

**BID NO. PUR-1583**  
**INVITATION TO BID**  
**ISSUED ON BEHALF OF**  
**THE BOARD OF COUNTY COMMISSIONERS**  
**OF WASHINGTON COUNTY, MARYLAND**

**BY**  
**THE WASHINGTON COUNTY PURCHASING DEPARTMENT**  
**100 WEST WASHINGTON STREET, SUITE 3200**  
**HAGERSTOWN, MD 21740**  
**PHONE: 240-313-2330**  
**FAX: 240-313-2331**

**DATE ISSUED: October 20, 2022**

**RUBBLE LANDFILL CLOSURE**

**PRE-BID TELE-CONFERENCE/CONFERENCE**

**DATE/TIME AND LOCATION:** **Thursday, October 27, 2022, at 1:00 P.M. (EDT/EST)**  
Washington County Administration Complex  
Conference Room 2001  
Second Floor, 100 West Washington Street  
Hagerstown, MD 21740

**DEADLINE FOR INQUIRIES:** No later than **4:00 P.M. (EST/EDT) Thursday, November 3, 2022**

**SUBMIT BIDS TO:** Washington County Purchasing Department Washington County  
Administration Complex 100 West Washington Street  
Third Floor, Suite 3200  
Hagerstown, MD 21740

**BID SUBMISSION DEADLINE  
AND BID OPENING TIME:** No later than **2:00 P.M. (EDT/EST) Wednesday, November 16, 2022**

**BID OPENING LOCATION:** Washington County Administration Complex  
Conference Room 3000  
Third Floor, 100 West Washington Street  
Hagerstown, MD 21740

If indicated below (✓) and not waived by the County, Bidders shall be required to provide the following:

  (✓)   A Bid Bond, in the amount of five (5%) percent of the bid on a bid of \$100,000 or more for construction contracts and on a bid of \$50,000 or more for contracts for services, supplies, or construction related services. See "Bid Bonds – Section 2" of the General Conditions and Instructions to Bidders.

  (✓)   A Performance Bond for a bid award of \$100,000 or more on construction contracts and on contracts for services, supplies, or construction related services. See "Bid Bonds – Section 2" of the General Conditions and Instructions to Bidders.

  (✓)   A Labor and Material Bond for a bid award of \$100,000 or more on construction contracts and on contracts for services, supplies, or construction related services. See "Bid Bonds – Section 2" of the General Conditions and Instructions to Bidders.

**PUR-1583  
RUBBLE LANDFILL CLOSURE**

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# Washington County

## MARYLAND

### PURCHASING DEPARTMENT DIVISION OF BUDGET & FINANCE

#### PUR-1583 RUBBLE LANDFILL CLOSURE

#### INVITATION TO BID

The Board of County Commissioners of Washington County, Maryland will accept sealed bids for **“RUBBLE LANDFILL CLOSURE”**. Bid documents are available immediately from the Washington County website: <https://www.washco-md.net/purchasing-department/purch-open-invites/>, for assistance you may contact the Washington County Purchasing Department, Washington County Administration Complex, 100 West Washington Street, Third Floor, Suite 3200, Hagerstown, MD 21740. **Direct all inquiries to Brandi Naugle, CPPB, Buyer, at telephone 240-313-2330 or fax 240-313-2331.**

All bids must be enclosed in a sealed opaque envelope marked **“SEALED BID – (PUR-1583) RUBBLE LANDFILL CLOSURE”** along with the companies name and address and be received and time stamped by the Washington County Purchasing Department, Washington County Administration Complex, 100 West Washington Street, Third Floor, Suite 3200, Hagerstown, Maryland, 21740, no later than **2:00 P.M., (EDT/EST), Wednesday, November 16, 2022** after which time they will be publicly opened in the Third Floor, Conference Room 3000. All interested parties are invited to be present. For those bidders who wish to hear a reading of the bids please call prior to the teleconference 240-313-2330 to receive instructions. *Facsimile Bids or any electronic bid submission will not be accepted.*

A Pre-Bid Conference/Teleconference will be held on **Thursday, October 27, 2022, at 1:00 P.M., (EDT/EST)** in the Washington County Administration Complex, Second Floor, Conference Room 2001, 100 West Washington Street, Hagerstown, Maryland. All interested bidders are requested to be present. Attendance is not mandatory but is strongly encouraged. Bidders who wish to participate in the teleconference, please call prior to the teleconference 240-313-2330 for further instructions. Inspections of the project site shall be scheduled by appointment, please contact David Mason, Deputy Director, Department of Solid Waste at 240-313-2792 between the hours of 7:00 A.M. – 4:00 P.M., Monday thru Friday.

**NOTE:** All Bidders must enter the Washington County Administrative Complex through either the front door at the 100 West Washington Street entrance or through the rear entrance (w/blue canopy roof) which is handicap accessible and must use the elevator to access the Purchasing Department to submit their bid and/or to attend the Pre-Bid Conference/Teleconference and/or the Bid Opening. Alternate routes are controlled by a door access system. The general public will be subject to wand search and will be required to remove any unauthorized items from the building prior to entry. Prohibited items include but are not limited to: Weapons of any type; Firearms, ammunition, and explosive devices; Cutting instruments of any type - including knives, scissors, box cutters, work

**tools, knitting needles, or anything with a cutting edge, etc.; Pepper spray, mace, or any other chemical defense sprays; and Illegal substances**

Washington County shall make positive efforts to utilize Disadvantaged Business Enterprises for its supplies and services and shall allow these sources to maximum feasible opportunity to compete for contracts. The Board of County Commissioners does not discriminate on the basis of race, color, national origin, sex, religion, age and disability in employment or the provision of services. Individuals requiring special accommodations are requested to contact the undersigned at 240-313-2330 Voice, TTY Dial 711 to make arrangements no later than five (5) calendar days prior to the Pre-Bid Conference and/or Bid Opening.

The Board of County Commissioners of Washington County, Maryland, reserves the right to accept or reject any or all bids and to waive formalities, informalities, and technicalities therein. The Board reserves the right to contact a Bidder for clarifications and may, at its sole discretion, allow a Bidder to correct any and all formalities, informalities, and technicalities in the best interest of Washington County, Maryland.

By Authority of:



Rick F. Curry, CPPO  
Director of Purchasing

**PUR-1583**  
**RUBBLE LANDFILL CLOSURE**

**INSTRUCTIONS FOR BIDDERS**

1. BIDS will be received by the Board of County Commissioners of Washington County, Maryland (herein called the "OWNER"), at the offices of the Washington County Purchasing Department, Washington County Administration Complex, 100 West Washington Street, Suite 3200, Hagerstown, MD 21740 **no later than 2:00 P. M., (EDT/EST) Wednesday, November 16, 2022**, after which time they will be publicly opened in the Third Floor, Conference Room 3000. All interested parties are invited to be present. For those bidders who wish to hear a reading of the bids please call prior to the teleconference 240-313-2330 to receive instructions. ***Facsimile Bids or any electronic bid submission will not be accepted.***
2. A pre-bid conference/teleconference will be held at the Washington County Administration Complex, located at 100 West Washington Street, Second Floor, Suite 2001, Hagerstown, MD. This conference is to clarify any interpretation of plans, specifications, methods of measurement or payment and other published data so advertised and intended for bidding purposes. Inspections of the project site shall be scheduled by appointment, please contact David Mason, Deputy Director, Department of Solid Waste at 240-313-2792 between the hours of 7:00 A.M. – 4:00 P.M., Monday thru Friday. Attendance at the conference and inspection is voluntary. All proceeding questions will be addressed in an addendum and issued to all prospective bidders. The meeting will be held on **Thursday, October 27, 2022, at 1:00 P.M., (EDT/EST)**. Bidders who wish to participate in the teleconference, please call 240-313-2330 prior to the teleconference for further instructions.
3. Each BID must be submitted in a sealed envelope, addressed to Washington County Purchasing Department at 100 West Washington Street, Suite 3200, Hagerstown, MD 21740. Each sealed envelope containing a BID must be plainly marked on the outside as BID for **(PUR-1583) – “RUBBLE LANDFILL CLOSURE”** and the envelope should bear on the outside the BIDDER'S name, address, and license number if applicable, and the name of the project for which the BID is submitted and be received, and time stamped by the Washington County Purchasing Department. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the Washington County Purchasing Department at 100 West Washington Street, Suite 3200, Hagerstown, MD 21740. ***Facsimile Bids or any electronic bid submission will not be accepted.***
4. All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one (1) copy of the BID form is required.
5. The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within one hundred twenty (120) calendar days after the actual date of the opening thereof. Should there be reasons why the contract cannot be



6. awarded within the specified period; the time may be extended by mutual agreement between the OWNER and the BIDDER.
7. BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID Schedule by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.
8. The OWNER shall provide to BIDDERS prior to BIDDING, all information, which is pertinent to, and delineates and describes, the land owned, and rights-of-way acquired or to be acquired.
9. The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve the contractor from fulfilling any of the conditions of the contract.
10. Should any Bidder find discrepancies in, or omissions from, the documents or be in doubt of their meaning, he/she should immediately request in writing an interpretation from: Brandi Naugle, CPPB, Buyer, Washington County Purchasing Department, Washington County Administration Complex, 100 West Washington Street, Suite 3200, Hagerstown, Maryland 21740; FAX: 240-313-2331; or send questions in Microsoft Word platform via e-mail to: [purchasingquestions@washco-md.net](mailto:purchasingquestions@washco-md.net).

All necessary interpretations will be issued to all Bidders in the form of addenda to this solicitation, and such addenda shall become part of the contract documents. Requests received after **4:00 P.M. (EDT/EST), Thursday, November 3, 2022, may not** be considered. Every interpretation made by the County will be made in the form of an addendum. Any and all such interpretation will be in the form of an addendum to the contract documents and will be sent (via-email) to the prospective Bidders at the email addresses furnished. Failure of any bidder to receive such addendum or interpretation shall not relieve any Bidder from his/her obligation under the bid as submitted. The County shall assume no responsibility for oral instructions or suggestions. ORAL ANSWERS WILL NOT BE BINDING ON THE COUNTY.

11. The bidder's attention is directed to the fact that the multiple requirements of the various funding agencies may be redundant, or in some cases, contradictory. The bidder is directed to satisfy the most stringent requirements in case of conflict. In all cases, federal agency requirements will supersede those of the Owner unless the Owner's requirement is more stringent.
12. Each BID must be accompanied by a BID BOND payable to the OWNER for five (5%) percent of the total amount of the BID plus Contingent Bid Items C-1 and C-2. As soon as the BID prices have been compared, the OWNER will return the BONDS (if requested) of all except the three (3) lowest responsible BIDDERS. When the Agreement is executed the bonds of the two (2) remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the LABOR AND MATERIAL PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

13. A PERFORMANCE BOND and a LABOR AND MATERIAL PAYMENT BOND each in the amount of one hundred (100%) percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.
14. Attorneys-in-fact who sign BID BONDS or LABOR AND MATERIAL PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective dated copy of their power of attorney.
15. The party to whom the contract is awarded will be required to execute the Agreement and obtain the PERFORMANCE BOND and LABOR AND MATERIAL PAYMENT BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary Agreement and BOND forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the Property of the OWNER.
16. The OWNER within ten (10) calendar days of receipt of acceptable PERFORMANCE BOND, LABOR AND MATERIAL PAYMENT BOND and Agreement signed by the party to whom the Agreement was awarded shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw the signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.
17. The NOTICE TO PROCEED shall be issued within ten (10) calendar days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period; the time may be extended by mutual agreement between the OWNER AND CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) calendar day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.
18. The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.
19. A conditional or qualified BID will not be accepted.
20. Award will be made to the responsive, responsible, low BIDDER for the BID determined to be constructed by the Owner and shall be based on the Total Sum Bid Plus Contingent Items C-1 through C-2.
21. All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.



22. Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to its BID.
23. Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause.
24. The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when required to do so by the OWNER.
25. Inspection trips for prospective BIDDERS will leave from the office of the Department of Solid Waste at 12630 Earth Care Road, Hagerstown, MD 21740, immediately following the Pre-Bid Conference/Teleconference.
26. The ENGINEER will be the SCS Engineers. All correspondence during construction shall be submitted to the Department of Solid Waste at 12630 Earth Care Road, Hagerstown, MD 21740.
27. Bidder must complete the project within eighteen months (18) or liquidated damages in the sum of Five Hundred (\$500.00) dollars for each consecutive calendar day will be applied.
28. Prior to contracting, private corporations must either be incorporated in the State of Maryland or registered with the Maryland Department of Assessments and Taxation as a foreign corporation and must be in good standing. Proof of such standing is required prior to the start of the contracting process and shall remain in good standing during the contract period. The website for the Maryland Department of Assessments and Taxation: <http://dat.maryland.gov/Pages/sdatforms.aspx#BNE> and the phone numbers for the State Department of Assessments and taxation are: **(410) 767-1340** or **(888) 246-5941**.

**PUR-1583**  
**RUBBLE LANDFILL CLOSURE**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**BASE BID ITEMS**

ITEM NO.	ITEM (Unit Price)	UNIT	APPR QTY	UNIT PRICE (Figures)	TOTAL PRICE (Figures)
1.00	<p>Mobilization &amp; Demobilization</p> <p>_____ Dollars</p> <p>(Written)</p> <p>_____ per Cents</p> <p>(Written)</p>	LS	1	\$ _____	\$ _____
2.00	<p>Construction Stakeout and Survey</p> <p>_____ Dollars</p> <p>(Written)</p> <p>_____ per Cents</p> <p>(Written)</p>	LS	1	\$ _____	\$ _____

**PUR-1583**

**RUBBLE LANDFILL CLOSURES**

**FORM OF PROPOSAL - SCHEDULE OF PRICES**

**TOTAL SUM BID**

**BASE BID ITEMS**

ITEM NO.	ITEM (Unit Price)	UNIT	APPR QTY	UNIT PRICE (Figures)	TOTAL PRICE (Figures)
3.00	Testing and Inspections _____ Dollars (Written) _____ per Cents (Written)	LS	1	\$ _____	\$ _____
4.00	Erosion and Sediment Controls _____ Dollars (Written) _____ per Cents (Written)	LS	1	\$ _____	\$ _____

**PUR-1583**  
**RUBBLE LANDFILL CLOSURES**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**BASE BID ITEMS**

<b>ITEM NO.</b>	<b>ITEM (Unit Price)</b>	<b>UNIT</b>	<b>APPR QTY</b>	<b>UNIT PRICE (Figures)</b>	<b>TOTAL PRICE (Figures)</b>
5.00	Clearing and Grubbing  _____ Dollars (Written)  _____ per Cents (Written)	AC	5.25	\$ _____	\$ _____
6.00	Excavation and Grading  _____ Dollars (Written)  _____ per Cents (Written)	CY	19,000	\$ _____	\$ _____

**PUR-1583**  
**RUBBLE LANDFILL CLOSURES**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**BASE BID ITEMS**

<b>ITEM NO.</b>	<b>ITEM (Unit Price)</b>	<b>UNIT</b>	<b>APPR QTY</b>	<b>UNIT PRICE (Figures)</b>	<b>TOTAL PRICE (Figures)</b>
7.01	Geomembrane  _____ Dollars (Written)  _____ per Cents (Written)	SY	230,000	\$ _____	\$ _____
7.02	Geocomposite Drainage Net  _____ Dollars (Written)  _____ per Cents (Written)	SY	230,000	\$ _____	\$ _____

*Form of Proposal – Schedule of Prices*

**Rubble Landfill Closures**

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Sign for Identification

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**RUBBLE LANDFILL CLOSURES**

**FORM OF PROPOSAL - SCHEDULE OF PRICES**

**TOTAL SUM BID**

**BASE BID ITEMS**

ITEM NO.	ITEM (Unit Price)	UNIT	APPR QTY	UNIT PRICE (Figures)	TOTAL PRICE (Figures)
7.03	8 OZ./SY Geotextiles  _____ Dollars (Written)  _____ per Cents (Written)	SY	230,000	\$ _____	
8.00	Cap Drain Aggregate  _____ Dollars (Written)  _____ per Cents (Written)	CY	500	\$ _____	



**PUR-1583**  
**RUBBLE LANDFILL CLOSURES**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**BASE BID ITEMS**

ITEM NO.	ITEM (Unit Price)	UNIT	APPR QTY	UNIT PRICE (Figures)	TOTAL PRICE (Figures)
9.01	Soil Protective Layer  _____ Dollars (Written)  _____ per Cents (Written)	CY	14,200	\$ _____	
9.02	Vegetative Support Layer  _____ Dollars (Written)  _____ per Cents (Written)	CY	3,000	\$ _____	

**PUR-1583**  
**RUBBLE LANDFILL CLOSURES**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**BASE BID ITEMS**

ITEM NO.	ITEM (Unit Price)	UNIT	APPR QTY	UNIT PRICE (Figures)	TOTAL PRICE (Figures)
10.00	Landfill Gas Vents  <div style="text-align: right;">_____ Dollars</div> <div style="text-align: center;">(Written)</div> <div style="text-align: right;">_____ per Cents</div> <div style="text-align: center;">(Written)</div>	EA	5	\$ _____	
<b>Total Base Bid Items (1.00 through 10.00)</b>  <div style="text-align: right;">_____ Dollars</div> <div style="text-align: center;">(Written)</div> <div style="text-align: right;">_____ per Cents</div> <div style="text-align: center;">(Written)</div>			<div style="text-align: center;">\$ _____</div> <div style="text-align: center;">(Figures)</div>		

**PUR-1583**  
**RUBBLE LANDFILL CLOSURES**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**CONTINGENT BID ITEMS**

<b>ITEM NO.</b>	<b>ITEM (Unit Price)</b>	<b>UNIT</b>	<b>APPR. QTY</b>	<b>UNIT PRICE (Figures)</b>	<b>TOTAL PRICE (Figures)</b>
C1	Contingent Unsuitable Excavation	CY	500	\$ _____	\$ _____
	_____ Dollars				
	(Written)				
C2	Contingent Select Material for Backfill	CY	500	\$ _____	\$ _____
	_____ Dollars				
	(Written)				
	_____ per Cents				
	(Written)				

**PUR-1583**  
**RUBBLE LANDFILL CLOSURES**  
**FORM OF PROPOSAL - SCHEDULE OF PRICES**  
**TOTAL SUM BID**  
**CONTINGENT BID ITEMS**

<b>Total Contingent Bid Items (C1 through C2)</b>  <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> <span style="width: 60%; text-align: center;">(Written)</span> <span style="width: 40%; text-align: right;">Dollars</span> </div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> <span style="width: 60%; text-align: center;">(Written)</span> <span style="width: 40%; text-align: right;">per Cents</span> </div>	<div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> <span style="width: 10%;">\$</span> <span style="width: 90%; text-align: center;">(Figures)</span> </div>
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**NOTE:** Contingent bid items are for work not shown on the Contract Drawings and shall only be performed at direction by the Owner.

<b>Total Sum Bid for Base Bid Items (No. 1 – 10) Plus, Contingent Items (C1 and C2)</b>  <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> <span style="width: 60%; text-align: center;">(Written)</span> <span style="width: 40%; text-align: right;">Dollars</span> </div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> <span style="width: 60%; text-align: center;">(Written)</span> <span style="width: 40%; text-align: right;">per Cents</span> </div>	<div style="display: flex; justify-content: space-between; border-top: 1px solid black; margin-top: 10px;"> <span style="width: 10%;">\$</span> <span style="width: 90%; text-align: center;">(Figures)</span> </div>
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## BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned,  
as Principal, and \_\_\_\_\_ as Surety, are hereby held and firmly  
bound unto the Board of County Commissioners of Washington County, Maryland as OWNER in the  
penal sum of \_\_\_\_\_ for the payment of which, well and truly to be made, we hereby jointly  
and severally bind ourselves, successors, and assigns.

Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 2022. The Condition of the above  
obligation is such that whereas the Principal has submitted to the Board of County Commissioners of  
Washington County, Maryland a certain BID, attached hereto and hereby made a part hereof to enter  
into a contract in writing, for the **PUR-1583 Rubble Landfill Closure (Contract No. LF-RE-163-20)**.

NOW, THEREFORE,

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

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

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

\_\_\_\_\_(L.S.)  
Principal

\_\_\_\_\_  
Surety

By: \_\_\_\_\_

**IMPORTANT** - Surety companies executing BONDS must appear on the Treasury Department's most  
current list (Circular 570 as amended) and authorized to transact business in the State where the project is  
located.

**PUR-1583**  
**(Contract No. LF-RD-163-20)**

**CONTRACT AGREEMENT BY AND BETWEEN THE  
BOARD OF COUNTY COMMISSIONERS OF  
WASHINGTON COUNTY, MARYLAND**

**AND**

**XXXXXXXXXXXXXXX**

THIS CONTRACT AGREEMENT (hereinafter the "Contract") is made this \_\_\_\_\_ day of \_\_\_\_\_, 2022, by and between CONTRACTOR, (hereinafter the "Contractor") and the **BOARD OF COUNTY COMMISSIONERS OF WASHINGTON COUNTY, MARYLAND**, a body corporate and politic and a political subdivision of the State of Maryland, (hereinafter the "County").

**RECITALS**

This Contract is for the construction of **PUR-1583 Rubble Landfill Closure (Contract No. LF-RE-163-20 PUR-1583)**, near Hagerstown, Washington County, Maryland, as shown on the drawings identified in the same manner, with a final approval date of, Month 2022 on file at the Washington County Division of Environmental Management, Williamsport, Maryland, subject to all the conditions, covenants, stipulations, terms and provisions contained in the Specifications, the Specifications being in all respects incorporated herein by reference and made a part hereof as if attached or entirely stated herein, has recently been awarded to the Contractor by the County, at and for a sum equal to the prices and rates respectively named therefore in the bid.

One of the conditions of said award is that a formal contract be executed by and between the Contractor and the County evidencing the terms of said award.

NOW, THEREFORE, in consideration of the mutual covenants, conditions and agreements herein contained, the parties hereby agree as follows:

1. The "Contract Documents," except for modifications issued after the execution of this Contract, are enumerated as follows and are incorporated herein by reference and made a part hereof as if attached or entirely stated herein:

*Invitation to Bid Instructions to Bidders*  
*Form of Proposal*  
*Bid Bond*  
*Contract Agreement*



*Performance Bond*  
*Labor and Material Payment Bond Non-Collusion Certificate*  
*Anti-Bribery Affidavit*  
*Notice of Award Notice to Proceed*  
*Washington County's Insurance Requirements for Independent Contractors Policy*  
*Supplemental General Conditions Special Conditions*

*Technical Specifications:*  
*Divisions 1, 2, 29, 31, 32, 33, and 35*

*The Contract Drawings, consisting of 14 Sheets:*

- 1 Title Sheet*
- 2 Legend and General Notes*
- 3 Existing Conditions*
- 4 Intermediate Grading Plan*
- 5 Final Grading Plan*
- 6 General Details I*
- 7 General Details II*
- 8 Landfill Profiles*
- 9 Pre-Development Drainage Divide Map*
- 10 Post-Development Drainage Divide Map*
- 11 Phase I Erosion and Sediment Control Plan*
- 12 Phase II Erosion and Sediment Control Plan*
- 13 Erosion and Sediment Control Plan Notes and Details I*
- 14 Erosion and Sediment Control Plan Notes and Details II*

2. The date of commencement and substantial completion of the project contemplated herein shall be as set forth in the Information for Bidders and stipulated by the Notice to Proceed or an authorized extension thereof.
3. The Contractor shall complete **Contract No. LF-RE-163-20, RUBBLE LANDFILL CLOSURE (PUR-1583)**, near Williamsport, Washington County, Maryland, in accordance with each and every one of the conditions, covenants, stipulations, terms and provisions contained in the aforementioned Specifications, which in all respects are incorporated herein by reference and made a part hereof as if attached or entirely stated herein, and as shown on the aforementioned drawings, which are also incorporated herein by reference and made a part hereof as if attached or entirely stated herein, at and for a sum equal to the prices and rates respectively named therefore in the bid attached hereto, and shall comply with and perform each and every obligation imposed upon it by the said Specifications or by the terms of said award.
4. The County shall comply with and perform each and every obligation imposed upon it by the said Specifications or by the terms of the said award.

5. The County shall pay the Contractor for the Contractor's performance of the Contract the sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_) (hereinafter the "Contract Sum"), when due and payable under the terms of the said Specifications and the terms of said award and shall be subject to additions and deductions as provided for in the Contract Documents.
6. Progress payments shall be made on account of the Contract Sum to the Contractor as set forth in the Contract Documents.
7. The Contractor hereby certifies that it is a corporation authorized and registered to do business in the State of Maryland with the Maryland State Department of Assessments and Taxation.
8. The Contractor hereby certifies that it has read and understood the provisions of the Washington County Purchasing guidelines dealing with conflicts of interest, and that it further certifies, represents, and warrants to the County that there is not current conflict of interest, and that the Contractor shall refrain from any such conflict of interest for the duration of this Contract.
9. This Contract was made and entered into in the State of Maryland and shall be governed and construed in accordance with the laws of the State of Maryland. As to the Contractor, this Contract is intended to be a contract under seal and specialty.
10. The Recitals are incorporated into this Contract as substantive provisions.

IN WITNESS WHEREOF, the parties have caused this Contract to be duly executed and delivered, the day and year first above written.

