pipeline shall be left alone with no water added during this time. Expansion time shall continue not less than 2 hours. This will allow for the pipeline to expand under first pressurization. After expansion time, the pressure in the pipeline should be again raised to the test pressure by adding water for the leakage test. This pressure test shall continue for at least 3 hours with no leakage allowable. Adequate measuring devices, including a 4 inch face pressure gauge in increments of 1 psi, shall be utilized by the Contractor.

- E. All visible leaks shall be immediately repaired and the line retested. Any section of the line in which the leakage occurs shall be repaired by the Contractor at his expense to the complete satisfaction of the Engineer, whether or not the trench has been refilled. Any pipe, fitting, valve, etc. which gives evidence under test of being defective, shall be replaced by the Contractor at his own expense. If the line shows an excessive number of leaks in any phase of the test, the Contractor shall re-test the line after initial correction until all leaks have been remedied.

- F. When charging and testing mains which are not close enough to connect directly by pipe or hose lines to existing mains, tank wagons shall be used to haul water and serve as suction wells.

3.07 TRACER WIRE LOOP CONTINUITY TEST

- A. Tracer wire shall be tested once installed to test its continuity. Any gaps in continuity discovered are to be repaired by Contractor

END OF SPECIFICATION

SPECIFICATION 02800-HORIZONTAL DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 DESCRIPTION

- A. The work of this section includes the installation of sewer transmission main pipe by means of Horizontal Directional Drilling (HDD) as shown on the drawings.
- B. Pipe materials, conforming to AWWA C-906-90, to be installed by HDD include the following:
 - 1. IPS, DR-11 2-inch, 3-inch, 4-inch, 6-inch, 8-inch, 12-inch, 16-inch
IPS, DR-9 2-inch, 3-inch, 4-inch, 6-inch, 24-inch
- C. The ground conditions anticipated along the HDD alignment are documented in Appendix B in a report by John D. Hynes & Associates dated August 27, 2015. Extremely high water table should be anticipated during the spring months of February, March, and April.
- D. Excavation and backfill for HDD entry/exit pits. Excavation includes earthwork, topsoil stripping, excavating, obstruction removal, and filling and grading to restore finish contours and elevations to preconstruction conditions.
- E. This specification section includes the HDD construction, installation of the pipe in the HDD construction pathway, securing the ends of the pipe at the end of the HDD installed section to prevent contamination from entering the pipe, disposal of all drill fluids and spoils from the HDD construction, and rough grading of the construction work zones.
- F. RELATED WORK

Documents affecting work of this Section include.

Specification 02100	Clearing and Grubbing
Specification 02220	Excavation for Structures
Specification 02221	Trenching
Specification 02485	Finish Grading and Seeding
Specification 02575	Paving Restoration
Specification 02610	Pressure Sewer Pipe
Specification 02615	High Density Polyethylene Pipe System
Specification 02652	Pressure Sewer Testing

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.02 QUALITY ASSURANCE

- A. The following American Society for Testing and Materials (ASTM) standards form a part of this specification as referenced:
1. ASTM D3350-06: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
 2. ASTM D3261: Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
 3. ASTM F1962: Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings
- B. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary work and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Key Staff as defined in Section 1.03 Paragraph C, shall not be changed or replaced from those identified by the Contractor in the required submittal without written permission by the Engineer.
- D. Coordinate the work of this Section with the work of other related Sections.
- E. Prepare to utilize a mud/slurry drilling method for completion of the HDD to satisfy the requirements of the Work.
- F. Prior to beginning any HDD work, the Contractor shall lay out and stake the ends of the proposed drill path including starting and ending point locations using a Professional Land Surveyor licensed in the State of Maryland. The layout shall be in compliance with the coordinates and other details, including project benchmarks, provided on the Drawings. The Contractor shall identify and submit in writing a request for any variances in the HDD alignment from the Drawings along with a basis for the request for consideration by the Engineer at least two weeks prior to starting the drilling. This request does not include changes in the drill path by the Contractor during construction as new data becomes available. If there is no request for variances then the Contractor shall submit a letter to the Engineer stating that the site layout is acceptable for the Contractor's means and methods prior to starting the work.
- G. Tracking system may consist of walkover system if maximum bore depth is less than 35-ft. If maximum bore depth is greater than 35-ft, Contractor shall use a wireline or equivalent tracking system.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