**APPROVED AND AGREED TO:  
CONTRACTOR:**

**ATTEST:**

\_\_\_\_\_

BY: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)

**APPROVED AND AGREED TO:  
OWNER:**

**ATTEST:**

**BOARD OF COUNTY COMMISSIONERS  
OF WASHINGTON COUNTY, MARYLAND**

\_\_\_\_\_  
Krista L. Hart, County Clerk

BY: \_\_\_\_\_  
Jeffrey A. Cline, President

**Recommended for approval:**

\_\_\_\_\_  
David A. Mason, Deputy Director  
Solid Waste

**Approved as to form and legal sufficiency  
For execution by the County:**

\_\_\_\_\_  
Kirk C. Downey  
County Attorney

END OF DOCUMENT

**PERFORMANCE BOND**

Board of County Commissioners of Washington County, Maryland

**BOND NO.** \_\_\_\_\_ **CONTRACT NO. LF-RE-163-20 (PUR-1583)**

Date Bond Executed: \_\_\_\_\_, 2022

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_,

\_\_\_\_\_  
(Here insert full name and address or legal title of Contractor, including zip code)

a corporation organized and existing under the laws of the State of \_\_\_\_\_ and authorized to do business in the State of Maryland, hereinafter called the “**Principal**” and \_\_\_\_\_

\_\_\_\_\_  
(Here insert full name and address or legal title of Surety, including zip code)

a corporation organized and existing under the laws of the State of \_\_\_\_\_ and authorized to do business in the State of Maryland, hereinafter called the “**Surety**”, are held, and firmly bound unto the Board of County Commissioners of Washington County, Maryland, hereinafter called the “**County**”, for the sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_), lawful money of the United States for the payment of which sum well and truly to be made, the Principal and the Surety bind themselves, their heirs, personal representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into or will enter into a contract with the County for the **PUR-1583 RUBBLE LANDFILL CLOSURE (Contract No. LF-RE-163-20) (hereinafter the “Contract”), in Washington County, Maryland**, which Contract and all work to be done thereunder and all the plans, drawings, and specifications accompanying the same shall be deemed a part hereof and shall be incorporated by reference herein to the same extent as if fully set forth.

NOW, THEREFORE, during the original term of said Contract, during any extensions thereto that may be granted by the County, and during the guarantee and warranty period, if any, required under the Contract, unless otherwise stated therein, this Performance Bond shall remain in full force and effect unless and until the following terms and conditions are met:

1. Principal shall well and truly perform the Contract; and
2. Principal and Surety shall comply with the terms and conditions in this Performance Bond.

Whenever Principal shall be declared by the County to be in default under the Contract, the Surety may, within fifteen (15) days after notice of default from the County, notify the County of its election to either promptly proceed to remedy the default or promptly proceed to complete the Contract in accordance with and subject to its terms and conditions. In the event the Surety does not elect to exercise either of the above stated options, then the County thereupon shall have the remaining contract work completed, Surety to remain liable hereunder for all expenses of completion up to but not exceeding the penal sum stated above.

The Surety for value received hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder of the Specifications accompanying the same shall in any way affect its obligations on this Performance Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder of the specifications accompanying the same.

This Performance Bond shall be governed by and construed in accordance with the laws of the State of Maryland and any reference herein to Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, Principal and Surety have set their hands and seals to this Performance Bond. If any individual is a signatory under the Principal heading below, then each such individual has signed below on his or her own behalf, has set forth below the name of the firm, if any, in whose name he or she is doing business, and has set forth below his or her title as a sole proprietor. If any partnership or joint venture is a signatory under the Principal heading below, then all members of each such partnership or joint venture, and each member has set forth below his or her title as a general partner, limited partner, or member of joint venture, whichever is applicable. If any corporation is a signatory under the Principal or Surety heading below, then each such corporation has caused the following: the corporation's name to be set forth below, a duly authorized representative of the corporation to affix below the corporation's seal and to attach hereto a notarized corporate resolution or power of attorney authorizing such action, and each such duly authorized representative to sign below and to set forth below his or her title as a representative of the corporation. If any individual acts as a witness to any signature below, then each such individual has signed below and has set forth below his or her title as a witness. All of the above has been done as of the Date of Bond shown above.

Signed, and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 2022, in four counterparts each of which shall without proof of accounting for the other counterparts be deemed an original hereof.

**WITNESS:**

\_\_\_\_\_  
(Typed Name of Principal)

BY: \_\_\_\_\_ (SEAL)

\_\_\_\_\_  
(Typed Name and Title)

**WITNESS:**

\_\_\_\_\_  
(Typed Name of Surety)

BY: \_\_\_\_\_ (SEAL)

\_\_\_\_\_  
(Typed Name and Title)

\_\_\_\_\_  
(Name of Local Agent)

(\_\_\_\_\_)\_\_\_\_\_  
(Telephone Number of Local Agent)

**LABOR AND MATERIAL PAYMENT BOND**

Board of County Commissioners of Washington County, Maryland

**BOND NO.** \_\_\_\_\_ **CONTRACT NO. (PUR-1583) LF-RE-163-20**

Date Bond Executed: \_\_\_\_\_, 2022

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_,

\_\_\_\_\_  
(Here insert full name and address or legal title of Contractor, including zip code)

a corporation organized and existing under the laws of the State of \_\_\_\_\_ and authorized to do business in the State of Maryland, hereinafter called the “**Principal**” and

\_\_\_\_\_  
(Here insert full name and address or legal title of Surety, including zip code)

a corporation organized and existing under the laws of the State of \_\_\_\_\_, and authorized to do business in the State of Maryland, hereinafter called the “**Surety**”, are held and firmly bound unto the Board of County Commissioners of Washington County, Maryland, a body corporate and politic, and a political subdivision of the State of Maryland, hereinafter called the “**County**”, for the use and benefit of claimants as hereinafter defined, in the Penal Sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_) lawful money, for the payment of which Penal Sum we bind ourselves, our heirs, executors, administrators, personal representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into or will enter into a contract with the County for the **PUR-1583 RUBBLE LANDFILL CLOSURE (Contract No. LF-RE-163-20) (hereinafter the “Contract”), in Washington County, Maryland.** The contract and all items incorporated into the contract, together with any and all changes, extensions of time, alterations, modifications, or additions to the contract or to the work to be performed thereunder or to the Plans, Specifications, and Special Provisions, or any of them, or to any other items incorporated into the contract shall hereinafter be referred to as the “**Contract**”.

WHEREAS, it is one of the conditions precedent to the final award of the Contract that these presents be executed.

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and materials furnished, supplied, and reasonably required for use in the performance of the Contract, then this obligation shall be null and void, otherwise it shall remain in full force and effect, subject to the following conditions:

1. A **Claimant** is defined to be any and all of those persons supplying labor and materials (including lessors of the equipment to the extent of the fair market value thereof) to the Principal or its subcontractors and sub-subcontractors in the prosecution of the work provided for the Contract, entitled to the protection provided by Md. Code Ann., State Finance and Procurement Article, §17-



101, *et seq.*, as from time to time amended.

2. The above-named Principal and Surety hereby jointly and severally agree with the County that every claimant as herein defined, who has not been paid in full may, pursuant to and when in compliance with the provisions of the aforesaid State Finance and Procurement Article, §17-101, *et seq.*, sue on this Bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant and have execution thereon. The County shall not be liable for the payment of any costs or expenses of any such suit.

The Surety hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder of the Specifications accompanying the same shall in any way affect its obligations on this Payment Bond, and it 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 the Specifications.

This Payment Bond shall be governed and construed in accordance with the laws of the State of Maryland and any reference herein to the Principal or Surety in the singular shall include all entities in the plural who or which are signatories under the Principal or Surety heading below.

IN WITNESS WHEREOF, the Principal and Surety have set their hands and seals to this Payment Bond this \_\_\_\_\_ day of \_\_\_\_\_, 2022

**WITNESS:**

\_\_\_\_\_  
(Typed Name of Principal)

BY: \_\_\_\_\_(SEAL)

\_\_\_\_\_  
(Typed Name and Title)

**WITNESS:**

\_\_\_\_\_  
(Typed Name of Surety)

BY: \_\_\_\_\_(SEAL)

\_\_\_\_\_  
(Typed Name and Title)

\_\_\_\_\_  
(Name of Local Agent)

(\_\_\_\_\_)\_\_\_\_\_  
(Telephone Number of Local Agent)

Revised 4/9/98

BID NO.: \_\_\_\_\_

### NON-COLLUSION CERTIFICATE

I HEREBY CERTIFY I am the \_\_\_\_\_  
(Title)

and the duly authorized representative of the firm of \_\_\_\_\_

whose address is \_\_\_\_\_

AND THAT NEITHER I nor, to the best of my knowledge, information and belief, the above firm nor any of its other representatives I here represent have:

- (a) Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the bid or offer being submitted herewith;
- (b) Not in any manner, directly or indirectly, entered into any agreement, participated in any collusion to fix the bid price or price proposal of the bidder or offeror herein or any competitor, or competitive bidding in connection with the Contract for which the within bid or offer is submitted; and that no member of the Board of County Commissioners of Washington County, Maryland, administrative or supervisory personnel or other employees of the Board of County Commissioners of Washington County, Maryland have any interest in the bidding company except as follows: (complete if applicable)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I solemnly affirm under the penalties of perjury that the contents of the foregoing paper are true to the best of my knowledge, information, and belief.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Printed or Typed Name)

BID NO.: \_\_\_\_\_

### ANTI-BRIBERY AFFIDAVIT

I HEREBY CERTIFY that

1. I am the \_\_\_\_\_ and duly authorized representative of the firm \_\_\_\_\_ whose address is \_\_\_\_\_, and that I possess the legal authority to make this affidavit on behalf of myself and the firm for which I am acting.

2. Except as described in Paragraph 3 below, neither I or to the best of my knowledge, the above firm, nor any of its officers, directors, or partners, or any of its employees directly involved in obtaining contracts with the State or any county, bi-county, or multi-county agency, or subdivision of the State have been convicted of, or have pleaded nolo contendere to a charge of, or have during the course of any official investigation or other proceeding admitted in writing or under oath acts or omissions committed after July 1, 1977 which constitute bribery, attempted bribery, or conspiracy to bribe under the provisions of Article 27 of the Annotated Code of Maryland or under the laws of any state or federal government.

3. (State "none" or, as appropriate, list any conviction, plea, or admission described in Paragraph 2 above, with the date, court, official, or administrative body; and the sentence or disposition, if any.)

I acknowledge that this affidavit is to be furnished to the requesting agency, to the Secretary of Budget and Fiscal Planning of Maryland, and, where appropriate, to the Board of Public Works and the Attorney General under Maryland Code, State Finance and Procurement, §13-405. I acknowledge that, if the representations set forth in this affidavit are not true and correct, the Board of County Commissioners of Washington County, Maryland may terminate any contract awarded and take any other appropriate action. I further acknowledge that I am executing this affidavit in compliance with Maryland Code, State Finance and Procurement, §13-405, which provides that certain persons who have been convicted of or have admitted to bribery, attempted bribery, or conspiracy to bribe may be disqualified, either by operation of law or after a hearing, from entering into contracts with the State or any of its agencies or subdivisions.

I do solemnly declare and affirm under the penalties of perjury that the contents of this affidavit are true and correct.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Printed or Typed Name)

## NOTICE OF AWARD

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PROJECT Description: **PUR-1583 RUBBLE LANDFILL CLOSURE (Contract No. LF-RE-163-20)** generally includes but not limited to providing all labor, services, tools, machinery, equipment, and materials necessary to complete the Rubble Landfill Closure and associated features as shown and described in the Contract Documents.

The OWNER has considered the BID submitted by you for the above-described WORK in response to its Advertisement for Bids dated \_\_\_\_\_, 2022, and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of \$\_\_\_\_\_.

You are required by the Information for Bidders to execute the Agreement and furnish the required CONTRACTOR'S Performance BOND, Payment BOND, and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS and CERTIFICATE OF INSURANCE within ten (10) calendar days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER. Dated this \_\_\_\_\_ day of \_\_\_\_\_, 2022.

Board of County Commissioners  
of Washington County, Maryland  
100 West Washington Street  
Hagerstown, Maryland 21740  
Owner

By \_\_\_\_\_

Title \_\_\_\_\_

### ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By \_\_\_\_\_, this  
(Print Name)  
\_\_\_\_\_ day of \_\_\_\_\_, 2022.

By \_\_\_\_\_ Title \_\_\_\_\_



**BOARD OF COUNTY COMMISSIONERS OF  
WASHINGTON COUNTY, MARYLAND**  
Washington County Administration Complex  
100 West Washington Street, Suite 3200  
Hagerstown, Maryland 21740

## NOTICE TO PROCEED

TO: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Project Title \_\_\_\_\_

Bid No. \_\_\_\_\_ Contract No. \_\_\_\_\_ Project No. \_\_\_\_\_

Type of Project / Construction \_\_\_\_\_

Amount of Contract = \$ \_\_\_\_\_

You are hereby given Notice to Proceed to commence work on the above project on or before \_\_\_\_\_  
and shall fully complete all of the work of said project within \_\_\_\_\_ consecutive calendar/working  
days thereafter. Your completion date is therefore \_\_\_\_\_

The Contract provides for an assessment of the sum of \$ \_\_\_\_\_ as liquidated damages for  
each consecutive calendar/working day after the above established project completion date that the work  
remains incomplete.

Issued this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

By \_\_\_\_\_  
(Signature)

Name & Title Printed \_\_\_\_\_

---

### ACCEPTANCE OF NOTICE

Receipt of the foregoing Notice to Proceed is hereby acknowledged for (Contracting Firm) \_\_\_\_\_

\_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

By \_\_\_\_\_  
(Signature)

Name & Title Printed \_\_\_\_\_

**POLICY TITLE**

**Insurance Requirements for  
Independent Contractors**

**ADOPTION DATE:**

August 29, 1989

**EFFECTIVE DATE:**

September 1, 1989

**FILING INSTRUCTIONS:**

---

**I. PURPOSE**

To protect Washington County against liability, loss, or expense due to damaged property, injury to or death of any person or persons and for care and loss of services arising in any way, out of, or in connection with or resulting from the work or service performed on behalf of Washington County.

**II. ACTION**

The following should be inserted in all Independent Contractor Contracts:

"The Contractor shall procure and maintain at his sole expense and until final acceptance of the work by the County, insurance as hereinafter enumerated in policies written by insurance companies admitted in the State of Maryland, have A.M. Best rating of A- or better or its equivalent, and acceptable to the County."

1. **Workers Compensation:** The Contractor agrees to comply with Workers Compensation laws of the State of Maryland and to maintain a Workers Compensation and Employers Liability Policy.

Minimum Limits Required:

Workers Compensation -	Statutory
Employers' Liability -	\$100,000 (Each Accident)
	\$500,000 (Disease - Policy Limit)
	\$100,000 (Disease - Each Employee)

2. **Comprehensive General Liability Insurance:** The Contractor shall provide Comprehensive General Liability including Products and Completed Operations.

Minimum Limits Required:

\$1,000,000 combined single limit for Bodily Injury and Property Damage.

Such insurance shall protect the County, its agents, elected and appointed officials, commission members and employees, and name Washington County on the policy as additional insured against liability, loss or expense due to damaged property (including loss of use), injury to or death of any person or persons and for care and loss of services arising in any way, out of, or in connection with or resulting from the work of service performed on behalf of Washington County.

2. **Comprehensive General Liability Insurance** (continued)

The Contractor is ultimately responsible that Subcontractors, if subcontracting is authorized, procure, and maintain at their sole expense and until final acceptance of the work by the County, insurance as hereinafter enumerated in policies written by insurance companies admitted in the State of Maryland, have A.M. Best rating of A- or better or its equivalent, and acceptable to the County.

3. **Business Automobile Liability:** The Contractor shall provide Business Auto Liability including coverage for all leased, owned, non-owned and hired vehicles.

Minimum Limits Required:

\$1,000,000 combined single limit for Bodily Injury or Property Damage.

**Certificate(s) of Insurance:** The Contractor shall provide certificates of insurance requiring a 30-day notice of cancellation to the Insurance Department, Board of County Commissioners of Washington County prior to the start of the applicable project.

Approval of the insurance by the County shall not in any way relieve or decrease the liability of the Contractor. It is expressly understood that the County does not in any way represent that the specified limits of liability or coverage or policy forms are sufficient or adequate to protect the interest or liabilities of the Contractor.

All responsibility for payment of any sums resulting from any deductible provisions, corridor, or self-insured retention conditions of the policy or policies shall remain with the Contractor.

**General Indemnity:** The Contractor shall indemnify, defend and save harmless the Board of County Commissioners of Washington County, its appointed or elected officials, commission members, employees and agents for any and all suits, legal actions, administrative proceedings, claims, demands, damages, liabilities, interest, attorneys' fees, costs and expenses of whatsoever kind of nature, whether arising before or after final acceptance and in any manner directly or indirectly caused, occasioned or contributed to in whole or in part by reason of any act, error or omission, fault or negligence whether active or passive by the Contractor, or any one acting under its direction, control or on its behalf in connection with or incident to its performance of the Contract.

Revision Date: August 27, 1991

Effective Date: August 27, 1991

Revision Date: March 4, 1997

Effective Date: March 4, 1997

## SECTION 100

### SUPPLEMENTAL GENERAL CONDITIONS

PARAGRAPH	TITLE	PAGE/PAGES
100.01	Definitions-----	100-1/100-3
100.02	Preliminary Matters-----	100-3/100-5
100.03	Correlation, Interpretation, and Intent of Contract Documents-----	100-5/100-6
100.04	Availability of Lands -----	100-6
100.05	Bonds and Insurance-----	100-6/100-8
100.06	Contractor's Responsibilities-----	100-8/100-12
100.07	Work by Others-----	100-12
100.08	Owner's Responsibilities-----	100-12
100.09	Clarifications and Interpretations -----	100-12/10-13
100.10	Changes in the Work-----	100-13/100-14
100.11	Change of Contract Price-----	100-14/100-15
100.12	Change of the Contract Time-----	100-15
100.13	Shop Drawings, Product Data and Samples-----	100-15/100-19
100.14	Record Drawings-----	100-19
100.15	Manufacturer's List and Certificates-----	100-19/100-20
100.16	Operation and Maintenance Manuals -----	100-20/100-23
100.17	Warranty and Guarantee: Tests and Inspections; Removal and Correction -----	100-23/100-25
100.18	Payments and Completion-----	100-25/100-27
100.19	Suspension of Work and Termination -----	100-27/100-28
100.20	Arbitration-----	100-28
100.21	Assignment of Contract-----	100-28
100.22	Removal of Equipment-----	100-28



## SUPPLEMENTAL GENERAL CONDITIONS

### PARAGRAPH 100.01

### DEFINITIONS

Wherever used in these general conditions or in other documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof.

Acceptance – written notice by the Engineer that the work complies with the specifications and that satisfactory performance has been demonstrated.

Addenda – written or graphic documents issued prior to the time of Bid opening which modify or interpret the Contract documents, drawings, and specifications, by additions, deletions, clarifications, or corrections.

Agreement– the written Agreement between the Owner and 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 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.

Approved equal – wherever appearing in the specifications and drawings, the words "or equal" shall mean "or equal" as approved by the Engineer.

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 and Payment 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 Contract, including all specifications and addenda thereto as prepared and issued by the Engineer, the Invitation to Bid or Advertisement, the Contractor's Bid, the Agreement, Instruction to Bidders, the General Conditions, Supplementary General Conditions, the Performance Bond, the Payment Bond, Certificates of Insurance, Hold Harmless Agreements, the Notice of Award of Contract, all change orders, the Notice to Proceed and all drawings, manufacturers' prints, shop drawings, the construction schedule, etc. As reviewed and accepted by the Engineer shall also become a part of and be incorporated into the Contract documents.

Contract price - the total monies payable to the Contractor under the Contract documents.

Contract time - the number of calendar days stated in the Agreement for the completion of the work.

Contractor - the person or corporation with whom Owner has executed the agreement.

County - the term “County” refers to the Washington County Division of Environmental Management or Department of Solid Waste.

Department – refers to the Washington County Department of Solid Waste.

Drawings - the drawings, which show the character and scope of the work to be performed and which have been prepared and approved by the Owner and are referred to in the Contract documents.

Engineer - the Washington County Department of Solid Waste, or the designated representative.

Equipment – the mechanical and electrical devices and other apparatus to be provided by the Contractor as described in Contract Documents.

Field Work Order - a written order issued by the County which clarified or interprets the Contract documents or orders minor changes in the work in accordance with the Contract Documents.

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 Owner or (d) a written order for a minor change or alteration in the work issued by the Owner. A modification may only be issued after execution of the agreement.

Notice of Intent to Award - the written notice from the Owner to the apparently lowest responsive, responsible Bidder of the intent to accept his Bid.

Notice to Proceed - written communication issued by the Owner to the Contractor authorizing him to proceed with the work.

Owner - the term “Owner” as used in the Contract documents refers to Washington County Board of County Commissioners.

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.

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 illustrates the equipment, material, or some portion of the work.

Specifications - a part of the Contract documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards, and workmanship.

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 Owner 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 for which it was intended; or if there be no such certification, the date when final Payment is due.

Washington County Roads Department - the agency having jurisdiction over all public rights-of-way except State Highway.

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, include the furnishing of all labor, materials, equipment, and other incidentals.

## **PARAGRAPH 100.02      PRELIMINARY MATTERS**

### **1. AWARD**

The Award of the Contract, if it is awarded, 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 or any Bidder who does not pass such investigation to the Owner's satisfaction in analyzing Bids. 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.

### **2. EXECUTION OF AGREEMENT**

At least six (6) counterparts of the Agreement and such other Contract documents as practicable will be signed by the Owner and the Contractor within ten (10) days of the Notice of Award. The Owner will identify those portions of the Contract documents not so signed and such identification will be binding on all parties. The Owner and the Contractor will each receive an executed counterpart of the Contract documents.

### **3. BONDS**

The Owner may, at any time during the responsive 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 responsive, responsible Bidder for such work. The Bidder so designated shall furnish to the Owner within ten (10) days after the date of such notice, the required Payment, and Performance Bonds. Failure of the apparent lowest responsive, responsible Bidder to deliver the Bonds within the prescribed period shall be just cause for the Owner to declare the Bid and any security therefore forfeited. The Owner may, in its sole discretion; award the Contract to said Bidder, following receipt of said properly executed Bonds.

### **4. FORFEITURE OF BID SECURITY**

Failure of the successful Bidder to execute and deliver the Agreement within ten (10) days of the Notice of Award shall be just cause for the Owner to annul the Notice of Award and declare the Bid and any security therefore forfeited.

### **5. PRE-CONSTRUCTION CONFERENCE**

Prior to commencement of work at the project site, a conference will be held to establish a definite work schedule, procedures for handling shop drawings and other submissions, and for processing applications for Payment. Among those present at the conference will be the Engineer, the Owner's representative, the Contractor and his superintendent, and all major subcontractors.

The Owner's representative will arrange for and organize the preconstruction conference.

## 6. PROGRESS MEETINGS

During the Contract, monthly progress meetings will be organized and conducted by the resident project representative to discuss the progress of the Contract. The Contractor, his construction superintendent, and all his major subcontractors, and the Engineer shall attend these meetings.

The agenda for these meetings will be as outlined below:

I. Review of previous meeting notes

II. Review of Contract

- A. Scheduling progress
- B. Shop drawings
- C. Change orders
- D. General items

III. Coordination

IV. Upcoming work

V. Discussion

## 7. BEFORE STARTING CONSTRUCTION

Before undertaking each part of the work, Contractor shall carefully study and compare the Contract documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Owner's representative any conflict, error discrepancy, which Contractor may discover.

Within fifteen (15) days after the effective date of the Agreement (unless otherwise specified in the special conditions), Contractor shall submit to Owner's representative for review and acceptance a progress schedule indicating the starting and completion dates of the various stages of the work; a schedule of shop drawing submissions; a schedule of values of the work, including a cost breakdown of all lump sum items; and the names of all subcontractors that the Contractor proposes to utilize during the work.

Before any work at the project site is started, Contractor shall have delivered to Owner, certificates (and any other evidence of insurance requested by Owner) which Contractor is required to purchase and maintain in accordance with the Contract documents, and Owner shall deliver to Contractor certificates (and other evidence of insurance requested by the Contractor) which Owner is required to purchase and maintain in accordance with Division I, Section 200, Paragraph 2.05 or RUS Documents whichever is more stringent.

Contractor shall submit the required certificates (and other evidence of insurance requested by Owner) as required for Contractor's subcontractors prior to such subcontractors commencing Performance of any part of the work.

## 8. QUALIFICATIONS OF SUBCONTRACTORS, MATERIALMEN, SUPPLIERS

Within fifteen (15) days after the notice of the Intent to Award, the apparent low Bidder shall submit to the Owner 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 Bidder in writing if the Owner, after due investigation, has reasonable objection to any subcontractor, person, or organization on such list. The failure of the Owner 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, not in conformance with the requirements of the Contract documents.

If, prior to the Notice of Award, the Owner has reasonable objection to and refuses to accept any subcontractor, person or organization on such list, the apparent low Bidder may, prior to the Notice of Award either (1) submit an acceptable substitute without an increase in his Bid price or (2) withdraw his Bid and forfeit his Bid security. If, after the Notice of Award, the Owner 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.

## 9. STARTING THE WORK

The Contractor will start the work in accordance with the requirements of the Notice to Proceed.

### **PARAGRAPH 100.03      CORRELATION, INTERPRETATION, AND INTENT OF CONTRACT DOCUMENTS**

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.

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 County'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: agreement, specifications, and drawings within the specifications the order of precedence shall be as follows:

- A.      Contract agreement
- B.      Addenda
- C.      Special conditions
- D.      Standard details
- E.      General conditions
- F.      Specifications text other than above
- G.      Contract drawings

Figure dimensions in 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. 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.

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.

Any provision in any of the Contract documents which may be in conflict or inconsistent with any of the paragraphs in these General Conditions shall be voided to the extent of such conflict of inconsistency, unless the USDA, MDE, or other funding agency requirements are more stringent than the conflicting conditions of these general conditions. In such cases the funding agency conditions shall prevail.