1.03 SUBMITTALS

- A. Company Qualifications – due within 10 business days after date of the Notice of Award.
1. Engineer and Owner reserve the right to disqualify the directional driller not satisfying the intent of these requirements.
 2. Company qualifications shall include the following information:
 - a. Company Profile: The general company profile shall demonstrate that the company has a minimum of five years of continuous experience in horizontal directional drilling; owns the equipment necessary to perform the work as specified in the Contract Documents.
 - b. A summary of the company's present size in terms of gross annual revenue and bonding and insurance capacity available for this project;
 - c. The number of projects completed per year for the last five years;
 - d. Number of years in operation;
 - e. Number of full-time employees, including number of complete drill crews and engineering staff;
 - f. List of drill rigs owned or leased by Company, of which a minimum of one drill rig shall have a minimum push/pull capacity of 100,000 pounds and be capable of supporting a wireline tracking system. Also provide a list of drill fluid recycling equipment, of which a minimum of one recycling system must have sufficient capacity to match the largest drill rig in the Company's fleet.
 - g. A list of similarly sized HDD projects (sewer or water), two (2) of which shall be a single pull of at least 1,800 feet in length, and utilizing similar tracking system, that have been completed within the past five years including project name, contract amount, length, pipe diameter, and soil conditions for the drill.
 - h. List of three project references with project descriptions, value of contract, and current name and phone number for a reference.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- B. Work Plan – due within 10 business days after date of Notice to Proceed.
1. Engineer and Owner reserve the right to disqualify directional driller company and/or personnel that do not satisfy the intent of these requirements.
 2. Task Schedule outlining key procedural steps and schedule to be used in performance of the Work.
 3. Procedures describing in detail the proposed equipment and key procedural steps, including, but not limited to:
 - a. HDD entry/exit pit laydown area configuration including size, capacity, arrangement of equipment, storage of fuel, pipe, expendables, drill fluid containment locations and details, assembled pipe storage, and location and size of entry and exit pits;
 - b. Conductor casing installation method, if applicable;
 - c. Dewatering method if needed, or a statement regarding method of water control;
 - d. Tracer Wire: Method of securing the tracer detection wire to HDPE pipe for installation with the pipe and end termination detail;
 - e. HDPE pipe assembly: Method of butt fusing pipe segments, type of equipment to be used for butt fusing, surface handling of the pipe to prevent damage during assembly and installation such as rollers and installation 'overbend' requirements, and training/experience certificates for field personnel who will be involved in pipe butt fusing operations;
 - f. All HDD pipelines shall be butt fused to any open cut HDPE sections on either end of the installation. Allow pipeline 48 hours to 'relax' prior to connection.
 - g. Initial Drill Fluid Design Mix and Components: bentonite clay and all anticipated additives, including product information, material specifications, handling procedures, Material Safety Data Sheet (MSDS), and special precautions.
- C. Key Staff: Provide resumes of key staff that will be assigned to the project.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Engineer must approve any variance from this requirement and reserves the right to delay commencement of the HDD operation until adequate supervisory staff is on site. Key staff shall demonstrate on their resumes that they meet the following qualifications:

1. Driller: Minimum five years of experience as a horizontal directional driller and have completed at least two projects of similar length and conditions. Must have worked for or with the bidding company for at least one year prior to this project.
 2. Superintendent: Minimum three years of experience with the bidding company as a superintendent and 15 years of HDD experience overall (not necessarily with the bidding company) and have a minimum of two similar projects experience as superintendent.
 3. Tracking specialist: Minimum three years of experience with tracking system to be employed.
 4. Drill Fluid Specialist: Minimum three years of experience and certified by a third party drill fluid training program. The Drill Fluid Specialist shall have the authority to design, change, or approve drill fluid chemistry for the Contractor activities for the project. In environmentally sensitive areas, it is recommended that the Drill Fluid Specialist be from a third party organization specialized in drill fluid management using the products planned for use by the Contractor. The Drill Fluid Specialist shall be on-site during all drilling operations involving drill fluids.
- D. Instrumentation System for drill and drill fluid monitoring. Include the manufacturer of the System and the designated person responsible for installing and maintaining the System that will be on-site full time during drilling operations. The Instrumentation System shall include, as a minimum, instruments for monitoring the following:
1. Drill rig thrust and torque calibrated for the specific drill, pump pressure and volume for drill fluids; and
 2. Drill head and carriage position in the hole.
- E. Contractor's estimate of pull forces for each proposed pipe installation. Where calculations warrant, fill the pipeline with clean ballast water during pullback.
- F. Tracking System Submittal including data on the proposed guidance system, and the accuracy of the guidance system at the design drill depths shown on the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Drawings. The system shall be capable of providing horizontal and vertical steering data along the entire drill path for each crossing, for the depths shown on the Drawings, plus an additional 10 feet.

- G. Fuel and Hydraulic Fluid Containment and Contingency Spill Plan. Include means and methods for managing, containing, and cleanup of fuel and oil spills should they occur at the site. Contractor shall dispose of all fuel, oil, or other leakage from equipment including diapers, absorbent material, and other related cleanup and spill control materials. At a minimum a fuel and oil spill kit shall be located at each end of the drill paths for the duration of directional drilling and pipe installation.
- H. Drill Fluid Management and Contingency Release Plan describing means and methods for containment, collecting, and disposal of drill fluid during the project; equipment and materials included in a site specific Drill Fluid Spill Kit; and procedures to be followed to minimize environmental damage due to frac-outs. A Drill Fluid Spill Kit shall be located at each end of the drill path during all drilling operations and shall include as a minimum: operational pumps and power supplies adequate for operating the pumps at any location on the site or along the drill paths, silt fence and straw/hay bales for containment, and shovels, brooms, and rakes for cleanup. The Plan shall fully describe procedures to be used to remove inadvertent drill fluid releases and procedure for shutdown of drilling operations once a release has been detected at the surface; procedures for restarting the drilling operations once the release has been contained; and both mitigation measures and future release containment at the release location that have been established.
- I. At least two weeks prior to starting HDD drilling, in accordance with Section 1.02.F, submit in writing a request for any variances in the HDD alignment from the Drawings along with a basis for the request for consideration by the Engineer. If there is no request for variances then the Contractor shall submit a letter to the Engineer stating that the site layout is acceptable for the Contractor's means and methods.
- J. Provide stakeout at 50-foot intervals and associated cut sheets prior to work being initiated.
- K. Cuttings, Bentonite Slurry, and Pit Spoil Disposal Submittal: Provide within 30 days of completion of the drilling a list of volumes of all cuttings, bentonite slurry, and entry/exit pit spoils disposed of off-site and the location of the disposal area.
- L. Daily Reports: By the close of business following each work day, Contractor shall submit a daily report. As a minimum, the report shall contain the following

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

information:

1. Drill fluid daily required data.
 2. Daily activities, including summary of progress for the drilling operations.
 3. Status of drilling operations with respect to key items in the project schedule and mitigation measures if behind schedule.
 4. Issues that occurred during the work day and the corrective steps taken to resolve them, or the action items required to resolve them.
 5. List of equipment and personnel at the site.
 6. Weather conditions.
 7. Any visitors, by name and agency, other than agents of Engineer or Owner.
- M. The tracking data acquired that day during the pilot hole drilling and an indication of compliance with project tolerances, curve geometry, and dogleg assessment as based on a three joint average calculation.
- N. Record HDD Drawing – due two weeks after installation of the HDPE pipe.
1. The Contractor shall submit the following information to the Engineer comprising the Record Drawing:
 - a. Record plan and profile information for the drill path based on electronic guidance system data obtained during pilot hole drilling. At a minimum, a survey data point shall be obtained at 100-foot intervals for the record drill path for each drill rod. Alternatively, the driller may survey the inside of the pipe following installation for record location and elevation.
 - b. Information provided must be definitive enough to produce accurate as-builts providing horizontal and vertical location of the pipe.

1.04 SPECIAL REQUIREMENTS

- A. Permit applications have been submitted to Federal and State agencies for this work. Copies of these permits and the permit conditions are contained in the Contract Documents, or will be provided upon the Owner's receipt, and should be reviewed prior to bidding and/or performance of the work. The Contractor shall be

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

responsible for full compliance with various permit conditions. Failure to comply with permit conditions will result in the Owner ceasing drilling operations until compliance is established and confirmed. Compliance with permit conditions shall be established and verified at no additional cost to the Owner.

- B. Locations of utilities have been approximated based on best available data. The Contractor shall contact Miss Utility well in advance of the work and adjust HDD entry pits or pipe installation depths as warranted.. The Contractor shall expose utilities with potential for conflict prior to construction to ensure and confirm that these utilities are not damaged during construction. If utilities are damaged, the cost to repair the damage is the Contractor's responsibility.
- C. The HDD alignment shall be oriented as shown on the Drawings.
 - 1. Pipe pullback direction shall be at the discretion of the Contractor.
 - 2. Minimum depth of the HDD alignment shall be as shown on the Drawings.
 - 3. Installation tolerance shall be a 5 foot radius circle around the design drill path centerline, as shown on the Drawings. Maintain all construction activity and equipment activity within the available rights of way.
 - 4. The exit point tolerance shall be right/left 3 feet and short/long 10 feet.
 - 5. The 3-joint average shall not be less than 90% of the design bend radius of the design drill path.
- D. Test pit and soil boring logs are included as an Appendix within the Contract Documents but are not to be considered part of the Contract Documents. Contractor may use this information at their own risk. The logs and data represent minimum information; if additional information or investigations are required by the Contractor for a reasonable purpose, it shall be the Contractor's responsibility to request and provide such services.
- E. A tracking system shall be provided by the drilling contractor and shall be capable of tracking the drill progress within the specified tolerances continually across the drill path. A walkover system will be permitted if the maximum depth of the HDD alignment is less than 35-ft; otherwise wireline methods shall be required. The tracking system shall be capable of providing horizontal and vertical steering data along the entire drill path, for the depths shown on the Drawings, plus an additional 10 feet.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- F. Contractor shall provide two 2-way radios to allow communication between crews. Radios shall be complete with built-in antennas, squelch and volume controls, and rechargeable battery packs. The Contractor shall not commence work until there is a working radio at each entry and exit location of an active drilling operation.
- G. Contractor shall be responsible for containing and collecting all drilling fluid released inadvertently, due to frac-out or other means and other remediation tasks which may be required by the Engineer or permit agencies. Such work shall be at no additional cost to the Owner.
- H. Contractor shall implement the Drill Fluid Management and Contingency Release Plan.
- I. Contractor shall implement the Fuel and Hydraulic Fluid Containment and Contingency Spill Plan.
- J. Contractor shall stop all drilling operations and shall notify Engineer at the earliest opportunity and no longer than 1 hour after first observation of a drill fluid release at the ground surface or into a wetland or waterway (outside of the designated entry/exit pit laydown areas).
- K. Contractor shall contact "Miss Utility" **1-800-257-7777** a minimum of 72 hours prior to any excavation or drilling.

PART 2 MATERIALS

2.01 GENERAL

- A. HDPE Pipe
 - 1. Refer to Specification Section 02615, High Density Polyethylene (HDPE) Pipe System for pipe material and handling, and Specification Section 02652, Pressure Sewer Testing, for testing requirements.
- B. HDD Rig
 - 1. The Contractor is responsible for the final determination of the drill rig size.
 - 2. Shall have sufficient capacity to complete the proposed drilling operations, and pipe pullback.
 - 3. Shall have a system to monitor and record maximum pullback pressures during the pullback operation.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

4. Shall have a drill head that is steerable and shall provide the necessary cutting surfaces and drilling fluid jets suitable for the conditions indicated in the contract documents.
5. Shall have an anchorage system to anchor drilling machine to the ground to resist thrust and pull forces during operation.