#### **PARAGRAPH 100.04      AVAILABILITY OF LANDS**

##### **1. AVAILABILITY OF LANDS**

Owner shall furnish, as indicated in the Contract documents, the lands upon which the work is to be performed, rights-of-way for access thereto, and such other lands which are designated in the Contract documents to be provided by Owner for the use of Contractor. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by Owner, unless otherwise provided in the Contract documents. If Contractor believes that any delay in Owner's furnishing these lands or easements entitles him to an extension of the Contract time, and Contract price, the Contractor may make a claim. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. Contractor shall not enter upon private property for any purpose without obtaining written permission of the property Owner.

##### **2. REFERENCE POINTS**

Owner shall provide Engineering surveys for construction to establish reference points, which in its judgment are necessary to enable Contractor to proceed with the work. Contractor shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Owner's representative whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for replacement or relocation of such points by professionally qualified personnel. In the event the reference points are lost or destroyed by the operations of Contractor, reference points shall be restored at no cost to the Owner.

#### **PARAGRAPH 100.05      BONDS AND INSURANCE**

##### **1. PERFORMANCE AND PAYMENT BONDS**

The Bidder to whom the Contract is to be awarded, must within ten (10) days after Notice of Intent to Award, provide Performance and Payment Bonds each in an amount equal to one hundred percent (100%) of the accepted Bid, for faithful Performance of the Contract; to cover the prompt Payment in full of all material furnished and labor supplied or performed; and also covering the correction of defective workmanship and material during the maintenance period, executed by a surety company or companies, as are approved by the Owner , and as are authorized to transact business in the state of Maryland .

## 2. CONTRACTOR 'S LIABILITY INSURANCE

The Contractor will purchase and maintain such insurance as will protect him from claims under workmen's compensation laws, disability benefit laws or other similar employee benefit laws, claims for damages because of bodily injury, occupational sickness or disease, or death of his employees, and claims insured by usual personal injury liability coverage from claims for damages of any person other than his employees including claims insured by usual personal liability coverage, and from claims for injury to or destruction of tangible property, including loss of use resulting therefrom - any or all of which may arise out of or result from.

The Contractor's operations under the Contract documents, whether such operations be by himself or by a subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be legally liable. This insurance shall be written for not less than any limits of liability specified in the Contract documents or required by law, whichever is greater, and shall include Contractual liability insurance. The Contractor will file with the Owner certificates of such insurance, acceptable to the Owner. These certificates shall contain a provision that the coverage afforded under the policies will not be cancelled or materially changed until at least fifteen (15) days prior to written notice has been given to the Owner.

## 3. BODILY INJURY LIABILITY AND PROPERTY LIABILITY DAMAGE INSURANCE

The Contractor shall take out, and maintain during the life of this agreement, bodily injury liability and property damage liability insurance to protect him and any subcontractor performing work covered by this Contract from claims for damages, for personal injury, including accidental death, as well as from claims for property damage which may arise from operations under this agreement, whether such operations by himself or by any subcontractors or by anyone directly employed by either of them and the amounts of such insurance shall be as follows. These policies shall include riders for additional coverage for blasting operation in the same amounts.

- A. Bodily injury liability insurance in an amount not less than 1,000,000 dollars for personal injuries, including wrongful death to any one person, and subject to the same limit for each person in an amount not less than 1,000,000 dollars on account of one occurrence.
- B. Property damage liability insurance, in an amount not less than 500,000 dollars for damages on account of any one occurrence and in an amount not less than 1,000,000 dollars for damages on account of all occurrences.

## 4. AUTOMOBILE BODILY INJURY LIABILITY AND PROPERTY DAMAGE LIABILITY INSURANCE

The Contractor shall take out and maintain during the life of the Contract such automobile bodily injury liability and automobile property damage insurance to protect him and any subcontractor performing work covered by this Contract from claims for damages, whether such operations be by him or any subcontractor or by anyone directly or indirectly employed by them and the amounts of such insurance shall be as follows:

- A. Automobile bodily injury liability insurance in an amount not less than 1,000,000 dollars for injuries including wrongful death to any one person, and subject to the same limit for each person, in an amount not less than 1,000,000 dollars on account of one occurrence.

- B. Automobile property damage liability insurance in an amount not less than 100,000 dollars for damage on account of any one occurrence and in an amount not less than 200,000 dollars for damages on account of all occurrences.

C. Builder's Risk Insurance

The Contractor shall maintain at his own expense, and in the name of Contractor and Owner, builder's risk insurance in completed value form for 100 percent (100%) of the insurable value of the work, including fire and extended coverage, and also covering vandalism and malicious mischief on structures, equipment, and contents of structures. Such insurance to be kept in force throughout the entire construction period and until such time as the project is accepted by the Owner. The proceeds of such insurance shall be payable to the Contractor and the Owner as their interests may appear.

5. OWNER'S PROTECTIVE LIABILITY INSURANCE

The Contractor shall take out and furnish to the Owner and maintain during the life of this Contract complete Owner's protective liability insurance in amounts as specified for bodily injury liability insurance and property damage liability insurance. These policies shall include riders for additional coverage for blasting operations in the same amount.

6. INSURANCE COVERING SPECIAL HAZARDS

None

7. INSURANCE CERTIFICATES AND POLICIES

The Contractor shall file with the Owner, as herein before required, satisfactory proof of acceptable insurance coverage. Such proof shall, unless otherwise required by the Owner, consist of the following.

- A. Two (2) copies complete of all insurance policies. Which copies shall be clear, readable reproductions, and must be the entire policy including all endorsements, exceptions, riders, qualifications, and restrictions, exactly as maintained in the records of the insured.
- B. Certificates of Insurance on the insurance carrier's standard form indicating all policies required by law in a number of copies equal to the number of counterparts of the Contract documents executed shall be furnished. Each certificate shall carry the provision that the policy will not be cancelled or materially changed except upon fifteen (15) days written notice to the Owner.

**PARAGRAPH 100.06**

**CONTRACTOR'S RESPONSIBILITIES**

1. SUPERVISION AND SUPERINTENDENTS

The Contractor shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the work in accordance with the Contract documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, safety programs and procedures of construction. Contractor shall be responsible to see that the finished work complies accurately with the Contract documents.



The Contractor will keep on the work at all times during its progress a competent English speaking 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.

## 2. LABOR, MATERIALS AND EQUIPMENT

The Contractor will provide competent, suitably qualified personnel to perform construction as required by the Contract documents. He will at all times maintain good discipline and order at the site.

The Contractor will furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing initial operation and completion of the work.

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 (including reports of required tests) as to the kind and quality of materials and equipment.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable manufacturer, fabricator supplier or distributor, except as otherwise provided in the Contract documents.

## 3. SUBSTITUTE MATERIALS OR EQUIPMENT

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 the specified and be suited to the same use and capable of performing the same function as that specified. No substitute shall be ordered without the written approval of the Owner who shall be the sole judge of equality.

## 4. CONCERNING SUBCONTRACTORS

The Contractor shall not employ any subcontractor or other person (initially or as substitute) against whom the Owner may have reasonable objection, nor will the Contractor be required to employ any subcontractor against whom he has reasonable objection. The Contractor shall not make any substitution for any subcontractor who has been accepted by the Owner, unless the Owner determines that there is good cause for doing so. There shall be written approval of subcontractors by the Owner.

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.

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. All work performed for the Contractor by a subcontractor shall be pursuant to an appropriate Agreement between the Contractor and the subcontractor.

## 5. PATENT FEES AND ROYALTIES

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 anyone directly or indirectly employed by the Owner from and against all claims, damages, losses, and expenses (including attorney's 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.

## 6. PERMITS

The Owner will secure and pay for all construction permits and will pay all governmental charges and inspection fees necessary for the prosecution of the work in accordance with these specifications, except for the roadside tree permit. The Contractor must obtain this permit from the Maryland Department of Natural Resources. The Contractor must also acquire and pay for all licenses required by any governmental agency to complete the work.

## 7. LAWS AND REGULATIONS

The Contractor shall 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, Contractor shall give the County prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate notification. If the Contractor performs any work knowing it to be contrary to such ordinances, rules, and regulations, and without such notice to the Department of Water Quality, the Contractor shall bear all costs arising therefrom. However, it shall not be the Contractor's primary responsibility to make certain that the drawings and specifications are in accordance with such laws, ordinances, rules, and regulations.

## 8. TAXES

The Contractor shall be responsible for the Payment of all excise, sales, or use taxes, and all other taxes required by law on all labor, materials, tools, apparatus, equipment, fixtures, and incidental which he purchases or uses for the purpose of fulfilling the work. He shall include all amounts required for such taxes within the Contract price. No additional payment will be made to cover such taxes.

## 9. USE OF PREMISES

The Contractor shall 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.

## 10. RECORD DOCUMENTS

The Contractor shall keep one record copy of all specifications, drawings, addenda, modifications, shop drawings, and samples at the site, in good order and annotated to show all changes made during the construction process. These shall be available to the Owner for examination and shall

be delivered to the Owner upon completion of the work.

## 11. SAFETY AND PROTECTION

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to:

- A. All employees on the work and other persons who may be affected thereby.
- B. All the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and;
- C. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.
- D. The Contractor shall 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. He will notify Owners of adjacent utilities when prosecution of the work may affect them. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by 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, will be remedied by the Contractor, except damage or loss attributable to the fault of drawings or specifications or to the acts or omissions of the Owner or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor .
- E. The Contractor will designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor 's superintendent unless otherwise designated in writing by the Contractor to the Owner.

## 12. EMERGENCIES

In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor without special instruction or authorization from the Owner, is obligated to act, at his discretion, to prevent threatened damage, injury, or loss. The Contractor shall give the Owner prompt written notice of any significant changes in the work or deviations from the Contract documents caused thereby.

## 13. SUBMITTALS - refer to Section 01 33 00 for information pertaining to all submittals.

## 14. INDEMNIFICATION

The Contractor shall indemnify and hold harmless the Owner and their agents and employees from and against all claims, damages, losses, and expenses including 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 attributed 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 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.

In any and all claims against the Owner or any of their agents 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 preceding paragraph, 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.

The obligations of the Contractor under the preceding paragraph shall not extend to the liability of the Owner, his agents or employees arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications or (2) giving of or the failure to give directions or instructions by the Owner, his agents or employees provided such giving or failure to give is the primary cause of injury or damage.

#### **PARAGRAPH 100.07      WORK BY OTHERS**

The Owner may perform additional work related to the project by himself, or he may let other direct Contracts therefore 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.

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 to report any such findings 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.

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.

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 therefore.

#### **PARAGRAPH 100.08      OWNER 'S RESPONSIBILITIES**

The Owner shall issue all communications to the Contractor through authorized representatives of the Owner.

The Owner shall furnish the data required of him under the Contract documents promptly and shall make payments to the Contractor promptly after they are due.

The Owner will issue with reasonable promptness such written clarifications or interpretations of the Contract documents (in the form of drawings or otherwise) as it 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, therefore.

**1. REJECTING DEFECTIVE WORK**

The Engineer 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 these documents). He will also have authority to require special inspection or testing of the work whether or not the work is fabricated, installed, or completed.

**2. DECISIONS ON DISAGREEMENTS**

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 incur 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.

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. However, no demand for arbitration of any such claim, dispute or other matter shall be made until the earlier of (1) the date on which the Engineer has rendered his decision or (2) 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 later than thirty (30) 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 (30) 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.

**3. LIMITATIONS ON ENGINEER'S RESPONSIBILITIES**

Neither the Engineer's authority to act under this Paragraph 2.09 nor any decision made by him in good faith either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any subcontractor, any of their agents or employees or any other person performing any of the work.

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.

**PARAGRAPH 100.10****CHANGES IN THE WORK**

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 the General Conditions.

The Owner may authorize minor changes or alteration 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 therefore as provided in the General Conditions.

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 2.06-12 and except as provided in the General Conditions.

The Owner will execute appropriate change orders covering changes in work performed in an emergency as provided in the General Conditions I and any other claim of the Contractor for a change in the Contract time or the Contract price which is approved by the Owner.

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.

**PARAGRAPH 100.11****CHANGE OF CONTRACT PRICE**

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.

The Contract price may only be changed by a change order. Any claim for an increase in the Contract price shall be in accordance with the requirements of the applicable funding agency.

Any claim for an increase in the Contract price which is not addressed by the applicable funding agency requirements shall be in writing delivered to the Owner within fifteen (15) 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 Owner. Any change in the Contract price resulting from any such claim shall be incorporated in a change order.

The value of any work covered by a change order or of any claim for an or decrease in the Contract price shall be determined in one of the following ways:

1. Where the work involved is covered by unit prices contained in the Contract documents, by application of the items involved.
2. By mutual acceptance of a lump sum

3. By cost and a mutually acceptable fixed amount for overhead and profit
4. If none of the above methods is agreed upon, the value shall be determined by the Owner based on 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 Contractor's combined overhead and profit, shall be as follows:
  - A. 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;
  - B. 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 under the General Conditions, the Contractor will submit in form prescribed by the Engineer an itemized cost breakdown together with supporting data.

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 as determined by the Engineer. 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.

#### **PARAGRAPH 100.12      CHANGE OF THE CONTRACT TIME**

The Contract time may only be changed by a change order. Any claim for an extension in the Contract time shall be in accordance with the requirements of the applicable funding agency.

Any claim for an extension in the Contract time, which is not addressed by the applicable funding agency requirements, shall be in writing delivered to the Owner within fifteen (15) 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 Owner 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.

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 therefore as provided in preceding paragraph. 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.

All time limits stated in the Contract documents are of the essence of the agreement. The provisions of this Paragraph 2.12 shall not exclude recovery for damages (including compensation for additional PROFESSIONAL SERVICES) for delay by either party.

#### **PARAGRAPH 100.13      SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES**

##### **1. General**

- A. For work under this Contract, the requirements of this section shall be followed by the Contractor.

- B. Forward a minimum of seven (7) sets to the County; any additional copies required by the Contractor shall be an addition to.

2. Shop drawings and project data

- A. Shop drawings and product data are generally defined as all drawings, diagrams, illustrations, brochures, schedules, bills of materials and other data which are prepared by the Contractor, his subcontractors, suppliers and distributors, or equipment manufacturers and fabricators, which illustrate the manufacture, fabrication, construction, installation of the work or a product data are required and shall be submitted for every element of the work, including but not limited to mechanical equipment, piping arrangements, structural steel, reinforcing steel, miscellaneous metals, electrical equipment, and other items as required in the special provisions. If the Contractor proposes to deviate from any detail indicated on the drawings, he shall state what the deviations are in writing and submit detailed drawings and descriptions of this work for approval.
- B. Shop drawings submitted by the Contractor shall be no larger than 24 inches by 36 inches, shall have  $\frac{3}{4}$ -inch borders on top, bottom and right-hand side and a 1-1/4-inch border on the left-hand side.
- C. Product data, including materials reproduced from manufacturer's product catalogs shall be no larger than 8 -1/2 inches by 11 inches. Catalog data shall be explicit with regard to details of the products being furnished and complete enough to enable the County to determine that the product submitted conform to the requirements of the specifications. If a submittal indicates more than one style, size, capacity, etc., of a product on a sheet, the Contractor shall clearly indicate by "highlighting" or otherwise specifically marking exactly which product type is being submitted for approval. Failure to indicate exactly which is being submitted is cause for rejection of the submittal. Catalog data shall bear the name of the manufacturer of the product.
- D. The Contractor shall submit drawings and product data certified correct for construction for the approval of the County as soon as possible after approval of the materials list and with due regard to the sequence in which such information will be required for construction. It is the Contractor's responsibility to provide finished drawings for approval, based on field measurements of actual conditions, indicating how he proposes to install the work and the materials and equipment being furnished under the Contract. Single line drawings will not be acceptable. Copies of the plans will not be accepted for submission as drawings, nor will catalog numbers alone be accepted for materials or equipment.
- E. Each submittal shall be assigned a sequential number by the Contractor, for purposes of easy identification, and shall retain its assigned number with appropriate subscript, on required resubmission the assigned number shall consist of the Contract number, followed by the specification section number where the item is specified, followed by a sequential number indicating the number of submittals in that section (e.g., 11020-04 is the fourth separate submittal for items specified in Section 11020). Resubmittals shall be identified with the same number as the original submittal, followed by the subscript R1, R2, etc. All products and materials submitted shall be clearly identified with the appropriate equipment name and number as it appears in the Contract documents.
- F. Shop drawings and product data shall be submitted in proper sequence and time with due regard to the time required for the review approval and transmittal.



- G. Shop drawings and product data shall be coordinated by the Contractor with drawings previously submitted by him, with drawings being prepared by him, and with drawings and data previously approved under this Contract. Submissions shall be made to the County by the Contractor only. Any data prepared by subcontractor suppliers and all correspondence originating with subcontractor, and suppliers shall be submitted through the Contractor.
- H. All shop drawings and product data covering related items of equipment, material, or integrated systems of equipment or material shall be submitted at the same time in order that their complete installation can be adequately reviewed. No partial submissions will be considered.
- I. No materials or equipment for which shop drawings and product data have been submitted for approval shall be delivered to the job site or incorporated into the work until the Contractor has received copies of such approved drawings and data or until the County has authorized him in writing to do so. Work shall not be done upon any part of the Contract, which is dependent upon the approval of another of the Contract, until such approval has been received from the County.
- J. All submittals must bear the stamp of approval of the Contractor as evidence that they have been checked by him. Submittals without this stamp of approval will not be considered and will be returned to the Contractor for resubmission. If the drawings or other data show variations from the requirements of the Contract documents because of standard practice or other reason, the Contractor shall submit specific practice or other reason, the Contractor shall make specific mention of such variation in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment; otherwise, the Contractor will not be relieved of the responsibility for executing the work in full conformance with the Contract documents even though such submittals have been approved.
- K. After submittal has been reviewed by the County it will be returned to the Contractor with the County's comments, if any. The County's approval of the Contractor's submittal is for general conformance only, but subject to detailed requirements in more or less detail, such reviewing is an effort to discover errors and omissions in the Contractor's submittals and to assist the Contractor in coordinating and expediting his work. The County's review shall in no way relieve the Contractor of his obligation and responsibility to coordinate the work and plan the details of the work or to relieve him of his responsibility in fulfilling the purpose and intent of the Contract. The County reserves the right to require written confirmation from the Contractor that the comments placed on submittals stamped "approved as noted" will actually be followed in the prosecution of the work.
- L. After checking and verifying all field measurements, the Contractor shall submit to the County for approval, eight (8) copies of all working drawings and manufacturer's catalog cuts, which shall have been checked by and stamped with the approval of the Contractor and identified as the County may require. After review by the County five (5) copies will be returned with comments and/or approval to the Contractor. The Contractor shall correct any rejected submittal when required and resubmit eight (8) copies for approval by the County. The data shown on the working drawings shall be complete with respect to dimensions, design criteria, material of construction and the like to enable the County to review the information as required. Machinery outline drawings alone are not acceptable. All working drawings covering related items of equipment or integrated systems of equipment shall be submitted at the same time in order that their complete operation can be adequately reviewed. No partial submissions will be considered. At the time of submission, the Contractor shall, in writing, call the County's

attention to any deviations that the working drawings may have from the requirements of the Contract documents.

### 3. SAMPLES

The Contractor shall furnish samples of items and materials as required in the technical provisions. Samples, unless otherwise required by the technical provision, shall be submitted to the County in duplicate, and each sample shall be properly labeled and identify, giving the date, the job for which it is offered, section and paragraph numbers of the technical provisions, the Contractor, the supplier, and trade name, and shall be accompanied by specifications, and such other pertinent data as will help in determining that the material conforms to the technical provisions.

### 4. CERTIFICATES AND AFFIDAVITS

Where specified in the Contract documents that a certificate and affidavit shall be submitted to the Engineer for approval of a particular product, or component of a product, submittals shall be made in accordance with the following:

- A. A certificate submitted for a product, or component of product shall indicate test results proving that product or component of a product meets the requirements of the standard specified in the Contract documents. An affidavit consisting of a sworn statement by an official of the company manufacturing the product indicating that the information on the certificate is true and accurate shall accompany the certificate.
- B. A statement originating from the Contractor, or any of his subcontractors, suppliers, or any of the agent which merely indicates that a particular product, or component of a product, meets the requirements of the standard specified in the Contract documents shall not be considered a certificate. Any such submittal made in this manner will not be approved and the corresponding product or component of the product shall not be incorporated into the work.

### 5. MIX DESIGNS

Mix designs shall be submitted for concrete, grout and bituminous paving mix design shall indicate all materials used in the product and their respective relative quantities. In any one mix design, all quantities shall be expressed either by weight or volume insofar as it is practical to do so.

### 6. DESIGN CALCULATIONS

Design calculations shall be presented in a neat, legible manner and shall bear the stamp and signature of a registered professional Engineer in the State of Maryland.

### 7. MILL TEST REPORTS

Mill test reports shall be submitted for structural steel and concrete reinforcement steel. Reports shall be on the mill's standard report form.

### 8. WIRING DIAGRAMS

- A. Complete schematic wiring diagrams showing required, or equipment manufacturer's recommended control wiring shall be submitted.

- B. Schematic wiring diagrams for all control panels furnished by the Contractor shall be required.
- C. Where electrical wiring is to be provided by others, the extent and requirements of such field wiring shall be clearly identified on the wiring diagrams.

## 9. EQUIPMENT AND MATERIALS

Submit detailed certified dimensional shop drawings and manufacturer's product data for materials and equipment, including wiring and control diagrams. Show complete information concerning materials of construction, fabrication, protective coatings, installation and anchoring requirements, fasteners, and other details. Include the manufacturer's specified displacement tolerances for vibration at the operational speeds specified. Submittals shall also include horsepower and torque available, versus horsepower and torque required at the pump input shaft and at the variable speed drive and/or gear reducer input shaft. Also include manufacturer's specified tolerances for noise level, operating temperature, pressures, amperage, and alignment.

### **PARAGRAPH 100.14      RECORD DRAWINGS**

During the progress of the construction, the Contractor shall keep a careful record at the job site of all changes and corrections to the information shown on the Contract drawings. The Contractor shall enter such changes and corrections on one set of Contract drawings immediately. The record drawings shall indicate, in addition to all interior changes and corrections, the actual location referenced from two permanently fixed surface structures of all subsurface utilities installed or uncovered by him. At the time of beneficial occupancy of each facility involved under the Contract, the Contractor shall submit to the Resident Project Representative one set of record drawings showing the aforementioned data.

The Contractor shall keep one copy of all Contract documents and approved shop drawings at the site in good order and annotated to show in red all changes made during the construction process. These shall be available to the County and the Resident Project Representative and shall be delivered to the Resident Project Representative upon completion of the project. If the Contractor fails to maintain the record drawings as required herein, final payment, with respect to the Contract as a whole, will be withheld until proper as-built drawings have been furnished to the Resident Project Representative.

### **PARAGRAPH 100.15      MANUFACTURER'S LIST AND CERTIFICATES**

#### 1. APPROVAL LIST

Within ten (10) days after receipt of a notice to proceed, and before ordering any equipment or materials, the Contractor shall submit to the Owner for approval a complete list of proposed manufacturers and fabricators for all materials and equipment to be used in this Contract. The purpose of this submittal is to allow the Owner and Engineer to predetermine the acceptability of proposed supplier before issuance of purchase orders by the Contractor. Submission and acceptance of the manufacturer's list shall neither relieve the Contractor from submitting detailed shop drawings and product data for all materials and equipment nor shall it constitute prior acceptance of any specific item of equipment prior to submittal of shop drawings. After submission and acceptance of the manufacturer's list, the Contractor shall not deviate from the named suppliers and manufacturers without written approval from the Owner.

#### 2. CERTIFICATES

- A. A certificate submitted for equipment, a product, or component of a product shall indicate test

results proving that the equipment, product, or component of a product meet the requirements of the contract documents. An affidavit consisting of a sworn statement by an official of the company manufacturing the equipment or product indicating that the information on the certificate is true and accurate shall accompany the certificate.

- B. A statement originating from the Contractor, or any of his subcontractors, suppliers, or any other agent which merely indicates that a particular item of equipment, product, or component of a product meets the requirements of the Contract Documents shall not be considered a certificate. Any such submittal made in this manner will not be approved and the corresponding equipment, product, or component of a product shall not be finally accepted.

**PARAGRAPH 100.16**

**OPERATION AND MAINTENANCE MANUALS**

1. The Contractor shall provide the Owner six (6) copies of the manufacturers' operation and maintenance manuals for each system or item of equipment.
  - A. Three preliminary copies of each vendor's equipment manual shall be submitted to the Owner for comments/approval within one month of receipt of approved shop drawings by the Contractor. The Owner /County will return one copy with comments.
  - B. No partial Payments for equipment delivered under this Contract or acceptance of equipment will be made until the required final operation and maintenance manuals have been received by the Owner.
  - C. On federally funded projects, EPA regulations require the submission by the grantee of a draft operation and maintenance manual at the 50% Payment point and an approved final operation and maintenance manual at the 90% point. EPA will hold up Payment to the grantee at those points if the submission and approvals are not made. The Contractor agrees that the equipment operation and maintenance manuals that he is required, to submit to the County from the manufacturers are due to the County by the 50% Payment point. The Owner reserves the right to withhold Payment(s) to the Contractor at that point if submittals are not made. In addition, if the submittals are incomplete, contain errors, are non-responsive or are for the wrong items of equipment or materials, and are therefore rejected, and are required to be resubmitted or are otherwise late, the Contractor shall pay for all costs incurred for re-review any other associated costs (including, but not limited to, reprinting the grantee operation and maintenance manual).
2. Operation and maintenance manuals shall be furnished by each vendor for the equipment provided under this Contract. Manuals shall be prepared specifically for this equipment and shall be done by personnel trained and experienced in the operation and maintenance of the described products.
3. The manuals, as a minimum requirement, shall contain the following information for each piece of equipment or system:
  - A. Description of unit and component parts:
    1. Function, normal operating characteristics and limiting conditions
    2. Performance curves, Engineering data and tests for only the specific equipment (delete all inappropriate information)

3. Complete nomenclature and commercial number of replaceable parts
- B. Operating procedures
  1. Complete installation, start-up, break-in conditions and routine and normal operating instructions
  2. Regulation, control, stopping, shutdown, and emergency operating instructions
  3. Summer and winter operating instructions
  4. Special operating instructions
- C. Maintenance procedures
  1. Routine operations
  2. Guide to “trouble-shooting”
  3. Disassembly, repair, and reassembly
  4. Alignment, adjusting and checking.
- D. Servicing and lubrication schedule including a list of lubricants required with equivalent lubricants, etc.
- E. Manufacturer’s printed operating and maintenance instructions
- F. Description of sequence of operation.
- G. Original manufacturer’s parts lists, illustrations, assembly drawings and diagrams required for maintenance.
  1. Predicted life of parts subject to wear.
  2. Items recommended to be stocked as spare parts.
- H. As-installed control diagrams by controls manufacturer.
- I. Each Contractor’s coordination drawings.
- J. Other data as required under pertinent sections of specifications.
- K. Name, address and telephone number of vendor, vendor’s representative, any support vendors, and local source of supply for parts or replacements.
- L. Special tools for disassembly, repair, alignment, and reassembly of equipment.
4. The manuals, as a minimum, shall contain the following information for each electrical system:
  - A. Description of system and component parts.

1. Function, normal operating characteristics and limiting conditions.
  2. Performance curves, Engineering data and tests.
  3. Complete nomenclature and commercial number of replaceable parts.
- B. Circuit directories of Panelboards:
1. Electrical service.
  2. Controls
  3. Communications
- C. As-installed color-coded wiring diagrams.
- D. Operating procedures:
1. Routine and normal operating instructions.
  2. Sequences required.
  3. Special operating instructions.
- E. Maintenance procedures:
1. Routing operations.
  2. Guide to “trouble-shooting”.
  3. Disassembly, repair, and reassembly.
  4. Adjustment and checking.
- F. Manufacturers printed operating and maintenance instructions.
- G. List of original manufacturer’s spare parts, manufacturer’s current prices, and recommended quantities to be maintained in storage.
- H. Other data as required under pertinent sections of specifications.
5. The operation and maintenance manuals shall conform to the following specifications:
- A. Format:
1. Size: 8-1/2” x 11”.
  2. Paper: manufacturer’s printed data, or neatly typewritten.
  3. Drawings:

- a. Provide reinforced punched binder tab, bind in with text.
  - b. Fold larger drawings to size of text pages.
4. Provide flyleaf for each separate product, or each piece of operating equipment:
  - a. Provide typed description of product, and major component parts of equipment.
  - b. Provide indexed tabs.
5. Cover: identify each volume with typed or printed title, “operating and maintenance instructions” list:
  - a. Title of project.
  - b. Identify of separate structure as applicable.
  - c. Identify of general subject matter covered in the manual.

#### B. Binders

1. Commercial quality three-ring binders with durable and cleanable plastic covers with the equipment name and item number embossed on the cover and the spine.
2. When multiple binders are used, correlate the data into related consistent groupings.

#### **PARAGRAPH 100.17 WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; REMOVAL AND CORRECTION, OR ACCEPTANCE OF DEFECTIVE WORK**

1. Warranty and guarantee: 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 inspections, tests or approvals referred to in Paragraph 2.17 – (b) 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 Paragraph 2.17.
2. Tests and inspections: 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, therefore. The Contractor will furnish the Owner the required certificates of inspection, 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.

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.

3. Access to the Work: The Owner 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.
4. Uncovering work: If any work is covered contrary to the written request of the County it must, if requested by the County, be uncovered for observation, and replaced at the Contractor's expense.

If any work has been covered which the County has not specifically requested to observe prior to its being covered, or if the County 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 County 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 therefore as provided in the General Conditions.

5. Owner may stop the work 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 has been satisfied. 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.
6. Correction of defective work 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 or any of his agent's defective work.
7. Acceptance of defective work if, instead of requiring correction or removal and replacement of defective work, the Owner (and, prior to approval of final payment) 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 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.

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 (3) 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, 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.

8. One year correction period if, after the approval of final payment and prior to the expiration of one (1) year after the date of substantial completion or such longer period of time as maybe 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 term 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 removal and replacement, including compensation for additional professional services, will be paid by the Contractor.

#### **PARAGRAPH 100.18            PAYMENTS AND COMPLETION**

1. Schedule of values: Within ten (10) days after receiving the notice to proceed, the Contractor will 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 estimate for payment furnished by the Owner.
2. Application for progress payment: The date for presentation of monthly applications for progress payments to the Owner shall be established at the pre-construction 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 (20) days prior thereto. At least ten (10) days prior to the time of monthly presentation to the Owner, the Contractor will submit to the 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 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 completed. Nor will any payment be made for materials and equipment stored on the sites and not actually incorporated in the work. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at the site or at another location agreed to in writing the application for payment shall also be accompanied by such data satisfactory to Owner, as will establish Owner's title to the material and equipment and protect Owner's interest therein, including applicable insurance.
3. Payment made to Contractor for materials and equipment stored at the site, but not yet incorporated into the work, shall not be included in any computation to determine the percentage of completion of the work for the purpose of retained percentage.
4. Contractor's Warranty of Title: 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.

5. Approval of payments the Owner shall, within ten (10) days after receipt of each application for payment, either indicate in writing approval of payment or return the application to the Contractor indicating in writing the reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the estimate. Owner shall, within thirty (30) calendar days of presentation to him of an approved estimate for payment, pay Contractor the amount approved by Owner subject to withholding by Owner of ten percent (10%) of the amount of each payment until such time as the value of the completed work is equal to fifty percent (50%) of the Contract.

When the work is 50% completed, one - half of the amount retained by Owner shall be returned to Contractor; provided that the Contractor is making satisfactory progress and there is no specific cause for greater withholding.

After the work is 50% completed, subsequent approved applications for payment shall be paid by Owner subject to withholding by Owner of 5% of each such approved application for payment so that the total amount withheld from Contractor shall not exceed 5% of the value of completed work based on approved applications for payment.

In the event that a dispute arises between the Owner and the Contractor, which dispute is based on increased costs incurred by one Contractor occasioned by delays or other actions of another Contractor, additional retainage in the sum of one and one-half times the amount of any possible liability may be withheld by the Owner from the Contractor until such times as a final resolution is agreed to by all parties directly or indirectly involved, unless the Contractor causing the additional claim furnished a Bond satisfactory to Owner to indemnify Owner against the claim.

The Owner may refuse to approve the whole or any part of any payment if in the opinion of the Owner, true representation of work completed is not accurate or if subsequent discovered evidence or results of subsequent inspections nullify any such payment previously approved and to such extent to protect the Owner from any loss because:

- A. The work is defective, or completed work has been damaged requiring correction or replacement;
- B. Claims have been filed or there is reasonable evidence indicating the probable filing thereof;
- C. The Contract price has been reduced because of modifications;
- D. The Owner has been required to correct defective work or complete the work in accordance with the General Conditions;
- E. Of unsatisfactory prosecution of the work, including failure to furnish acceptable submittals, engage in a satisfactory testing procedure, or to clean up;
- F. Contractor's failure to make payment to subcontractors, or for labor, materials, or equipment;

G. A reasonable doubt that the work can be completed for the balance then unpaid; or

H. A dispute has arisen for which a retainage is permitted under applicable law.

**PARAGRAPH 100.19**

**SUSPENSION OF WORK AND TERMINATION**

1. The Owner may, at any time and without cause, suspend the work on any portion thereof for a period of not more than ninety (90) days by notice in writing to the Contractor and the Owner 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 therefore as provided in the General Conditions.
2. Owner may terminate 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 orders of any public body having jurisdiction, or if he disregards the authority of the County 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 (7) days written notice, terminate the services of the 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 by the Owner and incorporated in a change order, as provided in the General Conditions.

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 monies by the Owner due to the Contractor will not release the Contractor from liability.

Upon seven (7) 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.

3. Contractor may stop work or terminate if, through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) 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 (30) days after it is submitted, or the Owner fails to pay the Contractor the sum approved or awarded by arbitrators within thirty (30) days of its approval and presentation, then the Contractor may, upon seven (7) days written notice to the Owner, terminate the Agreement and recover from the Owner payment for all work executed and any expense sustained plus a reasonable profit.

**PARAGRAPH 100.20**

**ARBITRATION**

All claims, disputes and other matters in question arising out of, or relating to, this Agreement or the breach thereof except for claims which have been waived by the making or acceptance of final payment as provided by Paragraph 3.05, Division I shall be decided by arbitration in accordance with the construction industry arbitration rules of the American Arbitration Association then obtaining. This Agreement so to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

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 thirty (30) day period specified in Paragraph 2.09-2, Division I, where applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question would be barred by the applicable statute of limitations.

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.

**PARAGRAPH 100.21      ASSIGNMENT OF CONTRACT**

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 monies 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 to do so.

**PARAGRAPH 100.22      REMOVAL OF EQUIPMENT**

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 his equipment and supplies from the property of the Owner. Failure on part of the Contractor to comply, the Owner shall have the right to remove such equipment and supplies at the expense of the Contractor.

**PARAGRAPH 2.23      PROJECT SIGNS**

See RUS (Rural Utilities Services) sign requirements.

**PARAGRAPH 2.24      NOTICES/INTEREST DOCUMENTS**

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.
2. All monies not paid when due hereunder shall bear interest at the legal rate in force at the place of the project.
3. 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. Contractor shall maintain a full-size set of construction drawings on the

site, which shall be constantly and accurately updated to show changes or additions. Such drawings shall be always available to the Engineer and/or Owner 's representative. Included among change in the invert elevations to the nearest 0.01-foot of water lines/manhole, and also change in slope, size, and alignment. Prior to payment of final estimate, the updated drawings shall be submitted to the Owner.

4. 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 these specifications and the rights and remedies available to the Owner 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.
5. 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.
6. The Contract documents shall be governed by the law of the State of Maryland.

END OF SECTION

## **SECTION 101 SPECIAL CONDITIONS**

### **PARAGRAPH 101.01      SUMMARY OF THE WORK**

The work included in this project consists of furnishing all new materials, equipment, supplies, labor, transportation, fuel, power, etc. Performing all work as required by the contract in strict accordance with the specifications, schedules, and drawings all of which are made a part hereof and including such detail construction. The work shall be complete, and all work, materials and services not expressly called for in the specifications, or specifically indicated on the drawings which may be necessary for complete and proper construction to carry out the contract in good faith, shall be performed, furnished, and installed by the Contractor at no additional cost to the Owner. The work shall be executed in the best professional manner by qualified, careful, and experienced workmen.

### **PARAGRAPH 101.02      CONSTRUCTION SCHEDULES**

The Contractor's attention is directed to the fact that essential services and vehicular access must be maintained in the zone of construction. A sequence of construction must be submitted to the County and no work will begin until the County has approved such sequence. Once the Contractor's proposed construction sequence has been approved, no deviation from that sequence without the advance approval of the County will be permitted, except in emergencies.

All construction of pipelines shall commence at the lowest point and proceed up slope to the highest point. Installation of valves, air release valves, and tees shall proceed concurrently with mainline installations.

### **PARAGRAPH 101.03      SUBSTANTIAL COMPLETION**

Prior to final payment, Contractor may, in writing to Owner, certify that the entire project is substantially complete and request that Owner issue a certificate of Substantial Completion, within a reasonable time thereafter the Owner and Contractor shall inspect the project to determine the status of completion. If Owner does not consider the project substantially complete, he will notify Contractor in writing giving his reasons, therefore. If the Owner considers the project substantially complete, he will prepare and deliver to Contractor a tentative certificate of substantial completion, which shall fix the date of substantial completion and the responsibilities between Owner and Contractor for maintenance. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment, and the certificate shall fix the time within which such items shall be completed or corrected, said time to be within the contract time. The Contractor shall have seven (7) calendar days after receipt of tentative certificate during which he may make written objection to the Owner as to any provisions of certificate or attached list. If, after considering such objection, the Owner concludes that the project is not substantially complete, the Owner will have the right to seek arbitration as outlined in these specifications.

### **PARAGRAPH 101.04      FINAL INSPECTION**

Upon written notice from the Contractor that the project is complete including corrective or deficient items listed in the substantial completion inspection, the Owner and Contractor will make a final inspection and will notify the Contractor within three (3) days in writing or all particulars in which this inspection reveals that the work is incomplete or defective. The Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

Final inspection and inspection at time of acceptance of the work will be under supervision of, and in such manner as directed by, the County. The Contractor shall furnish all appliances and all material and labor, which may be required for such inspection.

Resident Project Representatives and/or Inspectors employed by the Owner shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. A Resident Project Representative and/or Inspectors will be stationed on the work site, report the progress of the work and the manner in which it is being performed; also to report whenever it appears that the materials furnished and work performed by the Contractor fail to fulfill the requirements of the specifications and contract, and to call to the attention of the Contractor any such failure or other default, but no inspection nor any failure to inspect, at any time or place, however, shall relieve the Contractor from any obligation to perform all of the work strictly in accordance with the requirements of the specifications. In case of any dispute arising between the Contractor and any Resident Project Representative as to materials furnished or the manner of performing the work, the Resident Project Representative shall have the authority to reject material or suspend the work until the question at issue can be referred to and decided by the County Project Engineer. The Resident Project Representatives shall perform such other duties as are assigned to them. They shall not be authorized to revoke, alter, enlarge, relax, or release any requirements or these specifications, nor to approve or accept any portion of work, nor to issue instructions contrary to the plans and specifications. Inspectors shall in no case act as foremen to perform other duties for the Contractor, nor interfere with the management of the work by the latter. Any instructions which the Inspectors may give the Contractor shall in no way be construed as binding the Owner in any way, nor releasing the Contractor from fulfillment to the terms of the contract.

**PARAGRAPH 101.05      FINAL APPLICATION FOR PAYMENT**

After the Contractor has completed all such corrections to the satisfaction of the Owner and delivered all guarantees, bonds, certificates, and other documents as required by the contract documents, he may make application for final payment following the procedure as detailed in the procedure for progress payments. The final application for payment shall be accompanied by such data and schedules as the County may reasonably require, together with complete and legally effective releases or waivers, satisfactory to the County of all liens arising out of the contract documents and the labor and services performed and the material and equipment furnished thereunder. If any subcontractor, materialman, fabricator, or supplier fails to furnish a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to the county to indemnify him against any lien.

**PARAGRAPH 101.06      APPROVAL OF FINAL PAYMENT**

If on the basis of the Project Representative's observation and review of the work during construction, the final inspection and review of the final application for payment, all as required by the contract documents, the Project Representative is satisfied that the work has been completed and the Contractor has fulfilled all of the Contractor's obligations under the contract documents, he will present to the Owner for payment, otherwise the Project Representative will return the application to the Contractor indicating in writing the reasons for refusing to approve final payment in which case the Contractor shall make the necessary corrections and resubmit the application. The Owner shall within thirty (30) calendar days of presentation to him of an approved application for payment, pay the Contractor the amount approved.

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 Owner

nor the issuance of a certificate of Substantial Completion, nor any payment by Owner to Contractor under the contract documents, nor any act or acceptance by Owner nor any failure to do so, nor any correction of defective work by Owner shall constitute an acceptance of work not in accordance with the contract documents.

**PARAGRAPH 101.07      WAIVER OF CLAIMS**

The acceptance of final payment shall constitute a waiver of all claims by Contractor against Owner other than those previously made in writing and still unsettled. The attached Contractor's affidavit must be executed before final payment.

**PARAGRAPH 101.08      CONTRACTOR'S AFFIDAVIT**

To be furnished completed with application for final payment.

Affidavit

State of (                      )

ss:

County of (                      )

\_\_\_\_\_, being duly sworn, deposes and says that he is \_\_\_\_\_ of \_\_\_\_\_, which company has a contract with Washington County Department of Water Quality, bearing date of \_\_\_\_\_, covering the construction of Contract No. 180-716.

Despondent further swears that the said \_\_\_\_\_ has paid in full, at the prevailing recognized rate, and in accordance with specifications and contract obligations, for all labor supplied or performed and materials furnished in connection with the performance of said work, including all social security, unemployment insurance, and sales and use taxes applicable thereto, and owes no one for any labor or materials in connection with the performance of said work or any of the said taxes, and no claims have been made against the said Contractor for any unpaid material or labor.

This affidavit is made for the purpose of inducing the County to make a payment under the terms of its contract relying on the terms of the truth of the statements contained herein.

\_\_\_\_\_

Subscriber and sworn to before me

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_ Notary Public



**PARAGRAPH 101.09**

**DEFECTIVE WORK**

The Owner's 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 or has been damaged prior to approval of final payment). He will also have authority to require special inspection or testing of the work whether or not the work is fabricated, installed, or completed.

The Owner will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto; and the County does not guarantee the performance of the work in accordance with the contract documents.

The Owner will not be responsible for the acts or omissions of Contractor, or any subcontractor, or any of his or their agents or employees, or any other persons at the site or otherwise performing any of the work.

**PARAGRAPH 101.10**

**MISCELLANEOUS**

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 as follows:

A. To the Contractor's project superintendent;

B. To the Owner's designated representative;

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.

2. When any period of time is referred to in the contract documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.
3. The duties and obligations imposed by these general requirements and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees, and obligations imposed upon Contractor hereunder and the rights and remedies available to Owner hereunder, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available to them which are otherwise imposed or available by law.

**PARAGRAPH 101.11**

**EASEMENTS AND RIGHT-OF-WAYS**

The Owner has or will obtain the necessary easements for the construction of the pipelines on private property. It is anticipated, but not guaranteed, that construction easements as shown on drawings will be obtained where possible. The Contractor shall not enter upon or occupy with men, tools, or materials any private property outside the limits of the easements or right-of-way obtained by the Owner, without written consent of the Owner of such property. Any access costs for rights-of-way outside of the limits of those furnished by the Owner shall be borne by the Contractor. Any easement condition shall prevail over specifications.

Trees in rights-of-way shall not be cut down unless otherwise shown on the drawings and/or authorized by the property Owner. The Contractor shall have no claim for extra compensation owing to the fact that he may be required to excavate by hand or tunnel in the vicinity of trees that may be ordered left standing.

If so directed by the Owner, shrubbery, which would interfere with the construction, shall be carefully removed, protected, and replanted or replaced by the Contractor at his own expense, and at no additional cost to the Owner. The replaced shrubs must be viable for twelve (12) months after replanting.

Stumps of trees which have been cut down shall be removed or cut below the ground surface so as to be unseen when backfilled and seeded. All debris resulting from the removal of trees shall be removed from the site and disposed of by the Contractor in a manner satisfactory to the Owner's representative. Cutting and removal of trees and stumps and disposal of debris shall be at the Contractor's expense, and at no additional cost to the Owner.

The Contractor shall restore the area covered by both the temporary and permanent rights-of-way to a condition as good as or better than the original condition before construction at his own expense and without additional cost to the Owner. The restoration shall include bringing the area up to original grade, placing topsoil and seed, replanting, or replacing shrubbery, repairing, or replacing walks, driveways, fences, etc., damaged or removed in the course of the construction of the pipelines, but does not include the replacement of trees authorized to be removed by the Owner's representative.

The Contractor shall take all necessary precautions to protect trees, shrubs, grassed areas and landscaping outside of the easements and right-of-way from damage. Damages caused by the Contractor to these features shall be repaired or replaced at the Contractor's expense, at no additional cost to the Owner.

Where grassed areas have been affected by the construction, the Contractor shall furnish and place topsoil and shall fertilize and seed such areas. After a reasonable amount of time any such areas that fail to show a stand of grass shall be re-seeded and re-fertilized. At his own expense and at no additional cost to the Owner, the Contractor shall perform the above work and properly water, mow, rake, weed and otherwise maintain such areas until a stand of grass acceptable to the Owner's representative exists.

#### **PARAGRAPH 101.12      EMERGENCY FORCES**

The Contractor shall provide an emergency force and emergency phone numbers to be made available on a 24-hour call basis with authority and facilities to handle in a diligent manner, with or without instructions from the Owner any and all emergencies affecting public welfare and safety. He shall designate a responsible member of his organization on the work to be in charge of this force and the name of the person so designated shall be reported to the Owner if, in the opinion of the Owner, an emergency occurs and the Contractor does not respond with an effort to remedy the emergency, the Owner will cause the emergency to be remedied and all costs shall be borne by the Contractor and the amount will be deducted from the next payment estimate.

#### **PARAGRAPH 101.13      CONTROL OF WORK AND MATERIAL**

The work shall at all times be subject to inspection by the Owner, and duly authorized representatives of the governing authorities, bodies, or departments having jurisdiction over the work being performed

and facilities being provided in the project. They shall have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and for inspection.

If the specifications, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the inspecting authority timely notice of its readiness for inspection. Every effort will be made by the Owner to see that inspections are promptly made where they would unduly delay the progress of work being performed by the Contractor. If any work should be covered without approval or consent of the Owner or the inspecting authorities, it must, if required by the Owner or inspecting authorities, be uncovered for examination, and properly restored at the Contractor's expense.

Re-inspection of any work may be ordered by the Owner of the inspecting authorities, and if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the contract documents, the Owner shall pay the cost of re-inspection and replacement. If such work is not in accordance with the contract documents, the Contractor shall pay such costs.

Final inspection, and inspection at time of acceptance of the work, will be made under the supervision of, and in such manner as directed by, the Owner. The Contractor shall furnish all appliances and all material and labor, which may be required for such inspections.

No additional compensation will be paid to the Contractor for labor, tools, or appliances, which may be used or expended in such inspection.

Inspectors employed by the Owner, shall be authorized to inspect all work done and materials furnished. Said inspection may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. An inspector or inspectors will be stationed on the work to report the progress of the work and the manner in which it is being performed; also, to report whenever it appears that the materials furnished and work performed by the Contractor fail to fulfill the requirements of the specifications and contract, and to call to the attention of the Contractor any such failure or other default, but no inspection nor any failure to inspect, at any time or place shall relieve the Contractor from any obligation to perform all of the work strictly in accordance with the requirements of the contract documents. In case of any dispute arising between the Contractor and any inspector as to materials furnished or the manner of performing the work, the inspector shall have the authority to reject materials or suspend the work until the question at issue can be referred to and decided by the Owner. The inspectors shall perform such other duties as are assigned to them. They shall not be authorized to revoke, alter, enlarge, relax, or release any requirements of the contract documents, nor to approve or accept any portion of work, nor to issue instructions contrary to the contract documents. Inspectors shall in no case act as foremen or perform other duties for the Contractor, nor interfere with the management of the work by the Contractor. Any instructions which the inspectors may give the Contractor shall in no way be construed as binding the Owner in any way, nor releasing the Contractor from fulfillment of the terms of the contract.

All work, all materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of the Owner who shall be the final judge of the quality and suitability of the work, materials, processes or manufacture, and methods of construction for the purposes for which they are used. Should they fail to meet the Owner's approval they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall immediately be removed from the site. If, in the opinion of the Owner, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work damaged or not performed in accordance with the contract documents, the compensation to be paid to the Contractor hereunder shall be reduced

by such amount as in the judgement of the Owner shall be equitable.

Whenever a material or article required is specified or shown on the plans by using a name of a proprietary product or of a particular manufacturer or vendor, such reference is intended merely as a standard. Any material or article which will perform adequately the duties imposed by the general design will be considered equal and satisfactory providing the material or article so proposed is deemed by the engineer to be of equal substance and function, also considering quality of workmanship and economy of operation. It shall not be purchased or installed without the County's written approval.

1. Tests

Prior to final acceptance, all work under the contract shall be tested as specified hereinafter. All defects shall be corrected, and the work left in a condition satisfactory to the Owner or inspecting authority.

2. General Guaranty

Neither the final certificate of payment nor any provision in the contract documents, nor partial or entire occupancy of the premises by the Owner, shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work by the county unless a longer period is specified. The Owner will give notice observed defects with reasonable promptness.

**PARAGRAPH 101.14      PROTECTION OF OTHER UTILITIES**

The Contractor shall take all necessary precautions to protect all existing utilities above and below ground during the course of his operations to guard against disruption of service. Contractor should contact Miss Utility for location of existing utilities prior to work activities.

Before beginning work, the Contractor shall notify all necessary agencies and shall determine the location of any facility, which is questionable. Although the drawings show existing utilities according to the best available information, it is possible that utilities exist which are not shown in the drawings and that those utilities shown on the drawings may be inaccurately located. It is the sole responsibility of the Contractor to establish the exact location of all utilities. The cost of any special inspection by the various utility companies will be borne by the Contractor. Any utilities damaged by the Contractor shall be repaired as quickly as possible to the satisfaction of the utility and at the expense of the Contractor.

All facilities which are uncovered during construction shall be properly protected from damage and freezing.

**PARAGRAPH 101.15      CONFLICTS AND DISCREPANCIES**

If a discrepancy or conflict does exist within the drawings or specifications or between the drawings and specifications the following order of precedence shall prevail:

1. Contract agreement

2. Addenda
3. Special conditions
4. Standard details
5. General conditions
6. Specification text - other than above
7. Contract drawings

**PARAGRAPH 101.16      SURVEYS AND STAKEOUT**

The Contractor shall carefully preserve benchmarks, reference points and stakes, and in case of willful or careless destruction, he will be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance. Prior to the final acceptance of the work by the Owner, the Contractor shall re-establish and replace any disturbed property monuments with the project limits of work at no cost to the affected easement holder, or the Owner and shall furnish the Owner with a property survey of the affected portions of the project site certifying that all disturbed property monuments been accurately replaced.

Washington County Department of Water Quality will provide surveys and stakeouts to the Contractor for the purpose of locating all proposed facilities.