C. Drilling Fluids (Mud/Slurry) System

1. Drill fluid shall be designed for this specific project conditions by the Drill Fluid Specialist. All components of the drill fluid shall be NSF 61 certified. Typical acceptable drill fluids consist of bentonite clay (compatible with the environment) and clean water. It shall be the responsibility of the Contractor to select appropriate drill fluid cleaning equipment for the drill production rate and for the anticipated site soil and groundwater conditions. Note that brackish water may be present. The Drill Fluid Specialist is responsible for assessing project water supply and project conditions and for the design and implementation of drill fluid and water treatments for project specific conditions. The Drill Fluid Specialist and Contractor shall be responsible for providing a drill fluid circulation and recycling system that is compatible with the drill production rate.
2. Waste oil, diesel fuel, or environmentally non-compatible polymers shall not be part of the drilling mud/slurry composition.
3. Engineer shall approve all additives.
4. Shall contain additives as necessary to permit use in brackish and saltwater environments.
5. The Drill Fluid Specialist shall monitor and record the following data a minimum of 2 times per day, or after a noticeable change in formation or drill fluid return properties. These data shall be obtained for both drill fluid traveling downhole and the return drill fluid:
 - a. Drilling fluid parameters (density, viscosity and sand content) shall be measured and recorded. This information shall be communicated to the Engineer's field personnel, and attached to the daily drilling report provided by the Contractor to the Engineer. Drill fluid properties shall be determined by the Drill Fluid Specialist for this project. The following provides required measurements and provides the properties assumed for the design of the drill path depth. Fluid density shall be measured using a

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

balance beam scale made for fluid density measurements. All components of the scale shall be cleaned and calibrated at the beginning of each shift and cleaned before and after each measurement is taken. If any damage is suspected to any part of the scale, the scale must be repaired and calibrated according to the manufacturer's specifications. Damaged components must be replaced immediately. The drill fluid density will be determined by the Drill Fluid Specialist. Drill fluid initial density should be 74 lb/ft³ maximum with an allowable increase to 78 lb/ft³ throughout the drill.

- b. Viscosity shall be measured and recorded with a Marsh funnel. The viscosity will be determined by the Drill Fluid Specialist. Typical viscosity should be maintained between 50 and 80 centipoises (cP) throughout the drill though encountered subsurface conditions may require changes.
 - c. Sand content shall be measured and recorded with a sand content measurement kit. Sand content should be kept below 1% to avoid excessive increases in fluid density as well as wear and damage to equipment.
6. Drill fluid system shall have filters in-line to prevent solids from being pumped into the drill pipe.
 7. Drill fluid system shall have connections between the pump and drill pipe that are relatively leak-free.
 8. Any spilled drilling fluid shall be fully contained in a 12-inch (minimum) height berm erected and maintained around the HDD machine, along connections between the mud cleaning system, and around the mud cleaning system, and properly disposed of.

D. Mixing System

1. A self-contained, closed drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid composed of bentonite clay, water, and approved additives.
2. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure adequate mixing.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

3. Drilling fluid reservoir tank shall be of adequate size for the work.
 4. Mixing system shall continually agitate the drilling fluid during drilling operations.
- E. Mud/Slurry Motors
1. Shall be of adequate power to operate the required drilling devices, if used.
- F. Pipe Rollers
1. Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being butt-fused, and/or during pullback operations.
- G. Tracer Wire
1. A detection wire shall be pulled along with the pipeline.
 2. The detection wire shall be Protrace HDD-CCS PE45 – 8 AWG - as manufactured by Pro-Line Safety Products Company, or approved equal. Wire outer jacket to be green (if available).
 3. The detection wire shall be segmented to terminate at each end of pipe entering a cleanout, division valve, or air-release valve assembly. Five feet of wire shall be coiled at each of these assemblies (unless immediately adjacent to each other).

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor is fully responsible for implementing a safe and effective drilling plan.
- B. The Contractor shall take precautions to protect the pipe while being handled. Chains, end hooks, or cable slings shall not be used to handle the pipe. Care shall be taken to protect the pipe from scarring, gouging, or excessive vibration.
- C. The directional drilling procedure shall include provisions to guard against electrocution such as grounded mats, ground cables, hot boots and gloves. In addition, the drilling equipment shall include an alarm system capable of detecting electrical current as it nears electric lines. Electrical utilities which are shown on the drawings are from the best available data and are for the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Contractor's informational purposes only. Their exact location is not guaranteed nor is it guaranteed that all are shown.

- D. Provide notification to the Engineer a minimum of 72 hours before mobilizing onto the site. Provide notification 48 hours in advance of casing installation and drilling. Contact Miss Utility and obtain locate tickets three working days in advance of work.
- E. Provide all traffic barriers and traffic control and maintenance of traffic measures in accordance with Drawings and permits.
- F. Construct the perimeter bentonite slurry, cuttings, and pit spoil control system, and storm water control barrier in accordance with Best Management Practices in the local area. The system shall provide positive containment for all drilling fluids and drainage from drill cuttings and prevent any of the drill fluid or drainage fluids or other drill fluid contaminated material or fluid from entering the adjacent wetlands or water body, either by topping or breaching including under storm conditions.
- G. Establish a secure and contained construction work area at the drill rig. Excavate and verify all utilities identified or marked out in the field that are within 50 feet of the work. Expose all adjacent utilities as shown on the drawings until after completion of the pilot drill or until the protective steel casing has been installed past the utility location. Use an air-vacuum system or approved equivalent method to expose the utilities.
- H. Maintain the work site in a clean and safe manner.
- G. Excavation, backfill, and compaction of access and test pits shall be in accordance with Specification 02220 Excavation for Structures. When water is encountered, provide and maintain a dewatering system of sufficient capacity to remove water. Keep all excavations and access pits free of water until backfill operation is in progress. Perform dewatering in such a manner that removal of soil particles is held to a minimum. Dewater into a sediment trap as directed by Engineer. Any permits required for the dewatering operation are the responsibility of the Contractor.
- H. Spill and drill fluid management shall be in accordance with requirements stated in the project permits, and in the approved Drill Fluid Management and Contingency Release Plan, which shall include the following measures:
 - 1. Controls in place to stop drilling activity, assess the drill path for observable releases, and control any observable release in a timely