Sewer line stakeout reference sheets will be supplied by the Contractor in advance of construction for his use during construction. Reference sheets shall be furnished for all sewer mains and appurtenances consisting of horizontal layout and vertical control on offset line at each structure and at one-hundred-foot (100) intervals and will show the excavation depth from existing grade to sewer invert and, where applicable, quantity of select backfill.

Where quantities for select backfill are shown on the reference sheets, it is the amount payable for that section of water lines shown, quantities used in excess of the amount shown to complete the select backfill the full width and full depth of the trench shall be at the cost of the Contractor. Details for determining pay quantity is shown on standard details of these specifications.

The method employed by the Contractor for transferring sewer grades from the stakeout to the pipe laying shall be subject to the county's approval. The Contractor shall be responsible for any error in grade of the finished work.

Sewer line reference sheets shall be prepared for all mains, showing stationing of mains, fittings, and appurtenances. Benchmarks with descriptions shall be incorporated on referenced sheets.

Washington County Department of Water Quality shall furnish a baseline and one benchmark for the sewer main. The Contractor shall provide all additional stakeouts required to construct the facility.

**PARAGRAPH 101.17      TRAFFIC CONTROL AND ACCOMMODATION OF TRAFFIC**

All work will be done in accordance with the manual on uniform traffic control devices (MUTCD) wherein traffic control devices such as precise sign messages, barricades by type, plastic drums, pavement markings, lights, flagmen, etc. are fully described, with regard to their application, use, size, color, placement, etc. And wherein typical control device layouts are shown. All such devices and techniques planned for use on this project shall be utilized as directed by the Owner and shall conform to the muted requirements.

Depending on the type of operation involved, the engineer shall have the authority to require additional

devices or manpower, if needed without additional cost to the Owner. Within the project there may be areas of limited horizontal and vertical sight distances. All flaggers not in good visual communications shall be equipped with reliable two-way radio communications between themselves and the work area(s). Additional flaggers, flashers, barricades, plastic drums with steady burl lights and any other traffic control devices deemed necessary by the Owner will be provided by the Contractor. Flaggers shall use stop/slow paddles. Paddles shall be a minimum of 24" x 24" in size. The use of flags is prohibited.

The Contractor shall make use of all reasonable means to maintain the normal flow of traffic. Should it become desirable to close any road, the Contractor shall request in writing to the County and if the request is approved by the County, the County will forward the request to the proper governmental agency for final approval. If the request is denied, the Contractor shall not have recourse or justifiable claim for additional compensation for such denial.

If a request to close any road is approved, the Contractor shall maintain traffic in accordance with all conditions set forth by the governmental agency(s) approving such requests at no additional cost.

The Contractor shall construct and maintain without extra compensation, such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians or vehicles. The Contractor shall furnish and erect without cost to the Owner, substantial barricades at crossings of trenches, or along the trench, to protect the traveling public.

#### **PARAGRAPH 101.18      FACILITIES PROVIDED BY OWNER**

The Owner has no facilities for storage of the Contractor's equipment or materials. Where feasible, the Contractor may locate storage sheds, maintenance yards and sanitary facilities within the confines of the rights-of-way obtained by the Owner, subject to the Owner's representative's approval. Should the Contractor locate his headquarters and storage area at some location other than in the Owner's right-of-way, the costs resulting from such location shall be borne by the Contractor.

The Owner is not providing any utility, the Contractor shall be responsible for furnishing electricity, water and any other utilities required during construction. The cost of furnishing all the utilities shall be included in the price bid and no additional payment will be made for the same.

#### **PARAGRAPH 101.19      COMPLAINTS**

The Owner shall be responsible for processing all complaints. It is anticipated that a regular system of complaint handling will be developed at the start of the project wherein complaints will be registered with the Owner, but the Owner will assume no obligation to remedy or satisfy complaints, which shall remain the sole obligation and responsibility of the Contractor.

The Contractor shall make a sincere effort to satisfy complaints as quickly as possible. If in the opinion of the County, a complaint is valid and not satisfied in a reasonable time, the County may cause the complaint to be satisfied by whatever means necessary and all costs for satisfying the complaint will be deducted from the next pay estimate.

#### **PARAGRAPH 101.20      SUBSURFACE CONDITIONS**

There is no subsurface information included. No subsurface investigation has been conducted.

All excavation will be unclassified. No extra compensation or payment will be allowed for rock excavation, removal of water or for removal of any material native or manmade regardless of its character over and above the bid items as set forth in the proposal.

**PARAGRAPH 101.21      CONFERENCES**

A pre-construction conference will be held prior to the start of construction. The meeting will be attended by representatives of the Owner, Contractor and all agencies affected by the work at a time and place to be determined. The conference will be for the purpose of discussing construction schedules, methods, and requirements. During the course of construction, job conferences shall be held at least monthly to review progress, coordinate work and discuss items of general interest.

**PARAGRAPH 101.22      ABBREVIATIONS**

For the purpose of these specifications, the following abbreviations shall represent the words and phrases hereinafter ascribed to them:

1.        ASTM - AMERICAN SOCIETY FOR TESTING MATERIALS, SPECIFICATIONS AND TENTATIVE SPECIFICATIONS.
2.        AWWA - AMERICAN WATER WORKS ASSOCIATION, STANDARDS.
3.        L.F., LIN. FT. — lineal foot (feet)
4.        C.F., CU. FT. — cubic foot (feet)
5.        C.Y., CU. YD. — cubic yard (s)
6.        S.F., SQ. FT. — square foot (feet)
7.        V.F., VERT. FT. — vertical foot (feet)
8.        MFBM — thousand feet board measure.
9.        L.S. — lump sum
10.       D.I. — ductile iron.
11.       PVC — poly vinyl chloride

**PARAGRAPH 101.23      CORRECTION OF WORK**

All materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of the Owner who shall be the final judge of the quality and suitability of the work materials, processes of manufacture, and methods of construction for the purposes of which they are used. Should they fail to meet the approval, they shall be forthwith reconstructed, made good, replaced, and/or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall immediately be removed from the site. If, in the opinion of the Owner, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract

documents. The compensation to be paid to the Contractor hereunder shall be reduced by such amount as in the judgment of the Owner shall be equitable.

**PARAGRAPH 101.24      TESTS**

Prior to final acceptance, all work installed under the contract shall be tested as work progresses. All defects shall be corrected, and the work left in a condition satisfactory to the Owner.

**PARAGRAPH 101.25      GENERAL GUARANTY**

Neither the final certificate of payment nor any provision in the County documents, nor partial or entire occupancy of the premises by the County, shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year unless otherwise provided in the Contract Documents, from the date of final acceptance of the work by the Owner the guarantee period for all County Road repairs shall be two (2) years from the date of Final Acceptance. The Owner will give notice to observed defects with reasonable promptness.

**PARAGRAPH 101.26      ALL WORK INCLUSIVE**

It is the intent of the content specifications and drawings that all the equipment, material, labor, taxes, fees, etc. Will be paid by the bid items listed in the proposal to complete all the work required to complete the project in a professional and acceptable manner. The bid items listed in the proposal are all inclusive and no additional payment will be made for any item major or incidental to the pay items listed.

**PARAGRAPH 101.27      PERMITS**

All permits issued with these specifications or as an addendum are made a part of these specifications. No payment in addition to the pay items will be made for completing the requirements of the permits.

**PARAGRAPH 101.28      ADDENDA**

Any addendum issued shall supersede the special conditions.

**PARAGRAPH 101.29      OWNER MAY STOP THE WORK**

If the work is defective or Contractor fails to supply sufficient skilled workmen of suitable materials or equipment, or Contractor fails to make prompt payments for labor, materials or equipment, the Owner may order Contractor to stop the work or any portion thereof, until the need for such order has been eliminated however; this right of the Owner to stop the work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of Contractor or any other part.

**PARAGRAPH 101.30      HOURS OF WORK**

Work shall be performed only on Monday and through and including Friday, legal holidays excluded, between the hours of 7:00 a.m. and 5:00 p.m. Work to be performed at other times; holidays, nights, Saturdays, and Sundays; shall be requested 72 hours in advance thereof and shall have the prior written approval of the Project Representative, emergencies excluded. All facilities required for carrying out



and inspecting the work shall be provided and maintained by the Contractor. Such work performed outside of regular working hours shall be performed at no additional expense to the Owner with all overtime hours and overhead cost of Inspection to be paid by the Contractor. Legal holidays shall mean the legal day of observations by Washington County for New Year's Day, Martin Luther King's Birthday, President's Day, Good Friday, Memorial Day, Juneteenth, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving, Christmas Eve, Christmas Day and New Year's Eve.

**PARAGRAPH 101.31      STANDARD SPECIFICATIONS**

When standard specifications are referenced herein, e.g., AWWA, MDE, ASTM, SHA etc., It is the intent of these specifications to be interpreted as the latest addition and revision thereto.

**PARAGRAPH 101.32      SCOPE OF WORK**

The intent of the drawings and specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the work in accordance with the standard specifications and all incidental work necessary to complete the project in an acceptable manner, ready for use, occupancy, or operation by the County.

All work that may be called for in the specifications and not shown on the drawings or shown on the drawings and not called for in the specifications shall be executed and furnished by the Contractor, as if described in both these ways; and should any specifications or drawings either directly or indirectly, but which is nevertheless necessary for the proper carry-out of the intent thereof, the Contractor is to understand the things to be implied and required, and shall perform all such work and furnish any such material as fully as if they were particularly delineated or described.

Any discrepancies found between the drawings and the specifications and site conditions or any inconsistencies or ambiguities in the drawings or specifications shall be immediately reported to the County, in writing. Work performed by the Contractor after his discovery of such discrepancies, inconsistencies or ambiguities shall be performed at the Contractor's risk.

END OF SECTION

## **SECTION 01 11 00 SCOPE OF WORK**

### **Part I - GENERAL**

#### **1.1 SUMMARY OF WORK**

The Board of County Commissioners of Washington County, Maryland is accepting bids for the Rubble Landfill Closure Project. This specification section provides a general description of the Scope of Work (Work). The Contractor shall refer to the appropriate specification for details. The project site is in Washington County, Maryland, 11112 Kemps Mill Road, Williamsport, MD 21795.

The Contractor is to coordinate his work (materials handling and traffic) with other site contractors and/or County personnel or their representatives.

The work to be performed by the CONTRACTOR under this project includes providing all labor, services, tools, machinery, equipment, and materials necessary to complete the Rubble Landfill Closure and associated features. The work includes, but is not limited to, the following:

1. Adherence to construction sequencing as indicated on the Contract Drawings.
2. Stakeout and surveying during all construction activities for construction quality control, measurement and payment, and verification of constructed features.
3. Installation of erosion and sediment control devices as shown on the Contract Drawings.
4. Clearing, grubbing, stripping specified areas to the limit of work.
5. Removal and Construction of the Retaining Wall
6. Pavement removal and Placement
7. Other miscellaneous work as shown on the Contract Drawings and specified herein, such as the following:
  - a. Removal of excess excavated material.
  - b. Miscellaneous site work including temporary erosion and sediment controls, temporary and permanent seeding, mulching, cleanup, restoration, and temporary/permanent re-vegetation of the areas disturbed during construction.
  - c. Providing temporary field offices during construction, including storage, sanitary facilities, electrical power, lighting, and communication equipment if required by the Contractor.
  - d. Maintaining Record Drawings depicting all in place construction.

#### **1.2 CONTROL OF WORK**

The OWNER shall furnish all survey controls. All survey points shall be clearly preserved, and if destroyed or removed without authority, shall be reset by a Professional Land Surveyor at the expense of

the CONTRACTOR. Using the provided control points, the CONTRACTOR shall stake out all the work for the project and shall set any necessary grade stakes for the approval by the ENGINEER. As a minimum, a 100-foot by 100-foot grid is required for all fine grading. All minimum slopes shall be achieved. All survey grades shall comply with the tolerances specified in Section 02 21 00.

It shall be the duty of the CONTRACTOR to keep the ENGINEER informed of the times and places he intends to work so the ENGINEER may check the lines and elevations with minimal inconvenience to the ENGINEER or delay to the Contractor.

In the event the CONTRACTOR fails to comply with the Specifications or the ENGINEER'S instructions regarding any phase of work, the ENGINEER will not approve such defects until they are corrected and are in accordance with the Contract Documents.

### **1.3 LEGAL NOTIFICATION**

The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the CONTRACTOR performs and work contrary to such laws, ordinances, rules, and regulations, he shall bear all cost arising therefrom.

The construction of this work involves earth disturbance. An earth disturbance permit and sanitary landfill permit have been secured by the County Public Agency. It is the responsibility of the CONTRACTOR to secure any additional permit required to execute this Contract.

### **1.4 PERMITS**

The CONTRACTOR shall secure all necessary permits for this work. Any federal, state, or county roadway excavation, trenching or backfilling operations associated with this work shall be performed to the jurisdictional agencies' standards. This expense should be factored into the submitted bid.

### **1.5 SPECIAL SITE CONSIDERATION**

The CONTRACTOR is responsible for street cleaning and shall provide all equipment necessary to accomplish these tasks. The OWNER'S operations require clean streets at all times. Water required shall not be provided by the OWNER and shall not be obtained onsite. The CONTRACTOR is responsible for obtaining any required water and the cost shall be considered incidental to the Section 31 25 13ST, Erosion and Sediment Control.

### **1.6 WORK UNDER OTHER CONTRACTS**

#### **1.6.1 Construction Quality Assurance Consultant**

A separate contract with the OWNER will be issued to the Construction Quality Assurance (CQA) Consultant. That contract includes:

- a. Construction quality assurance monitoring
- b. Construction quality assurance testing

- c. Written certification of construction to the Maryland Department of the Environment (MDE).

## **1.7 CONTRACTOR USE OF PREMISES**

The CONTRACTOR shall have equipment and material delivery access to and from the site as noted in the General Conditions.

No later than 15 days after Notice to Proceed, the CONTRACTOR shall arrange with the OWNER a sequence of procedures, means of access, space for storage of materials and equipment, and use of approaches and roadways. CONTRACTOR'S use of premises shall be confined to the areas approved by the OWNER.

### **1.7.1 Smoking**

Smoking is PROHIBITED on the entire project site unless a specific location is approved by the OWNER and delineated appropriately by the CONTRACTOR. The CONTRACTOR shall be Liable for any and all damages and injury as a result of CONTRACTOR'S employees or agents smoking on site.

### **1.7.2 Private Driveways**

The CONTRACTOR shall not use private driveways

## **1.8 OWNER OCCUPANCY**

The CONTRACTOR shall cooperate and coordinate with the OWNER, to minimize conflicts with OWNER'S activities at the site.

## **1.9 ONSITE MATERIAL**

Soils excavated from the limits of disturbance shall be tested by the CONTRACTOR in accordance with Section 01 45 23 of these specifications prior to and during construction activities. Based on preliminary investigations and experience with site soils, it is anticipated that soil excavated from the site will be suitable for construction purposes, although segregation, screening, moisture conditioning or other treatment may be needed to meet Section 01 45 23 of these specifications. CONTRACTOR is responsible for providing segregation, screening, and moisture conditioning, if required. However, the OWNER does not guarantee onsite material will meet all the project specifications. CONTRACTOR shall conduct his own investigations to determine suitability of onsite material and is responsible for furnishing offsite materials as required to meet the project specifications.

## **1.10 SITE CONDITIONS**

### **1.10.1 Historical Use of Site**

The Project site is an active municipal solid waste transfer station. Customers and transfer vehicles will be entering and exiting the sites on a regular daily basis. The CONTRACTOR shall coordinate all construction activities with the on-site attendant to align the disposal bins to minimize the interaction between the CONTRACTOR and customers.

### **1.10.2 Existing Grades**

The existing grades may vary from those indicated on the Contract Drawings. The CONTRACTOR'S field survey shall be used to verify site conditions.

### **1.10.3 Existing Features**

The Contract Documents require the CONTRACTOR to field verify the location of existing features, including trees, existing concrete structures, existing piping systems, existing wells, existing underground, and overhead utilities, etc.

## **1.11 SUBMITTALS**

### **1.11.1 Site Health and Safety Plan**

The CONTRACTOR is responsible for site health and safety for his employees. Within 15 days of Notice to Proceed, the CONTRACTOR shall prepare a Site Health and Safety Plan and provide a copy of this Plan to the ENGINEER and the OWNER for informational purposes only. The Site Health and Safety Plan shall be prepared in accordance with applicable provisions of OSHA regulations 29 CFR 1910.120 and 1926. The CONTRACTOR's Site Health and Safety Plan must be submitted to the ENGINEER and the OWNER prior to commencing work.

### **1.11.2 Sequence of Construction**

A sequence of construction is provided on the Contract Drawings and shall be adhered to as indicated on the Contract Drawings unless the ENGINEER provides prior written authorization to the CONTRACTOR. In the event that the CONTRACTOR chooses to vary from the specified sequence of construction, a separate written plan of the CONTRACTOR'S proposed sequence of construction shall be submitted within ten (10) days after the Notice to Proceed and receive the ENGINEER's and Soil Conservation District's approval prior to commencing the work.

### **1.11.3 Shop Drawings, Record Drawings, Testing Data**

Submit Shop Drawings, Record Drawings, independent quality control laboratory test results, manufacturer's specifications and literature for various products, and other information as described herein.

### **1.11.4 Other Submittals**

Other submittals as specified in the Contract Documents.

## **1.12 SUPERINTENDENT**

Provide a single qualified full-time superintendent for the duration of the project.

CONTRACTOR shall not change superintendent without OWNER'S written permission. CONTRACTOR'S proposal to change personnel must be justifiable to the OWNER and must demonstrate that the proposed replacement possesses adequate qualifications.

### **1.13 SCHEDULE OF VALOES**

The CONTRACTOR shall provide a complete Schedule of Values within ten (10) days after the Notice to Proceed and receive the ENGINEER's approval prior to submission of the CONTRACTOR's first request for progress payment. The CONTRACTOR shall provide an updated complete Schedule of Values with each request for progress payment in accordance with the requirements of the General Conditions, Section GC-92.

### **PART II - PRODUCTS**

Not applicable.

### **PART III - EXECUTION**

Not applicable.

END OF SECTION

## **PART 2 - PRODUCTS**

### **2.1 BASE BID ITEMS DESCRIPTION, MEASUREMENT AND PAYMENT**

#### **ITEM LO-MOBILIZATION AND DEMOBILIZATION**

1. Mobilization shall consist of the furnishing of all Work, materials and operations required for assembling and setting up the Project, including, but not limited to, initial movement of personnel to the Project site; providing a project office trailer, establishment of shops and plants; construction of sanitary and any other facilities required by the Specifications and State or local regulations; moving on and off site all construction equipment, hauling units, concrete mixers, hoisting equipment, compressors and tools required to complete the Work; establishment of storage yard area; all other Work and operations which must be performed prior to beginning Work on compensational Items of Work; the cost of required insurance and bonds and any other initial expense required. Demobilization shall consist of the removal of all CONTRACTOR'S property from the project site and cleanup of all affected areas.
2. Price for this Item shall be included as a lump sum in the Bid Form. Contract lump sum price for Mobilization and Demobilization will be paid in five (5) equal amounts of the Lump Sum Price for Mobilization.

#### **ITEM 2.0 - CONSTRUCTION STAKEOUT AND SURVEY**

1. Work under this Item includes, establishing vertical and horizontal control points, construction stakeout, performing and submitting all required surveys during and upon completion of construction activities, recording and preparing as-built drawings including, as-builts of the liner system, any as-built for quantity purposes and final construction as-built drawings.
2. Price for this Item shall be included as a lump sum in the Bid Form.

#### **ITEM 3.0-TESTING AND INSPECTIONS**

1. Work under this item includes all work and materials required to provide, complete in place, all required testing and inspection of specific materials as specified in these specifications including but not limited to Geocomposites, Geotextiles, HDPE Materials, stone, soils, and other specified materials. The CONTRACTOR is required to coordinate Work with the various regulatory agencies of the County and State.
2. Price for this Item shall be included as a fixed Lump Sum unit price in the Bid Form.

#### **ITEM 4.0 - EROSION AND SEDIMENT CONTROL**

1. Work under this Item includes all material and labor required to implement the erosion and sediment control plans as shown in the Contract Documents including silt and super silt fence installation, ditch lining, temporary and permanent seeding, soil preparations and fertilizing for seeding, riprap inlet and outlet construction, inlet/outlet construction, culvert construction, basin outlet construction, restoration, and repair of

disturbed areas, stabilized construction entrances, sump pits, and inlet/outlet protection. This item includes the modifications to Sediment Trap and structures. This item also includes replacement or repair of all erosion and sediment control items required to maintain erosion and sediment controls during construction activities. This item also includes the removal of all erosion and sediment controls at project completion, to be performed at the direction of the OWNER.

2. Price for this Item shall be included as a fixed Lump Sum unit price in the Bid Form.

#### ITEM 5.0 - CLEARING AND GRUBBING

1. Work under this Item includes, but is not limited to, all work related to clearing and grubbing; removal of topsoil, organic matter and root mat; removal of objectionable material, rubbish, and debris; clearing and grubbing of woody vegetation, including bushes and trees solely in the areas noted on the Contract Drawings; temporary stockpiling as necessary; removal of all related stumps and tree debris; excavation and removal of remaining root ball and filling of voids with clean earth fill; removal of other obstructions interfering with the work; disposal of cleared and grubbed materials in accordance with Specifications; replacement of any necessary suitable material wasted by Contractor during the clearing and grubbing process; and preparing approved areas for disposal of any excavated waste materials. All Work shall be in accordance with the Contract Documents and local codes and regulations.
2. Price for this Item shall be included as a fixed unit price per acre in the Bid Form.

#### ITEM 6.0 - EXCAVATION AND GRADING

1. Work in this item includes excavation and grading required to meet the grades shown in the Contract Drawings and hauling of excavated materials to an onsite stockpile designated by the Owner. This work item includes all excavation and grading required to construct roads, swales, trenches, final grades, relocation of waste, etc. Material shall be stockpiled at the location(s)  
  
determined by the Owner and placed in a controlled manner in conformance with Owner and State standards.
2. Excavation of materials for Bid Item No. 5 will be measured on the basis of cubic yard volume removed as determined by field survey and computed by AutoCAD or other approved methods. The surveys shall be performed in accordance Section 02 21 00 - Field Engineering, Survey Controls and Record Drawings at the milestones listed in Paragraph 3.2 "As-Built Surveys". Upon the Engineer's written approval of each as-built survey, said as-built survey will be the basis for determining the volume of soils excavated or placed to establish the grades.
3. Payment for the excavation of materials will be made at the contract unit price per cubic yard (CY). The unit price shall include compensation for all labor, equipment, and materials to haul, stockpile, separate, survey, place, compact, grade, test, and rework the borrow, as well as all incidentals to complete the work in accordance with the Contract Documents.



#### ITEM 7.01 – GEOMEMBRANE

#### ITEM 7.02 - GEOCOMPOSITE DRAINAGE NET (GDN)

#### ITEM 7.03 - 8 OZ/SY GEOTEXTILE

1. Work under this Item includes all materials and labor required to construct the geosynthetic portions of the liner system including the geomembranes, GDN, and geotextile. Work under this Item also includes furnishing and installation of liner limit markers, construction of the anchor trenches, temporary anchoring, protection of work, material repairs, material sampling, all required laboratory and field material testing, and providing material and labor for the construction of any required temporary stormwater diversion berms and temporary stormwater conveyance piping system as needed to protect the works and materials. No separate payment will be made for material required for the anchor trench, waste, or replacement of any material damaged prior to final acceptance by the Owner.
2. Measurement for Item 7 shall be on the basis of square foot placed as determined by the 2-dimensional placement area, as computed by AutoCAD or other approved methods. Surveys shall be field run by an independent surveyor licensed in the State of Maryland. The surveys shall be performed in accordance with SECTION 02 21 00 at the milestones listed in Paragraph 3.2 "As-Built Surveys". Upon the Engineer's written approval of each as-built survey, said as-built survey will be the basis for determining the quantity of geosynthetics installed.
3. Payment for Item 7 in accordance with requirements specified herein, shall be per square foot (SF) based on the unit costs given by the Contractor in the Bid Form.

#### ITEM 8.0-CAP DRAIN AGGREGATE

1. This item of work shall consist of furnishing and placing Aggregate to the lines, grades, width, and depth as shown on the Plans, Details and/or as directed by the ENGINEER.
2. The payment will be full compensation for all aggregate, furnishing, hauling, placing, grading, materials, labor, equipment, tools, and incidentals necessary to complete the work.
3. Cap Drain Aggregate will be measured and paid for at the Contract unit price bid per cubic yard (CY).

#### ITEM 9.01 - SOIL PROTECTIVE LAYER

#### ITEM 9.02- VEGETATIVE SUPPORT LAYER

1. Work under this Item includes all labor, equipment, and materials to haul, excavate, furnish, load, stockpile, separate, screen, rehandle, dry, wet, reprocess, survey, place, compact, grade, test, and rework the soil layers, as well as all incidentals to complete the work in accordance with the Contract Documents.

2. Measurement for Item 9 shall be on the basis of cubic yard volume placed as determined by and computed by AutoCAD or other approved methods. Surveys shall be field run by an independent surveyor licensed in the State of Maryland. The surveys shall be performed in accordance Section 02 21 00 at the milestones listed in Paragraph 3.2 "As-Built Surveys". Upon the Engineer's written approval of each as-built survey, said as-built survey will be the basis for determining the volume of soils placed to establish the grades and required thickness of low permeability soil layer.
3. Payment for Item 9 in accordance with requirements specified herein, shall be per cubic yard (CY).

#### ITEM 10.0 - LANDFILL GAS VENTS

1. This item of work shall consist of furnishing and placing landfill gas vents, screens and HDPE slip boots the lines, grades, and depth as shown on the Plans, Details and/or as directed by the ENGINEER. This work item includes all materials, backfill, bentonite plugs, incidentals, excavation, and grading required to install the vents.
2. The payment will be full compensation for all materials, furnishing, hauling, placing, grading, labor, equipment, tools, and incidentals necessary to complete the work.
3. Landfill Gas Vents will be measured and paid for at the Contract unit price bid per Each vent.

### 2.2 CONTINGENT ITEMS

#### ITEM C-1 - CONTINGENT UNSUITABLE MATERIAL EXCAVATION

1. This work shall consist of the removal of Unsuitable Material encountered at or below the normal limit for Unclassified Excavation as described for that item or as shown on the Plans. Unsuitable material to be removed shall be based upon the judgment of the ENGINEER and shall be removed to the extent directed by the ENGINEER. The proposed quantities include a contingent item for this work, which shall be used if so directed by the ENGINEER.
2. Unsuitable Material Excavation will be measured as described above and paid for at the Contract Unit price bid per cubic yard. The payment shall be full compensation for all labor, materials, equipment, excavation, backfill (with borrow material as approved by the ENGINEER), compaction, disposal, and incidentals necessary to complete this item of work.

#### ITEM C-2 - SELECT MATERIAL FOR BACKFILL

1. Measurement of additional excavation and backfill with No. 57 stone will be on a cubic yard basis and be the number of cubic yards of additional excavation within the limits directed by the ENGINEER.
2. Unit price bid per cubic yard for additional excavation and backfill with No. 57

shall include furnishing all labor, materials, and equipment, and performing all work to the limits directed by the ENGINEER and in conformance with these contract documents.

### **2.3 INCIDENTAL ITEMS NOT MEASURED FOR PAYMENT**

Items of work not specifically included for measurement and payment as described herein will not be measured for payment, but the cost thereof will be considered as incidental to the contract with the associated costs borne solely by the CONTRACTOR. This shall include, but not be limited to the following items of work:

Surveying for measurement and payment quantities;

Compliance with submittal requirements and as-built drawing preparation;

Preparation and provision of daily activity reports, material logs, schedules, field notes and other documentation of construction activities as requested by the ENGINEER;

Inspections, coordination and cooperation with OWNER, ENGINEER, or any other person or entity on the Forty West Landfill property;

Maintaining of material storage and CONTRACTOR'S staging areas;

Testing of materials, including all equipment and personnel required;

Quality assurance and quality control;

Removal and disposal of existing items located within the limit of disturbance not otherwise included in the Bid Items - as directed by the ENGINEER, including fencing, reinforced concrete pads, debris, etc.;

Providing and paying for temporary electrical utility services;

Providing environmental protection;

Health and safety measures;

Proper control and removal of stormwater and groundwater from within excavations and within and surrounding all other areas within the limit of disturbance;

Providing source(s) of water for wetting soils, dust control, testing, flushing, cleaning activities and/or any other purposes during construction. The CONTRACTOR is responsible for obtaining any required water for use during construction. Water is not available onsite for the CONTRACTOR'S use.

Repair of damage to onsite or offsite property;

Repair of weather-related damage to material or any other surfaces;

Proper storage, protection, and maintenance of stockpiled materials;

Access/egress ramps or roadways required for construction purposes not otherwise shown on the Contract Drawings;

Locating and marking of existing utilities located within the Landfill property; and

All other activities, supplies, materials, equipment, and labor needed to complete the Work as specified in the Contract Documents not specifically mentioned herein.

## **PART 3 - EXECUTION**

### **3.01 PAYMENT PROCEDURE**

#### **A. Breakdown of Lump Sum and Fixed Unit Price Items:**

1. Prior to first request for payment, the CONTRACTOR shall submit to the ENGINEER for approval an itemized Schedule of Values which includes a complete detailed breakdown of all lump sum and fixed unit price Items awarded. The detailed breakdown shall include quantities with all material and labor costs for individual Work Items required to complete the lump sum and fixed unit price Item. Quantities estimated by the CONTRACTOR are for the purpose of providing a basis for realistic progress payment consistent with performance of the Work. The CONTRACTOR will revise the job breakdown if the ENGINEER so requests.
2. Payments will be made in accordance with the GENERAL CONDITIONS section. The CONTRACTOR may request periodic payments on a monthly basis in accordance with a time schedule approved by the ENGINEER. Submission for payment shall be made to the ENGINEER. However, all payment requests will be made on the basis of the approved breakdown and accompanied by all supporting documentation required herein.
  - a. The CONTRACTOR may request payment for specific Items of material and equipment, which has been purchased for incorporation into the Project provided these Items have been previously approved for use in accordance with the Contract Documents and provided the ENGINEER agrees to request of the CONTRACTOR.
  - b. Payment request for materials or equipment purchased may be honored for materials or equipment, which are stored on site and stored in a manner satisfactory to the ENGINEER. Payment will be made for specific Items of material and equipment provided an invoice and delivery ticket is submitted with the payment request, which clearly indicate the materials and equipment are to be used for the Project. The following periodic payment request must include a receipted invoice certified by the vendor as to payment received for the specific Item, which had been previously paid for. Unless the required certified invoice is received with the following request for periodic payment, money previously paid will be deducted from any money due the CONTRACTOR without any penalty of any kind to the ENGINEER.

END OF SECTION

## **SECTION 01 33 00 SUBMITTALS**

### **PART I- GENERAL**

#### **1.1 DESCRIPTION**

This section includes general requirements and procedures related to the CONTRACTOR'S responsibilities for preparing and transmitting submittals to the ENGINEER to demonstrate that the performance of the work will be in accordance with the Contract requirements. Submittals include schedules, test results, topographic surveys, CONTRACTOR'S drawings, samples, manuals, methods of construction, and record drawings. Other requirements for submittals are specified under applicable sections of the standard specifications and special provisions.

#### **1.2 SUBMITTAL REQUIREMENTS**

Not later than 10 days after the receipt of Notice to Proceed, the CONTRACTOR shall submit in writing a list of materials and equipment that will be purchased, giving name, address, and telephone number of supplier, manufacturer, or processor. No material shall be incorporated into the work until approval of the source has been given. Delivery of materials to the contract site prior to approval is made at the CONTRACTOR'S risk and is subject to immediate removal at no cost to the OWNER should it be determined that the source is not acceptable.

Submittals shall be scheduled and coordinated with the ENGINEER and CONTRACTOR'S construction schedule.

A complete submittal schedule and list of required submittals shall be submitted with the first submittal, but not later than 10 days after receipt of the Notice to Proceed. The schedule for submission of submittals shall be arranged so that related equipment items are submitted concurrently. The ENGINEER may require changes to the submittal schedule to permit concurrent review of related equipment.

#### **1.3 SCHEDULES**

##### **1.3.1 Construction Schedule - Chart Form**

Within 10 days after the date set forth in the Notice to Proceed for the construction to start, the CONTRACTOR shall prepare and submit for review to the ENGINEER an "expanded" construction schedule showing the order in which he proposes to carry out the work and the dates upon which he proposes to start and complete each work item. The expanded schedule shall be an elaboration of the bid schedule with completion dates remaining unchanged. The schedule shall show each work item provided in the Contract, and shall include the dates for submittals, sample testing, approval of materials and CONTRACTOR'S drawings, and the procurement of materials and equipment. The construction schedule shall be in chart form showing expected completion percentages and arranged to record actual completion percentages at stated intervals. The schedule will outline in detail the proposed equipment, manpower, and production rates necessary to achieve the schedule. The CONTRACTOR shall update the schedule every 2 weeks with any and all changes in equipment, manpower, etc. annotated.

The ENGINEER may require, and the CONTRACTOR shall furnish such additional information and data as required to justify the basis of the schedule.

The accepted construction schedule shall be kept up to date as work progresses, including work added by change order, and shall be submitted to the ENGINEER every 2 weeks (at Construction Progress Meetings) and with the monthly request for payment. If the CONTRACTOR fails to submit the updated schedule within the time prescribed, the ENGINEER may withhold approval of progress payment estimates until such time as the CONTRACTOR submits the updated schedule.

The construction schedule shall determine the order in which the work is to proceed. However, the ENGINEER may request and authorize minor changes to this schedule whenever such changes are of advantage to or necessary for the operations of the OWNER.

## **1.4 CONTRACTOR'S DRAWINGS**

### **1.4.1 General**

The CONTRACTOR'S drawings shall be neat in appearance, legible, and explicit to enable proper review and ensure contract compliance. They shall be complete and detailed to show fabrication, assembly, and installation details, wiring and control diagrams, catalog data, pamphlets, descriptive literature, and performance and test data. They shall be accompanied by calculations or other sufficient information to provide a comprehensive description of the structure, machine, or system provided, and its intended manner of use. If the CONTRACTOR'S drawings deviate from the Contract Documents, the CONTRACTOR shall advise the ENGINEER in writing with the submittal and state the reason, therefore.

No portion of the work requiring a CONTRACTOR'S drawing shall be started, nor shall any materials be fabricated, delivered to the site, or installed, prior to the approval by the ENGINEER. Fabrication performed, materials purchased, or onsite construction accomplished that does not conform to the approved CONTRACTOR'S drawings shall be at the CONTRACTOR'S risk. The OWNER will not be liable for any expense or delay due to connections or remedies to accomplish conformity.

The review and approval of CONTRACTOR'S drawings by the ENGINEER shall not relieve the CONTRACTOR from his responsibility with regard to the fulfillment of the terms of the Contract. The CONTRACTOR assumes all risks of errors and omissions, and the ENGINEER will have no responsibility.

Contract work, materials, fabrication, and installation shall conform to approved CONTRACTOR'S drawings.

### **1.4.2 Shop Drawings**

Shop drawings shall show types; sizes; accessories; layouts, including plans, elevations, and sectional views; components; assembly and installation details; and all other information required to illustrate how applicable portions of the contract requirements will be fabricated and/or installed. In the case of fixed mechanical and electric equipment (if applicable), layout drawings drawn to scale shall be submitted to show required clearances for operation, maintenance, and replacement of parts. This will include manufacturer's certified performance curves, catalog cuts, pamphlets, descriptive literature, installation, and application recommendations, as required. Shop drawings for closely related items such as a pump and its motor shall be submitted together. Additional shop drawings and information required for electrical and mechanical equipment (if applicable) will be listed in appropriate specification sections.



### **1.4.3 Catalog Data**

Manufacturer's catalog, product, and equipment data shall be certified and shall include material types, performance characteristics, voltage, phase, capacity, and similar data. Wiring diagrams shall be provided when applicable. Indicate catalog, model, and serial numbers representing specified equipment. Provide complete component information to verify all specified items.

### **1.4.4 Installation Drawings**

Submit installation drawings that depict CONTRACTOR-designed items and methods of construction, including geosynthetic panel layout; all mechanical and electrical controls (if applicable); and piping drawings. Requirements for the drawings will be listed in appropriate specification sections. Drawings shall be accompanied by calculations or other information to completely explain the structure, machine, or system described and its intended use. Review and approval of such drawings by the ENGINEER shall not relieve the CONTRACTOR from his responsibility with regard to the fulfillment of the terms of the contract. The CONTRACTOR assumes all risks of error.

### **1.4.5 Manufacturer's Installation Recommendations**

Manufacturer's installation recommendations and instructions shall provide written detailed step-by-step preparation and structure design calculations, installation of the materials and products, including recommended quality control testing, seaming, joining, and repair specifications.

### **1.4.6 Method of Construction**

When so specified or directed by the ENGINEER, the CONTRACTOR shall submit proposed methods of construction for specific portions of the work. This submittal shall include a detailed written description of all phases of the construction operation to fully explain to the ENGINEER the proposed method of construction. If required by the specifications, submit installation drawings to supplement the description. Review and approval by the ENGINEER will be in accordance with approval process herein and shall not relieve the CONTRACTOR from his responsibility with regard to fulfillment of the terms of the contract. All risks associated with the proposed method remain the CONTRACTOR'S responsibility, and therefore the ENGINEER shall have no responsibility. After review and approval, if, in the opinion of the CONTRACTOR, modifications are necessary, submit such modifications in detail, including reasons for the modifications. Modifications shall not be implemented without review and approval by the ENGINEER.

### **1.4.7 Submittal Process**

#### **1.4.7.1 General**

Each CONTRACTOR'S drawing submitted by the CONTRACTOR shall have affixed to it the following certification statement signed by the CONTRACTOR:

"Certification Statement:

By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and pertinent data, and I have checked and coordinated each item with other applicable approved drawings and all contract requirements."

#### **1.4.7.2 Identification**

With the first submittal, submit a CONTRACTOR'S drawing submittal schedule listing as near as practical, by specification section number, all submittals required and approximate date the submittal will be forwarded. All submittals for approval shall have the following identification data, as applicable:

- OWNER'S name.
- Project name and location.
- Product identification.
- Drawing title, drawing number, revision number, and date of drawing and revision.
- Applicable contract drawing numbers and specification section and paragraph numbers.
- Subcontractor's, vendor's, and/or manufacturer's name, address, and phone number.
- CONTRACTOR'S certification statement.

For catalog product data or brochures submitted in packages of multiple items, the identification is needed only on the exterior. In such instances, the identification shall include page and catalog item numbers for items submitted for approval. If one or more of the items in such a submittal are not approved, resubmittal of only the unapproved items is required. Catalog, product data, or brochures containing various products, sizes, and materials shall be highlighted to show the particular item being submitted. Likewise, items not applicable to the contract shall be marked "not applicable" or crossed out.

#### **1.4.7.3 Space**

Vacant space of approximately 2.5 inches high by 4 inches wide shall be provided adjacent to the identification data to receive the ENGINEER'S status stamp.

#### **1.4.7.4 Number of Copies**

See General Conditions, or as otherwise specified by the OWNER.

#### **1.4.7.5 Approval Process**

Each submittal shall be in accordance with the CONTRACTOR'S drawings submission schedule. Allow 14 days for the first submittal for checking and appropriate action by the ENGINEER. CONTRACTOR'S drawings will be returned stamped with one of the following classifications:

- APPROVED - No corrections, no marks.
- APPROVED AS NOTED - A few minor corrections. All items may be fabricated as marked without further resubmission. Resubmit a corrected copy to the ENGINEER.
- REVISE AND RESUBMIT - Minor corrections. Items not noted to be revised and corrected may be fabricated. Resubmit drawings as per original submissions with corrections noted. Allow 20 days for resubmittal for checking and appropriate action by the ENGINEER.
- NOT APPROVED - Requires corrections or is otherwise not in accordance with the contract documents. No items shall be fabricated. Allow 20 days for resubmittal for checking and appropriate action by the ENGINEER.

### **1.5 SAMPLES**



### **1.5.1 General**

The CONTRACTOR is required to collect and test material samples to certify that they meet the requirements of these specifications. The cost of sample testing shall be borne by the CONTRACTOR. The certified test results of the material shall be submitted by the CONTRACTOR to the ENGINEER for approval. The ENGINEER may conduct separate testing of material samples to confirm test results.

As soon as practicable after the issuance of the Notice to Proceed, the CONTRACTOR shall submit names of material suppliers and borrow sources, along with samples required by the Specifications or requested by the ENGINEER. Unless otherwise specified, the original submittal shall be a sample of each item. Approval shall be obtained from the ENGINEER prior to delivery of the material to the contract site. Such samples shall be representative of the actual material proposed for use in the project and of sufficient size to demonstrate design, color, texture, and finish when these attributes will be exposed to view. If samples deviate from requirements in the Contract Documents, the CONTRACTOR shall so advise the ENGINEER in writing with the submittal and state the reason, therefore.

### **1.5.2 Identification**

Each sample or laboratory test data results shall have the following identification data permanently attached:

- OWNER.
- Project name and location.
- Applicable Contract Drawing and/or Specification section number.
- Subcontractor's, vendor's and/or manufacturer's name, address, and phone number.

Mail under separate cover a letter submitting each shipment of samples containing the identification information listed herein. Enclose a copy of this letter with the shipment.

### **1.5.3 Approval Process**

Allow 14 days for checking and appropriate action by the ENGINEER. The OWNER may test certain samples for specified requirements before approval is given. Failure of a sample to pass such tests will be sufficient cause for refusal of that material and its source. Rejected samples will be returned upon request, and any or all resubmittals required shall consist of new samples and an additional 14 days for checking and approval. All sample testing will be performed by the CONTRACTOR at the CONTRACTOR'S own expense. Upon approval, one sample so noted will be returned and the remainder will be retained by the ENGINEER until completion of the work, or as otherwise defined by the OWNER. When requested, all approved samples will be returned for installation provided their identity is maintained in an approved manner until final acceptance of the project.

Samples of various materials or equipment delivered to the site may be taken by the ENGINEER for testing. Samples failing to meet the requirements of this Contract will automatically void previous approvals, and resubmittal or retesting of the samples will be required.

## **1.6 RECORD DRAWINGS (AS-BUILTS)**

The CONTRACTOR shall keep one record copy of all Contract Documents at the site in good order

and annotated to show all revisions made during construction. Such annotations shall be kept current and may be inspected by the ENGINEER at any time. Failure to maintain current record drawings will be cause for delay of progress payments. Record drawings shall be available to the ENGINEER at all times during the life of the Contract. The ENGINEER will hold a minimum of two as-built drawing review meetings to review the status of the CONTRACTOR'S as-builts during the progress of the construction. The CONTRACTOR shall be appropriately prepared for each of these review meetings. All drawings shall be made a part of the Record Drawings and shall include the following:

- Contract Drawings - Annotate or redraft, as required, to show all revisions, substitutions, variations, omissions, and discrepancies made or discovered during construction. These shall include, but are not limited to, location and depth of utilities, piping, conduits, manholes, pumps, valves, vaults, liner, and other equipment. Revisions shall be made and shown on all drawing views with actual dimensions established to permanent points.
- Installation Drawings - Same as Contract Drawings above when installation drawings are required. Include, for example, actual layouts of conduit run between various items of electrical equipment for power, control, and instrumentation; wire sizes, numbers, and functions; configuration of conduits; piping layouts; liner layout; and drainage net layout. Sections and details shall be added, as required, for clarity. Drawings of switchgear, motors, control centers, and other equipment shall be revised to show actual installations.

At the completion of the Contract, or at the ENGINEER'S request and before final payment is made, furnish the ENGINEER with one set of reproducible and electronic versions in AutoCAD 2022 (or more recent) of the final record drawings (as-builts) reflecting all revisions herein described.

The CONTRACTOR shall be responsible for coordination and cooperation with the OWNER'S personnel. The CONTRACTOR shall provide the OWNER'S personnel with location information as required.

## **PART II - PRODUCTS**

Not applicable.

## **PART III - EXECUTION**

Not applicable.

END OF SECTION

## **SECTION 01 45 00 QUALITY CONTROL**

### **PART I - GENERAL**

#### **1.1 DESCRIPTION**

This section includes requirements of a general nature related to the CONTRACTOR'S responsibility for quality control involving inspections, tests, certificates, and reports.

#### **1.2 INSPECTION**

The ENGINEER has the right to inspect all materials and equipment at all stages of development or fabrication and shall be allowed access to the site and to the CONTRACTOR'S and supplier's shops to conduct such inspections. Onsite work will be subjected to continuous inspection.

Inspection by the ENGINEER will not release the CONTRACTOR from responsibility or liability with respect to material or equipment. The ENGINEER will provide the CONTRACTOR a minimum of 24 hours' notice prior to offsite inspections.

When a shop test of mechanical equipment is required by the manufacturer before shipment to the Contract site, the CONTRACTOR shall give the ENGINEER a minimum of 10 working days written notice of the time of the required test. The CONTRACTOR shall ensure that the test site is safe, accessible, dry, ventilated, and well lit. Work involved with the installation of such equipment shall not proceed until the test results are approved by the ENGINEER.

When local codes or laws require approval or inspection of the work by other agencies or organizations before installation or operation, the CONTRACTOR shall obtain such approval and submit one signed original and three copies of the approval to the ENGINEER.

#### **1.3 TESTING**

##### **1.3.1 Field and Laboratory**

The CONTRACTOR shall contract with an independent geotechnical subcontractor to perform laboratory testing as required by these Specifications, including the following periodic inspections, engineering, and associated services:

- Soils - Inspect and test the placement and compaction of fills. Perform field density testing using a Troxler 3401 series nuclear moisture-density gauge (or approved equal) to assess the adequacy of compaction. Inspect subgrades and foundations. Perform all required soil tests per the applicable specifications section.
- Aggregates -The CONTRACTOR shall provide the OWNER all laboratory tests for aggregates (fine & coarse) for quality control purposes prior to its placement. The tests shall include, but not limited to, sieve analysis, moisture-density relationship, and specific gravity tests (if required by the Engineer). All tests shall be performed from a finished product at the quarry in accordance with AASHTO/ASTM Standards. The samples for preliminary investigation tests are obtained by the party responsible for development of the potential source. All material(s) shall be tested within six (6) months of time from the date

of its production. The CONTRACTOR shall ensure that segregation during placement and compaction does not introduce a serious bias in the results.

- Stone for Riprap - Stone for riprap shall be uniformly graded from the smallest to the largest pieces as specified in the Contract Documents. The stone will be accepted upon visual inspection at the point of usage and shall conform to MSHA Standard Specifications for Construction and Materials. Riprap shall not contain more than 10 percent by weight of the smallest size stone in each class.

The independent testing firm shall have performed previous similar work in a satisfactory manner and be an approved subcontractor. The CONTRACTOR shall include the cost of this service in his lump sum bid.

The CONTRACTOR shall cooperate with the ENGINEER and the laboratory testing representatives and provide at least 24 hours' notice prior to specified testing. The CONTRACTOR shall provide labor, materials, and testing facilities at the site as required by the Specifications and the approved subcontractor.

The CONTRACTOR shall be solely responsible for the adequate stability of cut soil slopes at the site and for providing a safe working condition within the excavated areas.

### **1.3.2 Pipeline and Other Testing**

Test procedures and requirements are specified in the appropriate specification section.

## **1.4 REPORTS**

### **1.4.1 Certified Test Reports**

Where transcripts or certified test reports are required by the Contract Documents, the CONTRACTOR shall submit them for approval by the ENGINEER. Approval shall be obtained before delivery of any material to the site. The testing shall have been performed in an approved independent laboratory within 6 months of submittal of the reports for approval. Transcripts of test reports shall be accompanied by a notarized certificate in the form of a letter from the manufacturer or supplier certifying that the tested material meets the specified requirements and is of the same type, quality, manufacturer, and make as that specified. An officer of the manufacturer or supplier shall sign the certificate.

### **1.4.2 Certificate of Compliance**

At the option of the ENGINEER, or where specified, the CONTRACTOR may, in lieu of the required tests, submit for approval a notarized Certificate of Compliance in the form of a letter from the manufacturer. The Certificate shall include identification of the materials manufactured and shall state the following:

- Manufacturer has performed all required tests.
- Materials supplied meet all test requirements.
- Tests were performed within 6 months of submittal of the Certificate.
- Materials that were tested are of the same type, quality, manufacture, and make as those specified.

An officer of the manufacturer shall sign the Certificate. Materials shall not be delivered until the ENGINEER approves the Certificate.

### **1.4.3 Manufacturer's Certificates**

The CONTRACTOR shall submit Manufacturer's Certificates for the installation of those items listed in the Specifications.

Manufacturer's Certificates shall state that the equipment has been installed under the supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative, and that it is operating in accordance with the specified requirements to the manufacturer's satisfaction.

### **1.5 MANUFACTURER SERVICES**

When required, manufacturer services are specified in appropriate specification sections.

### **1.6 EQUIPMENT CALIBRATION**

All field test equipment will be kept under control of the CONTRACTOR. The CONTRACTOR will be fully trained in the use of equipment, test procedures, and interpretation of results for each piece of test equipment. A copy of the Calibration Certificate will be kept by the QC technician and supplied to the ENGINEER.

Calibration of nuclear-density gauges shall conform to the frequencies and methods outlined in ASTM D2922-78 and D3017. Unstable or erratic gauges shall not be used in density testing and shall be immediately removed from the site.

## **PART II - PRODUCTS**

Not applicable.

## **PART III - EXECUTION**

Not applicable.

END OF SECTION

**SECTION 01 45 23**  
**INSPECTIONS, TESTS, SCHEDULES, AND REPORTS**

**PART 1- GENERAL**

**1.1 DESCRIPTION**

- A. This section includes requirements of a general nature related to the CONTRACTOR'S responsibility for inspections, tests, schedules, and reports.

**1.2 INSPECTIONS**

- A. The ENGINEER or OWNER has the right to inspect any materials or equipment at any stage of development or fabrication and shall be allowed access to the site and to the CONTRACTOR'S and supplier's shops to conduct such inspection. Inspection by the OWNER does not release the CONTRACTOR from responsibility or liability with respect to material or equipment, which meets the requirements of the Contract Documents.
- B. When specified inspections or tests are required by the Contract Documents, the work involved shall not proceed beyond that point until the OWNER or ENGINEER has approved such inspections or tests. The CONTRACTOR shall inform the OWNER of the progress of the work and shall give the OWNER a minimum of three (3) working days' notice of appropriate times for specified inspections and tests. The CONTRACTOR shall ensure that a portion of the work to be inspected is in a safe, accessible, and dry location.
- C. When local laws and codes require approval and inspection of the work by other agencies or organizations before installation or operation, the CONTRACTOR shall obtain such approval and submit one (1) signed original and three (3) copies of the approval to the OWNER.

**1.3 TESTING**

- A. The ENGINEER or OWNER has the right to conduct Quality Assurance (QA) testing on any materials at any stage of development at the OWNER'S cost if chosen to do so. In the event of OWNER QA testing, the CONTRACTOR must allow time for testing to be performed and results to be analyzed by the OWNER. Based on the results of the OWNER'S QA testing, the CONTRACTOR may have to supply alternative materials and/or redo work.
- B. CONTRACTOR shall provide all necessary testing laboratory services as specified in appropriate sections of these Specifications.
- C. CONTRACTOR shall employ and pay for services of qualified independent testing laboratory, approved by the OWNER, to perform specified inspection and testing.
- D. Employment of testing laboratory shall not relieve CONTRACTOR of obligation to perform work in accordance with the requirements of Contract Documents.