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

manner. Notify the Engineer of circulation losses greater than 25% of downhole pump volumes and for all observable drill fluid releases at the earliest opportunity, confirm in writing by the end of the work shift, and include in the Daily Report.

2. Be prepared to contain a potential observable blowout or drill fluid release. On observing a drill fluid release, stop all drilling operations, contain the release, and clean up the release. Cleanup, disposal, and environmental restoration that may be required as a result of an observable release is the responsibility and at the expense of the Contractor. Cleanup must be to 'before release' conditions.
3. Equipment and personnel to monitor for drill fluid release.
 - I. Directionally drilled pipe shall be installed to depths as required to permit the pipe to be installed at least at the minimum elevations and at the approximate locations shown on the Drawings. Directionally drilled pipe shall be installed in one continuous pipe segment as shown on the Drawings.
 - J. The Contractor shall use electronic survey instrumentation to monitor and adjust the drill head. The survey system shall measure the horizontal and vertical location of the drill head throughout the bore and provide sufficient readings to allow for slope adjustment. If magnetic interference affects the bearing sensors of the steering tool, the Contractor shall use appropriate methods to maintain the required slope and alignment within project tolerances.
 - K. A pilot hole shall be drilled along the path, as shown on the Drawings. Do not exceed the allowable bending radius of HDPE pipe or drill rods.
 - L. A Draft Record HDD Drawing of the finished pilot hole shall be furnished by the Contractor for approval by Engineer prior to pull-back of the pipe to be installed. Provide Engineer with tabulations of horizontal and vertical alignment.
 - M. Notify the Engineer immediately when forward motion of operation is stopped by an obstruction. Attempt a second installation using mud/slurry drilling methods only if approved by the Engineer.
 - N. The pilot hole shall be reamed to a diameter to be determined by the Contractor that is sufficiently sized in order to reduce forces applied to the HDPE pipe during pullback.
 - O. A swivel shall be installed between the reamer and the HDPE pipe connection to minimize torsional stress imposed on the pipe and allow the reamer to turn

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

without rotating the pipe.

- P. When calculations warrant, fill the HDPE pipe with water during the pulling installation process, and pull the pipe to the end of the drill. The water fill level should not exceed the ground elevation at the point that the pipe enters the ground. The pipe on the rollers or ground shall remain free of ballast water.
- Q. Measure and record the force required to pull the pipe into the hole during the installation. Record the drill string length (number of rods), and pulling assembly and drill rod size. Record the average and maximum force for each drill rod pulled from the drill rig pressure gages and provide calibration factors to convert pressure to force for each gear. Prior to pulling the HDPE pipe, pull the drill string with lead reamer and swivel and measure the amount of force required by the drill rig to move the assembly, and provide a measurement of the amount of force required to move the drill carriage using the same gears as used for the pulling operation. Provide this information in the Daily Report.
- R. All pipe pulled through the pilot hole shall have continuous tracer wires securely affixed to the pipe.
- S. Because of the elastic properties of the pipe, main line and service connection pipe shall be relaxed for at least 48 hours in order to return to its original pre-pull length prior to making any connections. The pipe shall be installed past the exit tie-in point, a minimum of 10 feet, to accommodate thermal contraction as well as viscoelastic stretch recovery in the pipe.
- T. The leading edge of the pipe shall be examined for significant external damage after pull back. If the pipe is deemed by the Engineer to have suffered significant damage, the damaged pipe shall be cut off and additional pipe pulled through the hole prior to the relaxation period.
- U. The Contractor shall be responsible for the containment and disposal of all drilling fluids or bentonite mud/slurry. The Contractor shall stockpile hay bales at the drilling site to contain an inadvertent bentonite mud/slurry return. Any hay bales used for containment of mud/slurry shall be removed from the site and properly disposed of at the completion of the work.
- V. The pullback shall be conducted in one continuous operation to limit the potential for binding of the pipe in the hole.
- W. Sections of the HDPE pipe shall be connected by heat fusion of the pipe butt ends in accordance with the manufacturer's requirements.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- X. Verify that the installed pipe is acceptable by successfully passing a pig with minimum outside diameter of ½ inch less than the inside diameter of the pipe through the HDPE pipe.
- Y. The Contractor shall provide all appurtenances and make pipe connections as required to ensure a complete working system.
- Z. Complete surface connections as indicated.
- G. The HDD entry/exit pit size shall be kept to a minimum. Any land disturbance shall be contained within the Limits-of-Disturbance (LOD) as shown in the contract drawings.
- H. Settlement or displacement of existing grade and/or adjacent facilities shall be monitored closely. Notify Engineer immediately if settlement or displacement is detected. The Contractor shall make provisions to maintain safe conditions and prevent damage.
- I. Should the Contractor abandon a hole for his/her convenience before the hole is completed, then the Contractor shall seal the drill hole with a bentonitic environmental grout or cementitious grout and re-drill at no additional cost.
- J. In the case that an obstruction is encountered during drilling or reaming, the bid unit price shall include at least three (3) re-directs per drill path. A “redirect” shall be defined as an occurrence wherein the drill tools encounter an obstruction which halts drill progress and the driller has attempted in good faith for a minimum of 1 hour to clear the obstruction, thus requiring the pullback of the drill rods, and redirection of the drill hole alignment around the obstruction.