- E. CONTRACTOR shall be responsible for all testing laboratory services and engineering data required for ENGINEER'S review of materials and equipment proposed to be used in the work. The testing laboratory shall certify the results of the testing.
- F. CONTRACTOR shall deliver to laboratory, at designated location, adequate samples of materials proposed to be used which require testing, together with applicable design drawings (mix designs for concrete, geosynthetic materials, aggregate materials, etc.).
- G. CONTRACTOR shall cooperate with laboratory personnel and provide access to Work.
- H. CONTRACTOR shall provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples at site or at source of products to be tested, to facilitate tests and inspections, and for storage, curing or preparation of test samples.
- I. CONTRACTOR shall notify OWNER and laboratory two working days prior to expected time for operations requiring inspection and testing services.
- J. CONTRACTOR shall provide testing per these Specifications for factory materials and field installation.
- K. After each inspection and test, CONTRACTOR shall submit copies of laboratory report(s) to the OWNER and ENGINEER for approval, including date issued. Project title and number, name of inspector, date and time of sampling or inspection, identification of project and specifications section, location in Project, type of inspection or test, date of test, results of test, and conformance with Contracts Documents shall be included in report(s).

#### **1.4 LIMITS ON TESTING LABORATORY AUTHORITY**

- A. Laboratory may not release, revoke, alter, or expand on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of Work.
- C. Laboratory may not assume duties of CONTRACTOR.
- D. Laboratory has no authority to stop Work.

#### **1.5 SCHEDULES**

- A. Construction Schedule: The CONTRACTOR shall submit for review and approval a construction schedule in accordance with Section 01 33 00.
- B. The CONTRACTOR shall furnish sufficient forces, construction equipment and all miscellaneous structures as may be necessary to ensure the progression and completion of the work in accordance with the submitted schedule. The CONTRACTOR shall increase its work force and may request from the OWNER a lengthening of the working hours if the CONTRACTOR falls behind the progress shown on the schedule. If, in the opinion of the OWNER, such increases are necessary for the completion of the work in accordance with terms of the Contract, they may be approved. Failure of the CONTRACTOR to comply with the requirements of the OWNER may be grounds for

termination by the OWNER if the CONTRACTOR is not proceeding at such rates as will ensure completion within the specified time. Such a determination may result in the termination of the right of the CONTRACTOR to continue the work.

- C. In the case of an emergency, the OWNER reserves the right to direct the CONTRACTOR to commence work at a certain location within four (4) hours' notice.

## 1.6 REPORTS

The date of certified test results of materials for which the CONTRACTOR is requesting approval shall be within the last month of the date of the submittal. Certified MQC test results of material actually to be used during the CONTRACT shall be submitted in accordance with Section 01 33 00.

### A. Certified Test Reports:

1. Where certified test reports are required by the Contract Documents, they shall meet the requirements listed in this Section.
2. Before delivery of materials for which certified test reports are required, certified copies of the reports of all tests required in referenced publications or specified within the Contract Documents shall be submitted to the OWNER for approval. Documents shall be on letterhead and be signed by a duly authorized agent of the company submitting the information.
3. The testing shall have been performed in an approved independent laboratory, within one (1) month of submittal of the reports for approval.
  - a. Test reports shall be accompanied by a certificate from the manufacturer or supplier certifying that the tested material meets the specified requirements and is of the same type, quality, manufacture make as those proposed to be supplied.

### B. Certificate of Compliance:

1. At the option of the OWNER, or where specified, the CONTRACTOR shall, in lieu of the specified tests and other tests required in the various reference documents, furnish a certificate of compliance from the manufacturer. The certificate shall state the manufacturer has performed all required tests; products to be supplied meet all test requirements; tests have been performed within one (1) month of submittal of the certificate; and products tested were of the same type, quality, manufacture and make of those proposed to be supplied. Documents shall be on letterhead and be signed by a duly authorized agent of the company submitting the information.

### C. Manufacturer's Certificates:

1. The CONTRACTOR shall submit manufacturer's certificates for the installation of those materials listed in the Contract Documents.



2. Manufacturer's certificates shall state that the material has been installed either under the continuous or periodic supervision of the manufacturer's authorized representative, and that it is in accordance with the specified requirements, to the manufacturer's satisfaction. Documents shall be on letterhead and be signed by a duly authorized agent of the company submitting the information.

## **PART 2-PRODUCTS**

Not Used.

## **PART 3 - EXECUTION**

Not Used.

END OF SECTION

**SECTION 01 52 00**  
**FIELD OFFICES AND SHEDS**

**PART I- GENERAL**

**1.1 DESCRIPTION**

This section includes the requirements for field office construction, maintenance, and removal. The CONTRACTOR shall provide field offices as specified herein at his own expense.

**PART II- MATERIALS**

Materials, equipment, and furnishings shall be new or used, and adequate for the required purpose. CONTRACTOR shall furnish and install all needed aggregate, piping for drainage, and maintain ingress and egress roadways for the designated field staging areas.

**PART III -EXECUTION**

**3.1 PREPARATION**

Fill grade sites for temporary structures to provide drainage away from buildings and install office spaces ready for occupancy 15 days after the Notice to Proceed.

**3.2 CONSTRUCTION**

Construction specifications include the following:

- Portable or mobile buildings, or buildings constructed with floors raised aboveground, securely fixed to foundations, with steps and landings at entrance doors.
- Structurally sound, secure, weather tight enclosures for office and storage spaces. Maintain during progress of work; remove at completion of work.
- Temperature transmission resistant floors, walls, and ceilings shall be compatible with occupancy and storage requirements.
- Interior materials in offices shall be sheet-type for walls and ceilings, finished or painted, resilient floors and bases.
- Lighting for offices shall include 50 foot-candles at desktop height, and exterior lighting at entrance doors.
- Fire extinguishers shall be the appropriate type to be located at each office and storage area. Interior materials in storage sheds will be as required to provide specified conditions for the storage of products.

**3.3 ENVIRONMENTAL CONTROL**

Environmental control specifications include:

- Heating, cooling, and ventilation for offices: automatic equipment to maintain
- Storage spaces - Heating and ventilation as needed to maintain products in accordance with contract documents, adequate lighting for maintenance and inspection of products.

### **3.4 CONTRACTOR'S OFFICE AND FACILITIES**

Specifications include:

- Size - For CONTRACTOR'S needs and to provide space for project meetings.
- Telephone - Required.
- Other Furnishings - CONTRACTOR'S option.

### **3.5 OWNER AND ENGINEER'S OFFICE**

There will be a separate trailer or structure furnished by the CONTRACTOR for sole use of the OWNER and ENGINEER, with a separate entrance door with a new lock and two keys. The separate trailer shall meet the requirements of a MSHA Type B Engineer's office. In addition, other specifications include:

- One (1) of the two touch-tone telephones shall be equipped with an answering machine and a speaker phone for holding conference calls.
- Phone lines shall be separate from the fax line.
- A copy machine with auto-feed capable of making 11" x 17" copies.
- One wastebasket per desk and table
- Ample, space, tables, and chairs shall be available to conduct progress meetings for eight (8) personnel.
- Printer HP Compatible B&W Laser Jet Printer with resolution of 1200 DPI (dots per in.) and a minimum of 8 MB of RAM. Officejets and Bubblejets will not be accepted. Printer shall have a minimum print speed of 15 PPM (pages per minute).
- Internet Access - The microcomputer system shall be provided with unlimited Internet service approved by the Engineer. Where available, internet high-speed service [DSL or cable] must be provided. If DSL or cable access is not available, then a wireless connection through Verizon, Sprint or other acceptable service provider must be provided for each computer.
- Accessories
  - (a) Uninterruptible power supply (UPS).
  - (b) Standard computer workstation with minimum desk space of 60 X 30 in. and a swivel type office chair, padded with arm rests.
  - (c) 8-1/2 x 11 in. and 11 x 17 in. copy paper to be supplied as needed.
  - (d) Toner or ink as needed for printer.
  - (e) Maintenance agreement to provide for possible down time.
  - (f) Physical security system to deter theft of computer components.

All equipment stated above shall be fully functional upon delivery and shall be retained in the construction field office for the duration of the Contract.

If for any reason the equipment fails to operate, the system shall be replaced or repaired within 48 hours.

### **3.7 STORAGE AREAS AND SHEDS**

Sheds shall be sized to the specific storage requirements for products of individual sections. Allow for access, orderly provision for maintenance, and for inspection of products.

### **3.8 MAINTENANCE AND CLEANING**

The CONTRACTOR shall provide weekly janitorial services for offices, periodic cleaning for storage areas and maintenance for office and storage areas. These services shall be provided throughout the duration of the project.

Approach walks shall be maintained free of mud, water, and snow.

### **3.9 REMOVAL**

At the completion of work, remove buildings, foundations, utility services, and debris. Restore areas.

END OF SECTION

**SECTION 01 70 00  
CONTRACT CLOSEOUT**

**PART I - GENERAL**

**1.1 DESCRIPTION**

This section includes requirements for cleanup, restabilization, and restoration of the Contract site. Cleanup shall be performed to prevent accidents to personnel and the OWNER'S employees, to protect all work-in-place, to restabilize and restore all disturbed areas, to remove all evidence of construction activities and to effect completion of the Contract in an orderly manner.

**1.2 CLEANUP**

Construction cleanup shall proceed as construction progresses and shall consist of the removal of all mud, oil, grease, soil, gravel, trash, scrap, debris, and excess materials that are unsightly or may cause the tripping or sliding of workmen, ladders, or equipment. Remove water from floor areas where electrical power tools are to be used and prevent stains on concrete, which will be exposed in the finished work. All cleaning materials and equipment used shall be selected and employed with care to avoid scratching, marring, defacing, staining, or discoloring the surfaces cleaned.

The CONTRACTOR shall perform final cleanup prior to his written request for a final inspection of any portion of the Contract work.

In addition to the normal "broom clean" requirements, the exposed surfaces of the following materials shall be cleaned as listed herein:

- Gravel roads - Remove mud, dirt, and redress.
- Painted surfaces - Remove marks, stains, fingerprints, and dirt.
- Exposed slabs - Wash, scrape, and scrub, using a detergent, as necessary, to remove bond breaker, dirt, and discolorations.
- Asphalt paving - Remove mud, dirt, and trash, and hose down as required.
- Aluminum - Clean as directed.
- Other surfaces - Remove all blemishes. Leave clean, uniform, and dust free.
- Premises and site - Remove all trash, debris, and surplus excavated material.

No items shall remain on or be discarded on this site or any other OWNER'S site. Items and excess materials that are to be discarded shall be removed to the landfill. Leave premises orderly and "broom clean".

**1.3 RESTORATION AND RESTABILIZATION**

All areas disturbed by the CONTRACTOR'S operation shall be restored and restabilized as specified herein. This shall include, but not be limited to, staging and stockpiling areas, construction strips, access roads, and all areas within the limits of work.

Final restoration and restabilization shall proceed in accordance with the construction schedule. This shall include seeding and sodding when season allows. Disassemble and remove all temporary construction facilities constructed by the CONTRACTOR and leave the site in an orderly and restored condition as required by the Contract Documents.

Preserve signs, markers, guard rails, bollards and fences in their existing locations and conditions unless written permission is obtained from the ENGINEER for their removal and restoration or their replacement. Upon approval from the ENGINEER, remove such conflicting facilities when grading operations begin and store them to keep them clean and in their existing condition.

Restore them to their previous locations or new locations as directed. Repair or replace damaged items as directed by the OWNER or ENGINEER, at no cost to the OWNER.

Restabilization of turf areas shall be performed in accordance with Section 31 25 13ST.

Gravel surfaces and access road shoulders shall be restored to their condition prior to being disturbed. Do not reuse shoulder material if it is contaminated by foreign material. Instead, replace with new material of the same quality and gradation as the original material. Materials and methods of construction shall be in accordance with Specification requirements and with applicable permits secured for this Contract.

#### **1.4 DISPOSAL OF WASTE AND EXCESS MATERIALS**

Construction waste and excess construction materials shall be disposed of in the OWNER'S disposal areas or as directed by the OWNER.

Waste and excess material disposed of in an unauthorized area shall be removed by the CONTRACTOR, and the area shall be restored to its condition before disturbance at no cost to the OWNER.

Dispose of human waste properly and as required by OWNER.

#### **1.5 REMOVAL OF CONDEMNED MATERIAL**

Material delivered to the Contract site, which has been determined by the ENGINEER to be unsuitable or not in accordance with the Contract Documents, shall be removed from the work site and disposed of in an approved area at no cost to the OWNER.

### **PART II - MATERIALS**

Not applicable.

### **PART III-EXECUTION**

Upon receiving the CONTRACTOR'S written request for substantial completion inspection, the ENGINEER will perform a walk-through of the site area with the CONTRACTOR'S and the OWNER'S representative(s). The ENGINEER shall identify and document, via a punch list, the additional construction items required to declare "substantial completion" of the Contract. If, in the opinion of the ENGINEER, the site area can be fully utilized for purposes for which it was intended, a "Certificate of Substantial Completion" shall be issued. If, in the opinion of the ENGINEER, the site area cannot be fully utilized for purposes for which it was intended, no "Certificate of Substantial Completion" will be issued, and another walk-through will be scheduled. All punch list items identified during the walks-through shall be addressed to the satisfaction of the ENGINEER. Final payment will not be made until all the punch list items are resolved to the satisfaction of the ENGINEER.

END OF SECTION

01 70 00-2

**SECTION 01 71 13**  
**MOBILIZATION AND DEMOBILIZATION**

**PART I- GENERAL**

**1.1 DESCRIPTION**

**1.1.1 Scope**

Perform construction preparatory operations, including the movement of personnel and equipment to the project site and for the establishment of CONTRACTOR'S facilities necessary to begin work. Provide construction closeout operations, including removal of equipment and personnel from the project site, removal of CONTRACTOR'S facilities, cleanup, and site restoration.

Maintain traffic control, both vehicular and pedestrian, on any facility affected by the Work. Provide maintenance, sweeping, dust control, and pavement cleaning on access roadways as required by the ENGINEER. Pavement cleaning shall be by a street sweeper or other approved method, a broom will not be accepted. Pavement cleaning shall occur after every rain event and as directed by the ENGINEER or as directed by the Department of Solid Waste. Pavement cleaning shall be from the project area to the facility entrance at Kemps Mill Road. All maintenance of traffic practices shall comply with the Manual of Uniform Traffic Control Devices (MUTCD).

**PART II-MATERIALS**

Not Applicable.

**PART III-EXECUTION**

All work performed in providing facilities and services shall be done in a safe and workmanlike manner.

CONTRACTOR shall provide all labor, materials, and equipment necessary to maintain vehicular and pedestrian traffic throughout the project duration. CONTRACTOR shall be responsible for obtaining all permits, approvals, and pay any fees necessary from local, county, and state regulatory agencies required to crossroads with earthmoving equipment. Signs, lights, barricades, and manpower shall be provided wherever necessary to protect the traveling public from hazardous conditions in accordance with local, county, and state transportation and OSHA requirements.

END OF SECTION

**SECTION 02 00 00**  
**SITE CONDITIONS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. The Rubble Reclamation Landfill is a closed rubble landfill facility and is located at 11112 Kemps Mill Road, Williamsport, MD 21795. The Landfill is adjacent to Kemp Mill Park, home to the Washington County Girls Softball League, depending on the time of year, softball games and practices will be played at the park facility on evenings and weekends. The CONTRACTOR shall always take caution while traveling through the softball facility especially during games and practice times.
- B. This section includes requirements of a general nature relating to site conditions and the CONTRACTOR'S responsibility for existing utilities.

**1.2 RELATED SECTIONS AND DOCUMENTS**

Not Applicable

**1.3 EXISTING UTILITIES**

- A. Existing utility facilities and structures are shown in accordance with the best available information. The OWNER will not be responsible for the completeness or accuracy thereof nor for any deductions, interpretations, or conclusions drawn therefrom. Seventy-two (72) hours in advance of work in the vicinity of existing facilities, the CONTRACTOR shall notify Miss Utility by calling 1-800-257-7777. The CONTRACTOR shall then verify to his/her own satisfaction by test pit or other means the actual locations of existing utilities prior to construction in their vicinity
  - 1. Should the CONTRACTOR during his/her operations encounter any underground utilities the presence of which was not previously known, or of a different type than shown, shall immediately notify the OWNER and take all necessary precautions to protect the utility and maintain continuation of service until said utilities can be adjusted by the appropriate utility owners.
  - 2. The CONTRACTOR shall notify all public utility corporations, jurisdictional agencies, or other owners to make all necessary adjustments to public utility fixtures and appurtenances within or adjacent to the limits of construction. The CONTRACTOR shall be responsible for coordinating his/her activities with the utility. Delays and additional costs resulting from a lack of coordination between the utilities and CONTRACTOR shall be at no cost to the OWNER
  - 3. Damage caused to utilities either directly or indirectly by the CONTRACTOR shall be repaired and the facilities restored to their original condition to the satisfaction of the OWNER and the utility owner, at no additional cost to the OWNER.
- B. Work in Vicinity of Existing Utilities:



1. At least 72 hours prior to starting work in the vicinity of underground utility structures and appendances, the CONTRACTOR shall notify Miss Utility, as previously stated. The CONTRACTOR shall support and protect all utilities and appurtenances in accordance with the plans and OWNER'S requirements and shall take any other steps necessary to protect the structures from disturbance and damage.
  2. Electricity shall not be turned off more than eight (8) hours to the leachate storage facility and the CONTRACTOR shall schedule the outage at least three (3) business days in advance, if necessary.
- C. Relocations by Others:
1. Relocations indicated in the Contract Documents (if applicable) to be performed by others are not a part of the Contract. However, it shall be the CONTRACTOR'S responsibility to coordinate his/her construction with the performer of such relocations so as not to cause delay in this Contract.
  2. Relocations by others arranged by and for the convenience of the CONTRACTOR shall be at no additional cost to the OWNER.
- D. Access to Utilities/Facilities:
1. The CONTRACTOR shall at all times permit free and clear access to the various and affected facilities by personnel of the utility owners or operators for the purpose of inspection, maintenance, providing for additional service requirements, and the construction of new facilities. When personnel of the utility owners or operators are working within the limits of work to be performed by the CONTRACTOR, the CONTRACTOR will not be relieved of his/her responsibility for the maintenance and protection of such facilities.
  2. The CONTRACTOR shall at all times permit free and clear access to the existing monitoring wells. If the CONTRACTOR anticipates restricting access to any of these locations, they shall provide the OWNER with written notice at least 1-month prior to commencing work in this area.
- E. Abandonment/Modification of Existing Utilities and Structures
1. The CONTRACTOR shall repair/resurface paved roads as shown on the Contract Drawings. If paved surfaces are damaged from the CONTRACTOR's negligence or otherwise, the CONTRACTOR shall repair the paved surface at no expense to the OWNER.

#### **1.4 VARIABILITY OF FIELD CONDITIONS**

- A. All existing topographic elevations and contours shown on the Contract Drawings are based upon a combination of aerial topography. Relative dimensioning and minimum or maximum grades are the critical elements. If there is any doubt as to the intent of the design, the CONTRACTOR is to contact the ENGINEER for his direction and/or approval. The CONTRACTOR is responsible for verification of the existing conditions prior to the start of Construction.

- B. The CONTRACTOR shall be responsible for correcting all grading work not approved by the ENGINEER as being in accordance with the intent of the design at no additional cost to the OWNER.

## **1.6 AIR QUALITY**

- A. The CONTRACTOR shall be aware that this project involves construction within a solid waste landfill. Solid waste landfills of this type may vent off fumes that may be hazardous. The CONTRACTOR shall be responsible for monitoring air quality within the area of work and ensuring the safety of all personnel on site per OSHA Requirements and the Contract Documents. The CONTRACTOR's monitoring procedure shall be provided with his Site Health and Safety Plan.

## **1.7 REMOVAL OF DEBRIS**

- A. The CONTRACTOR may be required to remove existing debris and/or rubble waste at the site, in the locations indicated on the Contract Drawings and/or as directed by the ENGINEER. The debris and/or rubble waste materials are to be taken to the area specified by the Department of Solid Waste within the Forty West Landfill for disposal. The removal and hauling of such materials shall be paid to the CONTRACTOR as specified in Measurement and Payment Section. Disposal of the debris and rubble material removed from such areas will be at no cost to the CONTRACTOR. Deliveries to the Forty West Landfill shall be prearranged and coordinated with the OWNER.

## **1.9 SITE ACCESS**

- A. Site access is to be coordinated with the OWNER. The CONTRACTOR is responsible for providing his own lock and key to the site entrance gate. The CONTRACTOR is responsible for opening and closing the site entrance gate at the beginning and end of workday, respectively. Site access is to be coordinated with the OWNER.

## **PART 2 - PRODUCTS**

Not Used.

## **PART 3-EXECUTION**

Not Used.

END OF SECTION

**SECTION 02 21 00**  
**FIELD ENGINEERING, SURVEY CONTROLS, AND RECORD DRAWINGS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. OWNER has established benchmarks with horizontal and vertical control as shown on the plans for use by the CONTRACTOR.
- B. CONTRACTOR shall:
  - 1. Provide civil, structural, or engineering services specified or required to execute CONTRACTOR'S construction methods.
  - 2. Develop and make all detail surveys and measurements needed for construction including slope stakes, batter boards, piping layouts, and all other working lines, elevations and cut sheets.
  - 3. Keep a transit and leveling instrument, or other appropriate surveying equipment, on the site at all times and a skilled instrument person employed or obtained whenever necessary for layout of the Work.
  - 4. Provide all material required for additional benchmarks, control points, batter boards, grade stakes, and other items.
  - 5. Be solely responsible for all locations, dimensions, and levels.
  - 6. Safeguard all points, stakes, grade marks, monuments, and benchmarks made or established on the Work; re-establish same if disturbed; and rectify all the Work improperly installed because of not maintaining, not protecting, or removing without authorization such established points, stakes, marks, and monuments.
  - 7. Be responsible for removing and accounting for all numbered stakes located within the area designated for construction following the installation of the subgrade. Any areas which, in the opinion of the ENGINEER, may contain abandoned grade stakes shall be investigated and any necessary repairs will be made at the CONTRACTOR's expense, regardless of the investigation results.
  - 8. When requested by ENGINEER, provide such facilities as may be necessary for ENGINEER to check line and grade points placed by CONTRACTOR.
  - 9. Perform all measurements for payment required by the Contract Documents.
  - 10. Keep neat legible field notes of all measurements and calculations made by CONTRACTOR while surveying and laying out the Work.
  - 11. Retain the services of an independent (not employed by or otherwise affiliated with the CONTRACTOR) professional surveyor licensed in the State of Maryland to perform all required surveys, record, and prepare as-built drawings including but not limited to the following:

- a. Existing topographic conditions within the limit of disturbance following clearing and grubbing;
- b. Location of electric lines, water line, sewer line, all structures, drainage features, and roads;
- c. Sediment Basins and associated inlet and outlet structures, if modified;
- d. Permanent erosion and sediment control structures and surface water diversion structures, such as channels, culvert pipes and headwalls, dikes, letdowns, etc.
- e. Final topographic conditions within the limit of disturbance (LOD).

## **1.2 SURVEY TOLERANCE**

A. All survey grades shall comply with the following tolerances:

Top of Subgrade =	0 to - 0.2 feet
Top of Vegetative Support Layer=	0 to+ 0.2 feet
Top of General / Structural Fill / Other Fill Areas =	0 to+ 0.2 feet

B. Work shall be controlled as further described in Section 01 11 00.

## **1.3 CONTRACTOR'S PROJECT MANAGER**

A. CONTRACTOR shall employ and retain at the work site a Project Engineer capable of performing all tasks required of the CONTRACTOR. Tasks include but are not limited to:

1. Daily report of Project activity to be submitted to the ENGINEER with all pertinent information pertaining to the Project as follows:
  - a. Number of employees onsite.
  - b. Subcontractor's employees onsite.
  - c. Breakdown of employees by trade.
  - d. Major equipment and materials installed.
  - e. Major construction equipment utilized.
  - f. Location of all areas in which work/construction was performed
  - g. Materials and equipment received.
  - h. Quantity of the items completed or in progress with daily as well as cumulative quantity of work done for each item.

- i. Adherence to the construction schedule and construction sequencing.
2. Provide all surveying equipment required including transit, level, stakes, and required surveying accessories.
3. Furnish all required lines and grades for construction of operations. Check all piping, other materials, and equipment.
4. Maintain field office files and drawings, record drawings, and coordinate engineering services with Subcontractors. Prepare layout and coordination drawings for construction operations.
5. Check and coordinate Work for conflicts and interferences, and immediately advise the ENGINEER of all discrepancies noted.
6. Cooperate with ENGINEER in field inspections as required.
7. Attend all progress meetings.

## **1.5 RECORDS**

- A. Maintain a complete, accurate log of all control and survey work as it progresses.

## **1.6 SUBMITTALS**

- A. Submit name, address, and resume of CONTRACTOR'S Project Manager to ENGINEER.
- B. On request of ENGINEER, submit documentation to verify accuracy of field engineering work.
- C. When requested by ENGINEER, submit certificate signed by registered engineer or surveyor certifying that elevations and locations of Work are in conformance with Contract Documents. Explain all deviations.
- D. One copy of all field notes shall be furnished to the ENGINEER and one copy furnished to the OWNER with other records upon final completion.
- E. Provide paper and electronic versions in AutoCAD 2022 of all surveys as described in Paragraph 1.1 of this Section. CONTRACTOR shall submit for ENGINEER'S approval each survey within 3 days of data collection.

## **PART 2 - PRODUCTS**

Not Used.