END OF SPECIFICATION

SPECIFICATIONS

DIVISION 3 - CONCRETE

03310 Concrete (Utility)

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 03310 - CONCRETE (UTILITY)

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work of this Specification includes, but is not limited to:

Cast-in-place Cement Concrete Construction
Reaction and Support Blocking
Cradles and Encasement

B. Related Work Specified Elsewhere:

Specification 02221 - Trenching, Backfilling & Compacting
Specification 02575 - Paving Repair and Resurfacing
Specification 02610 - Sanitary Sewer Pipe
Specification 02715 - Water Mains
Specification 02740 - Valves and Fire Hydrants

C. Applicable Standard Details

Concrete Cradle and Encasement Details
Concrete Collar for Valves
Thrust Blocking for Vertical Bends
Thrust Block for Bends, Tees, Caps

1.02 QUALITY ASSURANCE

A. Reference Standards:

Maryland Department of Transportation, State Highway Administration (SHA)
Standard Specification for Construction & Materials, 1982 as Amended
American Society for Testing and Materials (ASTM):

C31 Making and Curing Concrete Test Specimens in the Field
C39 Test for Compressive Strength of Cylindrical Concrete Specimens
C42 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

C172 Sampling Fresh Concrete

1.03 SUBMITTALS

A. Certificates:

1. Submit a Statement of Compliance from the concrete producer, together with supporting data, attesting that the cement concrete conforms to the State Specifications for the class of concrete being used.
2. Submit certified results of compressive strength tests performed by an independent testing laboratory.

B. Shop Drawings:

1. Submit detailed shop drawings of reinforcing steel.

PART 2 - PRODUCTS

2.01 CEMENT CONCRETE

A. Ready - mixed, conforming to Section 918, State Highway Administration Specifications.

1. Requirements for State approved batch plants, design computations and plant inspection shall not apply. The acceptability of concrete will be based on conformance with the Cement Concrete Criteria specified below and the results of the specified tests.

B. Cement Concrete Criteria:

1. Mix No. 2 :

28 - day compressive strength: 3000 psi
Slump: 2 to 5 inches

2. Mix No. 6 (High Early Strength) :

28 - day compressive strength: 4500 psi

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

Slump: 2 to 5 inches

3. Minimum cement content and maximum water - cement ratio conforming to Table 918.06, State Highway Administration Specifications.

2.02 REINFORCEMENT STEEL

A. Reinforcement Bars:

1. Conforming to Section 911.01, State Highway Administration Specifications. Deformed, Grade 40.

B. Steel Wire Fabric:

1. Conforming to Section 911.06, State Highway Administration Specifications.

PART 3 - EXECUTION

3.01 GENERAL

- A. Comply with Section 608, State Highway Administration Specifications for construction requirements including formwork, curing, protection and finishing of cement concrete.
- B. Excavate and shape trench bottoms and sides to accommodate thrust block forms, encasement, manhole bases, inlets and vaults.
- C. Support pipe, valves and fittings at the required elevation with brick or concrete block. Do not use earth, rock, wood, or organic material as supports.

3.02 CONSTRUCTION

- A. Construct cast-in-place vaults, inlets, endwalls, curbs, sidewalks and miscellaneous reinforced structures of Mix No. 2 concrete. Mix no. 2 concrete shall be central-plant mixed.
- B. Construct manhole bases, reaction and support blocking, cradles encasements and miscellaneous mass concrete of Mix No. 2 concrete. Mix No. 2 concrete may be from a mobile cement concrete plant or truck - mixed.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- C. Construct reinforced and plain cement concrete roadway pavements and base courses of High Early Strength concrete. High Early Strength Concrete shall be central - plant - mixed.
- D. Provide spacers, chairs, bolsters, ties and other devices for properly placing, spacing, supporting and fastening reinforcement in place.
- E. Place concrete utilizing all possible care to prevent displacement of pipe or fittings. Return displaced pipe or fittings to line and grade immediately.
- F. Insure tie rods, nuts, bolts and flanges are free and clear of concrete.
- G. Do not backfill structures until concrete has achieved its initial set, forms are removed, and concrete work is inspected by the County.
- H. Perform backfilling and compaction as specified in Specification 02221.
- I. Concrete buttresses shall be placed on all main horizontal bends, wyes, or other changes in direction.
- J. Any encasement called for on the Contract Drawings shall be encased by a minimum of six inches of concrete around the perimeter of the pipe.

3.03 FIELD TESTS OF CONCRETE DURING CONSTRUCTION

- A. Perform compressive strength tests, slump tests, and air content tests for each 50 cubic yards of each class of concrete placed, or fraction thereof.
 - 1. Keep a slump cone and an air meter in close proximity to all concrete placements.
 - 2. Sample concrete in accordance with ASTM C172.
 - 3. Determine air content in accordance with ASTM C231 or ASTM C173 as applicable.
- B. Cast at least 5 cylindrical test specimens for each batch. Test two cylinders at 7 days; test two cylinders at 28 days. Hold the remaining cylinder in reserve for testing in the event that any of the other cylinders are damaged prior to testing.
 - 1. Prepare and cure test cylinders in accordance with ASTM C31. Determine

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

concrete compressive strength in accordance with ASTM C39. Compute and evaluate in accordance with ASTM C94.

- C. If test cylinders fail to meet compressive strength requirements, the County may require additional core tests in accordance with ASTM C42.
- D. All field and laboratory testing referenced shall be performed by an independent concrete testing laboratory engaged by the County. The Contractor shall assist the County, or the County's agent, when appropriate. If the results of any test indicates a non-compliance with the requirements of the specifications, the Contractor shall correct the condition. The Contractor shall be responsible to show compliance with the requirements of the specifications and contract drawings.

END OF SPECIFICATION

SPECIFICATIONS

DIVISION 4 - DIVISION 16

11300	Miscellaneous Pumps
13300	Flow Meter

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 11300 – MISCELLANEOUS PUMPS

PART 1 - GENERAL

1.01 DESCRIPTION

Contractor shall furnish all labor, materials, equipment and incidentals required to provide the complete pumping system as specified herein and as shown on the Drawings.

A. The work of this Specification includes, but is not limited to:

Meter Vault Sump Pump

B. Related Work Specified Elsewhere:

Specification 13300 - Metering

1.02 QUALITY ASSURANCE

A. Shop Test – Pump shall be shop tested. The test shall conform to the latest standards of the Hydraulic Institute. Pump test shall be performed with the specified motor. Pump to be tested in the same orientation as they will be installed. The test shall determine efficiency, head, capacity, horsepower and motor temperature at the operating point. The results shall be plotted in the form of a performance curve.

B. Field Test – Pump shall be field tested at shut off head and the design point to determine the amps drawn for each phase, flow rate, and discharge head. Contractor to provide all equipment to conduct test.

C. Documentation – Shop testing documentation to be include in O&M manual.

1.03 SUBMITTALS

A. Shop Drawings:

1. Contractor to submit detailed shop drawings for approval. Shop drawing to include:
 - a. Dimensions

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- b. Complete installation drawings showing location within the vault, sizing of pump anchor bolts (9 stainless steel) and pump and pipe support detail,
- c. Anticipated performance curves showing the relationship between TDH and capacity.
- d. Piping and electrical schematics showing all connections required to external equipment.
- e. O&M manuals.

PART 2 - PRODUCTS

2.01 MAG METER VAULT SUMP PUMP

- A. Pump: One Hydromatic Model SPD50, or approved equal, submersible sump pump to match design point of 30 gpm @ 14 TDH, 1/3 hp, 1550 RPM, 155v, single phase, 60 Hz. Motor shall be with built in overload, automatic reset, and engage via piggyback wide angle float switch to allow the pump to be operated manually without removing from the sump. Motor to be sized to be non-overloading throughout the full range of the pump curve without use of the service factor. Impeller shall be cast iron, non-clog type, two vane, high head design and connected to 416 SS motor shaft. Pump body and motor housing to be cast iron. Pump discharge to be 1-1/2 inch NPT. Pump shall feature mechanical seal with carbon/ceramic components.
- B. Automatic Control: Pump shall be supplied with a power cord and float cords directly connected to a 115v VAC outlet and run automatically when the float switch is engaged or manually via direct connection of the pump plug to the outlet.
- C. Provide a high level alarm at pump plug outlet. Alarm shall be a red lamp with globe.

PART 3 - EXECUTION

- A. Installation - Power: Install pump and float in the bottom of the meter vault as shown on the drawings. Install conduit with wire from the meter vault to the switch gear building in accordance with code. Plug pump power into available outlet within the switch gear building. Provide red plastic label on switchgear wall identifying power cord as 'Meter Vault Sump Pump – Do Not Unplug'.
- B. Installation – Discharge – Install a bronze check valve between the pump and the

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

discharge pipe. Run the 1-1/2 inch schedule 40 PVC solvent weld discharge piping through the vault wall to the exterior of the vault and to the adjacent fence. Bring discharge pipe to 1-foot above grade at the fence and terminate with a 90-degree elbow. Secure discharge to fence support posts with plastic cable ties. Run discharge pipe with 2% grade from vault to fence. Drill 1/4-inch 'weep' hole in discharge pipe within vault (directed to the bottom of the vault).

- C. Field Test – After installation subject the pump assembly to field tests under actual conditions.

END OF SPECIFICATION

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

SPECIFICATION 13300 – FLOW METER

PART 1 - GENERAL

1.01 DESCRIPTION

Contractor shall furnish all labor, materials, equipment and incidentals required to provide the complete flow metering system as specified herein and as shown on the Drawings.

1.02 QUALITY ASSURANCE

- A. Submit certificates of compliance that the equipment satisfies the requirements stipulated herein.
- B. Submit Manufacturer's Certification that the equipment has been installed properly and observed to function properly when in operation. Note Owner will need to integrate the meter's data output into the existing wastewater treatment plant's SCADA system (using the Owner's contractor at the Owner's expense). Certification will need to be performed after integration and may need to be delayed until flows through the pipe are routine.

1.03 SUBMITTALS

- A. Shop Drawings:
 - a. Detailed materials listing and dimensional drawings.
 - b. Data sheets and catalog literature for the meter and the microprocessor based converter/transmitter.
 - c. Connection diagrams for equipment wiring.
 - d. List of spare parts and optional equipment.
 - e. O&M manuals.

PART 2 - PRODUCTS

2.01 MAGNETIC FLOW METER

- A. Sensor:

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- a. Operating principle: Utilizing Faraday's law, the sensor converts the liquid flow through the sensor into electrical voltage proportional to the velocity of the flow.
 - b. Construction: The sensor flow tube shall be built of 304 stainless steel pipe, 2 coils mounted on the outside of the flow tube, and Hastelloy electrodes, hand rubber elastomer isolating liner and carbon steel connecting flanges.
 - c. Installation: A minimum of 5 pipe diameters upstream and 3 pipe diameters downstream, or as shown on the drawings.
 - d. Operating Temp: 23 to 150 degree F.
 - e. Size: 12-inch
 - f. Submergence: The meter shall have the capability to be permanently submerged to 30-feet indefinitely. Submergence kit to be factory installed.
- B. Converter Transmitter:
- a. Enclosure: NEMA 4X
 - b. Display: Background illuminated alphanumeric 3 line, 20 character display to indicate flow rate, totalized values, settings, and faults and 6 key keypad.
 - c. Power Supply: 115.230 VAC.
 - d. Operating temp: -5 to 120 degrees F
 - e. Output: 4-20mA into 800 ohms max. One relay rated at 42VAC/2A. One digital output. The mag meter shall produce a dry contact closure proportional to the flow rate.
- C. Sensor and converter/transmitter performance:
- a. Flow Range <1.0 fps to 33 fps for accuracies stated below.
 - b. Accuracy: 0.50% of actual.
 - c. Separation: Maximum distance of 900 feet between convertor and sensor without the use of any additional equipment. Provide doubled shielded cables.
 - d. Bi-directional flow capabilities shall be standard.
- D. Totalizer: Two eight digit counters for forward, net, and reverse flow.
- E. Manufacturer: The electromagnetic flow meter shall be a Siemens Model 5100W with a Siemens Model MAGFLO 5000 converter, or approved equal. Flow meter shall be protected by a factory installed submergence kit. Insertion type flow meters will not be accepted.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- F. Calibration: Flow Sensor shall be wet calibrated and all the calibration information and factory setting matching the sensor shall be stored in an integral mounted memory unit. The memory unit shall store sensor calibration data and signal converter settings for the lifetime of the product. At initial commissioning, the flow meter commences measurement without any initial programming. Any customer specified settings shall be downloaded to the memory unit. Should the signal convertor need to be replaced, the new convertor will upload all previous settings and resume measurement without any need for reprogramming or rewiring. A certificate of calibration will be required.
- G. Converter/Transmitter Function Details: The following functions shall be provided:
- a. All programming shall be accomplished through an integral keypad and all programming shall be protected by a user-defined password.
 - b. The relay shall be programmable as error indicator, limit alarm, or pulsed output.
 - c. The convertor system shall be equipped with an error and status log with 4 groups of information:
 1. Information without a functional error involved.
 2. Warnings which may cause malfunction in the application.
 3. Permanent errors which may cause malfunction in the application.
 4. Fatal error, which is essential for the operation of the flow meter.
 - d. A system error shall be indicated by a flashing icon on the display or activation of the relay when set as an error alarm.
 - e. The first nine standing errors shall be stored in the error pending log. A corrected error is removed from the error pending log. A status log shall be provided to store the last 9 error messages received for 180 days regardless of correction.
 - f. Flow meters shall have a built in zero return function with a low flow cut-off (operator settable), normally set at 1.5% of maximum setting.
- H. Verification Procedure: Verification using a stand-alone verifier to measure a number of selected parameters in the flow sensor and signal convertor, which affects the integrity of the flow measurement, shall be available through a factory verification service.

QUEEN ANNE'S COUNTY, MD
SOUTHERN KENT ISLAND SANITARY PROJECT
TRANSMISSION SEWER MAIN INSTALLATION

- I. Verification Parameters: Verification of the flow meter shall consist of the following test routines:
 - a. Insulation test of the entire flow meter system and cables.
 - b. Test of sensor magnetic properties.
 - c. Signal converter gain, linearity and zero test points.
 - d. Digital output test.
 - e. Analog output test.

- J. Verification Certificate: Verification of the flow meter shall be issued in the flow meter passes all of the tests within 2% of the original factory test parameters.

PART 3 - EXECUTION

- A. Follow the requirements for the minimum upstream and downstream installation for the flow sensor.

- B. Wiring between flow sensors and the remote mounted convertors shall use double shielded electrode cable and procedures as per the manufacturers' recommendations.

- C. Run conduit as shown between the flow meter vault and the Switch Gear Building as shown on the drawings, and into the Switch Gear Building to the location shown on the plans for the display unit. Run additional conduit as necessary within the Switch Gear Building to reach the integration point to connect the meter to the existing wastewater treatment plant's SCADA system. Allow adequate wire to land the wires into the integration point.

- D. Verify the meter is working to the extent possible without having any flow. Return to the site once flows are routinely being reported to re-check the operation of the flow meter at no additional cost to the Owner.

END OF SPECIFICATION