## **PART 3 - EXECUTION**

### **3.1 SURVEY CONTROLS**

Based on the control points provided by the OWNER, the CONTRACTOR is to provide all temporary and permanent benchmarks, monuments, and increments needed to control work. If during the work, control points set by the OWNER are disturbed by the CONTRACTOR, the CONTRACTOR shall replace same at no cost to the OWNER.

A survey grid shall be established as recommended by the ENGINEER for the landfill as shown on the CONTRACT DRAWINGS. The CONTRACTOR is responsible for completing, in electronic format (Microsoft Excel) the Construction Control Point grid table upon completion of each survey Milestone and submitting the grid table to the ENGINEER for approval. All areas outside the limits of the cell shall be surveyed based on a grid established by the CONTRACTOR with 100-foot maximum spacings. The same grid shall be used in grading operations, as well as in the preparation of "as-built" drawings and for measurement and payment.

### **3.2 "As-Built" Surveys**

To accurately quantify the volume of materials excavated, handled, processed, and placed, a topographic survey of the work area shall be performed at the CONTRACTOR'S expense at the following milestones:

- Milestone 1: Existing conditions, following clearing, and grubbing, yet prior to excavation.
- Milestone 2. Completed undercut-subgrade surface, including horizontal and vertical limits of all bridge-lifts, coarse aggregate, and other subgrade stabilization materials placed throughout undercut-subgrade construction.
- Milestone 3. Prepared subgrade fill surface.
- Milestone 4. Prepared low permeability soil layer (subbase) surface.
- Milestone 5. Final completed landfill cell (top of leachate collection drainage layer) and separation berms adjacent to Cells 1, 3, and 5.

Using the provided control points, the CONTRACTOR shall stake out all work for the project and shall at a minimum meet the grades at the grid provided by the ENGINEER. For areas outside the Cell limits, the contractor shall establish a grid as described in herein. All minimum slopes shall be achieved. Grades shall meet the tolerances stated in Paragraph 1.2

Upon completion of each milestone, the CONTRACTOR shall provide the above as-built surveys to the ENGINEER as both a paper copy and in AutoCAD 2022 format (or more recent) for the ENGINEER'S approval. Each as-built survey shall be conducted using the same baseline and offsets previously specified herein. Each of the paper copies will be submitted in accordance with SECTION 01 33 00 SUBMITTALS and shall be signed and sealed by a Professional Land Surveyor who is licensed in Maryland. After submittal of each as-built survey milestone, any work conducted by the CONTRACTOR towards the subsequent milestone prior to receiving written approval of said as-built survey from the ENGINEER, is done at the CONTRACTOR's own risk.

END OF SECTION

**SECTION 02 24 00**  
**ENVIRONMENTAL PROTECTION**

**PART I - GENERAL**

**1.1 DESCRIPTION**

- A. The CONTRACTOR shall perform all Work in such a manner as to minimize the pollution of air, water, or land during, and as the result of, construction operations under this Contract. For the purpose of these Specifications, environmental pollution is defined as the presence of chemical, physical or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and recreational purposes. The requirements of this Section are intended to apply to pollutants, which are generated by the construction process; they do not apply to the landfilled materials, which are buried at the landfill. Pollution from materials at the Site, contacted during construction, must also be minimized.

**1.2 SUBMITTALS**

- A. Submit in accordance with Section 01 33 00.
- B. Copies of photographs and documentation for onsite stockpiling of construction materials shall be submitted to the ENGINEER for review and comment. Proposed erosion control measures for the onsite stockpiles shall also be submitted.
- C. Copies of CONTRACTOR'S proposed trash and debris disposal methods shall be submitted for acceptance to the ENGINEER prior to onsite work.
- D. Copies of environmental testing data and data evaluation shall be submitted to the ENGINEER within one (1) week of receipt of request.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

**3.1 PROTECTION OF LAND AREAS**

- A. It is intended that the land resources within the Project boundaries and outside the limits of permanent Work performed under the Contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the Project.

The CONTRACTOR shall confine his/her construction activities to areas defined by the Contract Drawings and these Specifications.



### **3.2 PROTECTION OF TREES AND SHRUBS**

- A. Clearing and grubbing shall be limited to only those areas required to perform the specific required Work shown on the Contract Drawings. In all areas outside the LOD, the CONTRACTOR shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without special permission from the ENGINEER or OWNER. No ropes, cables, or guys shall be fastened to, or attached to, any existing nearby trees for anchorage unless specifically authorized by the ENGINEER or OWNER. Where such special emergency use is permitted, the CONTRACTOR shall first adequately wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The CONTRACTOR shall in any event be responsible for any damage resulting from such use.
- B. Where, in the opinion of the ENGINEER, trees may possibly be defaced, bruised, injured, or otherwise damaged by the CONTRACTOR'S equipment or operation, the CONTRACTOR shall protect adequately such trees to the drip line.
- C. Any trees or other landscape features scarred or damaged by the CONTRACTOR'S equipment or operations shall be restored as nearly as possible to a condition that will appear natural and not detract from the appearance of the Project at the CONTRACTOR'S expense. The CONTRACTOR shall choose a method of restoration, and shall either treat and heal or remove, dispose, and replace damaged trees, with approval from the ENGINEER.
- D. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter, shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workers with saws or pruning shears. Tree trimming with axes shall not be permitted. Where tree climbing is necessary, the use of climbing spurs shall not be permitted. Climbing ropes shall be employed where their use is deemed necessary for safety. Trees that are to remain, whether within or outside established clearing limits, that are subsequently damaged by the CONTRACTOR and are beyond saving, in the opinion of the ENGINEER, shall be immediately removed and replaced with a nursery-grown tree of the same species and size, or similar species and size of comparable value as required by the OWNER at no cost to the OWNER. CONTRACTOR shall insure growth or replacement.

### **3.3 PROTECTION OF WATER RESOURCES**

- A. The CONTRACTOR shall not pollute streams or other water resources. The CONTRACTOR shall assure the proper disposal of fuels, oils, acids, or other potentially harmful construction-related materials. It is the CONTRACTOR'S responsibility to investigate and comply with all applicable federal, state, OWNER, and municipal laws concerning pollution of rivers, streams, or other water resources. All work shall be performed in such a manner that objectionable conditions shall not be created at or adjacent to the Project area.
- B. Water used for onsite material processing, concrete curing, and cleanup or other wastewaters shall not be allowed to enter a stream or other water resource. If any landfilled material is dumped in unauthorized areas, the CONTRACTOR shall remove the material and restore the area to the condition of the surrounding undisturbed area. If



necessary, contaminated ground shall be excavated, disposed of, and replaced with suitable fill material, compacted, and finished with vegetative soil at the CONTRACTOR'S expense.

### **3.4 STORAGE FACILITIES**

- A. Use environmentally suitable stockpiling locations for the purpose of storing materials, equipment and suitable backfill material. Landfilled materials shall not be stockpiled. Environmentally suitable locations shall be level, devoid of mature strands of natural vegetation, and be removed from drainage facilities, wetlands, streams, and stream corridors.
- B. Portions of the construction area within the limits of disturbance may be utilized as environmentally suitable stockpiling locations.
- C. The CONTRACTOR shall not be restricted to the use of the site and may select other nearby locations within the limits of disturbance that meet the previously mentioned criteria upon approval by the OWNER. Pending OWNER approval, the CONTRACTOR may select locations elsewhere on the OWNER property. If the CONTRACTOR should select alternate locations, he shall submit photographs and other documentation (including E&S Control Plan), which show that his/her proposed locations meet the suitable criteria described above, to the ENGINEER. He shall receive the acceptance of the ENGINEER and the OWNER for the alternate locations prior to their use.
- D. Use straw bale sediment barriers or silt fencing and erect temporary fencing or other barriers to mark the boundary of the stockpile areas. Where fill is to be stored in excess of 7 days, the CONTRACTOR shall employ a suitable means of protecting excavated material from wind and water erosion. Erosion control methods may include one or more of the following: mulching, sprinkling with water, snow fencing, hay baling and stone covering.
- E. At the completion of use, restore storage and stockpile locations to the original conditions prior to construction as documented in the Pre- Construction Survey. Restoration shall commence as soon as the locations are no longer needed for storage or stockpiling purposes.
- F. Proposed erosion control measures shall be submitted by the CONTRACTOR to the ENGINEER for review and comment before the Pre-Construction Meeting.

### **3.5 DUST CONTROL**

- A. Dust control requirements at the site shall be implemented to comply with the OSHA requirements listed in 29 CFR 1910.1000.
- B. Maintain all excavations, embankments, stockpiles, access roads, landfill areas, borrow areas, alternative storage/stockpile locations, and all other work areas free from excess dust to such reasonable degree as to avoid causing a hazard or nuisance. Water sprinkling methods shall be permitted to control dust. The ENGINEER before use shall approve other methods. Dust control shall be performed as the Work proceeds and whenever a dust nuisance or hazard occurs.

### **3.6 NOISE CONTROL**

- A. Take reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound muffling devices and operated in a manner to cause the least noise consistent with efficient performance of the Work.

### **3.7 ODOR CONTROL**

- A. Take reasonable measures to prevent odor emitted from handling of the landfilled materials. Preventative measures may include the application of a 6-inch soil cover over exposed waste material. All landfilled materials that have been disturbed during the course of construction activities shall be covered at the completion of placement and maintained subsequently.

### **3.8 EROSION CONTROL**

- A. Surface drainage from cuts and fills within the construction limits, whether or not completed, and from borrow and backfill areas, shall be graded to control erosion within acceptable limits. To control erosion of the landfilled materials, no landfilled materials shall be left uncovered overnight. Preventive measures include the application of a 6-inch soil cover. Temporary control measures shall be provided and maintained until permanent drainage facilities are completed and operative. The areas of bare soil exposed at any one time by construction operations should be held to a minimum. In no case shall any drainage route be adversely impacted by erosion of soil from the construction area. Erosion control shall be conducted in accordance with Section 31 25 13ST and as shown on the Contract Drawings.

### **3.9 HAULING MATERIAL ON STREETS**

- A. When it is necessary to haul material over streets or pavements, the CONTRACTOR shall provide suitable vehicles so as to reduce deposits of material on the streets or pavements. The CONTRACTOR is responsible for ensuring that vehicles leaving the Site are clean of dirt and debris. In all cases where any materials are dripped or otherwise released from the vehicles, the CONTRACTOR shall clean up the same to a reasonable degree to keep the streets and pavements free from dirt, mud, stone, or other hauled material. The CONTRACTOR is responsible for adhering to all speed limits and traffic rules. The CONTRACTOR is responsible for obtaining all state, OWNER, and local permits to allow transport of any and all materials or equipment on public roadways.
- B. The CONTRACTOR is responsible for repair of damage to public and private roadways that result from the transport of material to and from the Site.

### **3.10 BURNING**

- A. Burning of tree stumps and other material from the clearing and grubbing operation will not be allowed. Refer to Section 31 10 00 for requirements on disposal of cleared and grubbed materials. No burning of refuse or other unnatural debris will be allowed.

### **3.11 TRASH AND DEBRIS DISPOSAL**

- A. Prior to onsite work, the CONTRACTOR shall submit descriptions of schemes for disposing of trash and debris resulting from their work to the ENGINEER for review, comment, and acceptance. The CONTRACTOR may not, except as noted in the specifications, dispose of trash or debris onsite.
- B. CONTRACTOR must maintain general cleanup practices as specified in the Contract Documents.
- C. The OWNER shall provide roll-off containers on-site for recycling of cardboard and mixed paper. The CONTRACTOR shall ensure that there is no contamination of the materials and shall retrieve any contamination.

### **3.12 CORRECTIVE ACTION**

- A. The CONTRACTOR shall, upon receipt of notice in writing from the ENGINEER of any noncompliance with the foregoing provisions, take immediate corrective action as specified in the Contract Documents at no additional cost to the OWNER.

### **3.13 POST-CONSTRUCTION CLEAN-UP/REMOVAL**

- A. The CONTRACTOR shall, unless otherwise instructed in writing by the ENGINEER, remove all signs of temporary construction facilities, such as work areas, stockpiles of excess materials, and other vestiges of construction prior to final acceptance of the work. The disturbed areas shall be graded and filled, and the entire area seeded in accordance with Sections 31 10 00ST and 31 25 13ST. Any offsite damage attributable to the CONTRACTOR'S performance of work shall be repaired at no additional cost to the OWNER.

### **3.14 ENVIRONMENTAL TESTING**

- A. In addition to any specified environmental testing and reporting that the CONTRACTOR is obligated to perform under this contract, the CONTRACTOR is obligated to report any environmental testing, and the results thereof, performed by the CONTRACTOR outside the testing specified under this contract. Upon the request of the ENGINEER, the CONTRACTOR will prepare and submit an evaluation, in writing, of all environmental test results. The CONTRACTOR'S evaluation will be presented to the ENGINEER within one week of receipt of any environmental test data evaluation request. The CONTRACTOR shall, as part of his/her evaluation, recommend any mitigative actions that will eliminate or reduce, to the preconstruction conditions, the environmental impacts noted from the results of the environmental testing.
- B. Should an environmental impact be documented in addition to that already documented from previous investigations, which is shown to be a direct result of the CONTRACTOR'S activity, and such activity is not in compliance with the specifications, the CONTRACTOR shall immediately alter his/her work practices and shall perform corrective actions, both at no additional cost to the OWNER.

- C. Should an environmental impact be documented, in addition to that already documented from previous investigations, which is not attributable to improper activity by the CONTRACTOR, the CONTRACTOR shall, if requested by the ENGINEER, relocate his/her activities, for as long as is physically practicable, from any area of work shown to be contributing to the environmental impact, or, if the ENGINEER requests, alter his/her sequence or means of operations such that the environmental impact is minimized, both at no additional cost to the OWNER.

END OF SECTION

**SECTION 29 22 00**  
**TEXTURED LLDPE GEOMEMBRANE**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

Work in this Section includes the manufacture, fabrication, testing, supply, and installation of textured linear low-density polyethylene (LLDPE) geomembrane for the closure cap system.

**1.2 QUALITY CONTROL AND QUALITY ASSURANCE**

- A. All tests and test frequencies specified in this section are Quality Control (QC) tests, and these tests are the responsibility of the CONTRACTOR.
- B. The ENGINEER will monitor geomembrane installation and construction and certify that construction is in accordance with Contract Documents and Construction Quality Assurance Plan.

**1.3 REFERENCES**

The publications listed below form a part of this specification to the extent referenced.

- A. ASTM International Standard Test Methods/Practices
- B. Geosynthetics Research Institute (GRI) Standard Practices
- C. Construction Quality Assurance Plan

**1.4 SUBMITTALS**

- A. Manufacturer: Submit the following information to the ENGINEER:
  - 1. Corporate background information, manufacturing capabilities and proof of Manufacturer's Qualifications
    - a. List at least ten (10) completed projects of similar scope to the Washington County Rubble Landfill Closure for which the Manufacturer has manufactured LLDPE geomembrane.
  - 2. Manufacturer's Brochure: Submit complete manufacturer's specifications, descriptive drawings, and literature for the LLDPE geomembrane, including the product identification and supplier of the polymer resin and recommended method for handling and storage of all materials prior to installation.
  - 3. Quality Control Program: Submit a complete description of the geomembrane manufacturer's formal quality control programs for manufacturing, fabricating, handling, installing, and testing. The document shall include a complete description of seaming by extrusion welding and hot wedge welding.

4. LLDPE Geomembrane Prequalification. Submit independent quality control laboratory test results demonstrating compliance with material properties listed in Table 1, LLDPE Resin Properties (Without Carbon Black), and Table 2, Textured LLDPE Geomembrane Properties.
5. Origin (Resin Supplier's name, resin production plant) and identification (brand name, number) of the LLDPE resin.
6. Panel Layout Drawing: As a minimum, drawings shall include an approximate panel deployment sequence, panel orientation, type of weld to be used for each seam, incorporate restrictions on panel and seam orientation, methods of deployment, and details of each step in the construction of any penetrations.
7. A description of the proposed means, methods, and materials for leak detection.

B. Manufacturer Quality Control Certificates

The CONTRACTOR shall submit test reports to the ENGINEER within 48 hours of completion of the test. Manufacturer quality control certificates are required prior to LLDPE geomembrane shipment. The tests and frequencies are specified in Paragraph 2.4, Manufacturer Quality Control Tests. The following information must be submitted for approval prior to shipping the material:

1. LLDPE Resin  
Copy of quality control certificates issued by the LLDPE Resin Supplier shall include production date(s) of the LLDPE resin and statement that no reclaimed polymer was added to the resin. However, the use of polymer recycled during the manufacturing process may be permitted if done with appropriate cleanliness and if recycled polymer is the same LLDPE as the parent material and does not exceed ten (10) percent by weight.
2. LLDPE Geomembrane  
Quality control certificates for each roll of geomembrane. The quality control certificates shall include: Roll numbers and identification; certification by the manufacturer that the geomembrane meets specified properties; list of quantities and descriptions of materials other than the base polymer which comprise the geomembrane.

C. Installer: Submit the following information to the ENGINEER

1. Show a minimum of five years continuous experience for which the Installer has installed LLDPE geomembrane and document that the installer has met the provisions of Paragraph 3.1 Installer's Qualifications.
2. Name or names of the master seamer(s) who will be proposed for the project and a list of completed facilities for which the master seamer has installed LLDPE geomembrane.

D. List of Personnel

The CONTRACTOR shall submit a list of proposed seaming personnel and their experience records. All personnel must be approved before they perform seaming

operations.

E. Submittals Required for Project Closeout

1. Record Drawings. Submit LLDPE geomembrane record drawings to the ENGINEER as specified in the CQA Plan.

2. Warranties (see Paragraph 1.6)

1.5 DELIVERY, STORAGE, AND HANDLING

A. Handling

The CONTRACTOR's personnel shall handle the material with care, shall use adequate equipment and shall take all precautions necessary to prevent damaging the LLDPE geomembrane.

B. Inspection upon Delivery

Upon delivery at the site, the CONTRACTOR, in the presence of the ENGINEER, shall conduct a visual inspection of rolls or factory panels for defects and for damage.

C. Storage

The CONTRACTOR shall be responsible for ensuring that the stored materials are protected from damage.

1.6 WARRANTY

The LLDPE Geomembrane Manufacturer shall provide a prorated 5-year material warranty. The CONTRACTOR shall warrant the LLDPE geomembrane to be free of workmanship defects for a period of 1-year following the date of final completion of the work under this contract. The warranty required herein shall be provided in addition to any warranty required by the contract general conditions.

PART 2 PRODUCTS

2.1 MANUFACTURER'S QUALIFICATIONS

The Manufacturer must have at least five (5) years documented experience in the manufacture of LLDPE geomembrane rolls, and/or documented experience totaling 1,000,000 m<sup>2</sup> (10,000,000 ft<sup>2</sup>) of manufactured LLDPE geomembrane rolls for at least ten (10) completed facilities, or as approved by the ENGINEER.

2.2 LLDPE GEOMEMBRANES

A. Single Source

All LLDPE geomembrane sheets and LLDPE extrudate for the construction of the project must be obtained from a single material supplier and manufacturer. It must be certified and warranted that the sheets, extrudate, and pipe boots are compatible with one another. The CONTRACTOR shall provide manufacturer's warranties for the sheets, LLDPE extrudate material, and pipe boots.

## 2.3 MATERIAL PROPERTIES

### A. LLDPE Geomembrane

LLDPE resin shall meet or exceed the requirements of Table 1-29 22 00, LLDPE Resin Properties (without Carbon Black). LLDPE geomembrane shall meet or exceed the requirements of Table 2A-29 22 00, Textured LLDPE Geomembrane Properties and Table 2B-29 22 00, Micro drain LLDPE Geomembrane Properties. Equivalent test methods are subject to the approval of the ENGINEER.

### B. Extrudate

Extrudate shall be the same resin as the LLDPE geomembrane. The manufacturer shall provide documentation and shall certify that the extrudate meets this requirement.

### C. Material Composition

The LLDPE geomembrane shall consist of new, first-quality products designed and manufactured specifically for the purpose of this project, as satisfactorily demonstrated by prior use. The LLDPE geomembrane shall be unmodified LLDPE containing no plasticizer, fillers, chemical additives, reclaimed polymers, or extenders. Approximately 2 to 3 percent carbon black shall be added to the resin for ultraviolet resistance per ASTM D 4218.

### D. Textured Surface

Textured-surface geomembrane shall be manufactured so that the surface irregularities that produce the specified friction are on both sides of the sheet. The LLDPE geomembrane thickness required shall not include the high points of the textured surface.

The geomembrane sheet shall have a soil/geosynthetic and geosynthetic/geosynthetic interface friction angle meeting the requirements of Table 2-29 22 00. It is the responsibility of the CONTRACTOR to submit pre-qualified geosynthetic materials or soil samples to an approved laboratory for testing during material selection for approval. Adhesion may be considered in determining the effective interface friction angle.

## 2.4 MANUFACTURER QUALITY CONTROL TESTS

### A. Test Reports

Specified tests shall be performed by the Manufacturer.

### B. Manufacturer Quality Control Tests

1. LLDPE resin shall be tested at a frequency of one test per resin batch. One batch is defined as one rail carload of resin. As a minimum perform tests for Density and Melt Index. Compliance with the Polymer Composition test requirement shall be established with a manufacturer's certificate of compliance. The finished rolls shall be identified by a roll number corresponding to the resin batch used.



2. LLDPE geomembrane shall be tested for properties at the specified frequencies required by Table 2-29 22 00.

## PART 3 INSTALLATION

### 3.1 INSTALLER'S QUALIFICATIONS

Installation shall be performed under the direction of an installation superintendent. The installer's field superintendent shall have previously installed or supervised the installation of a minimum of 1,000,000 m<sup>2</sup> (10,000,000 ft<sup>2</sup>) of LLDPE geomembrane. Actual seaming shall be performed under the direction of a "master seamer" who may be the same person as the field superintendent and who has seamed a minimum of 200,000 m<sup>2</sup> (2,000,000 ft<sup>2</sup>) of LLDPE geomembrane using the type of seaming apparatus as that proposed for use for this project. The field superintendent must be on site whenever installation and/or seaming is being performed.

#### A. Licensed Installer

The Installer shall be approved and/or licensed by the geomembrane manufacturer.

#### B. Experience of Personnel

All personnel performing seaming operations shall be qualified by experience and by successfully passing trial seam tests and shall be approved by the ENGINEER prior to installing the Work. The "Master Seamer" shall have experience seaming a minimum of 200,000 m<sup>2</sup> (2,000,000 ft<sup>2</sup>) of LLDPE geomembrane using the same type of seaming apparatus to be used on the site-specific geomembrane and shall provide direct supervision over less experienced seamers.

### 3.2 INSTALLATION EQUIPMENT

#### A. Seaming Methods

Approved processes for field seaming are extrusion welding and fusion welding. Solvent or adhesive welding is prohibited. Proposed alternate processes shall be documented and submitted to the ENGINEER for approval. Only apparatus which have been specifically approved by make and model shall be used.

#### B. Welding Equipment

The CONTRACTOR shall provide welding equipment with gauges showing temperatures at the nozzle or barrel (extrusion welder) and at the wedge (fusion welder). The fusion-welding apparatus must be automated self-propelled devices and shall be equipped with gauges giving the important temperatures and pressures.

#### C. Field Tensiometer

The CONTRACTOR shall provide a field tensiometer for on-site peel and shear testing of LLDPE geomembrane seams for Quality Control capable of performing testing equivalent to ASTM D 6392.

D. Punch Press

The CONTRACTOR shall provide a punch press for the on-site preparation of specimens for testing.

3.3 PREPARATION

A. Surface Preparation

Prior to LLDPE geomembrane panel deployment, the CONTRACTOR shall inspect the surface upon which the geomembrane will be placed. The surface shall be prepared in accordance with Section 31 22 25 - Earthwork, smooth, free of stone, rock, or gravel larger than three (3) inches in any dimension, and free of debris, waste, frozen materials, vegetation, organic materials, roots, and other deleterious matter.

B. Certification of Subgrade Acceptance

The CONTRACTOR shall be responsible for preparing the Prepared Subgrade according to the Contract Documents and geomembrane manufacturer's recommendations and is subject to approval by the Maryland Department of the Environment. Prior to geomembrane installation, the Installer shall certify in writing that the surface upon which the geomembrane will be installed is acceptable. A copy of the Certificate of Acceptance is provided in Paragraph 3.14. The Certificate of Acceptance shall be given by the CONTRACTOR/ Installer to the ENGINEER prior to commencement of geomembrane installation in the area under consideration.

C. Damaged Prepared Subgrade

Prior to geomembrane panel deployment, the CONTRACTOR shall repair damage to the Prepared Subgrade.

D. Anchor Trench

LLDPE geomembrane anchor trenches shall be constructed to the lines and grades shown on the Drawings. The geomembrane in the anchor trench shall be constructed as shown on the Drawings and backfilled as indicated with care not to damage the geomembrane.

3.4 PANEL DEPLOYMENT

The deployment shall be performed in accordance with this section and the Construction Quality Assurance Plan.

A. Identification

Each field panel shall be given a unique "identification code" consistent with the layout plan.

B. Installation Sequence

The Installer shall be responsible for the final installation sequence of geomembrane panels.

C. Orientation

Panels shall be oriented perpendicular to the line of the slope crest. Seams parallel to or less than a 45-degree angle from any crest or toe of slope are defined as horizontal seams. Horizontal seams are prohibited on slopes greater than 10 (horizontal): 1 (vertical) and shall be at least 5 feet from the crest or toe of slopes greater than 10:1.

D. Wrinkles

LLDPE geomembrane panels shall be unrolled using methods that will minimize wrinkles and will not damage, stretch, or crimp the geomembrane and shall protect the underlying subsurface from damage. Folded wrinkles that cannot be controlled or eliminated by other means shall be removed by cutting and patching.

E. Bridging

Material shall be installed to allow for temperature related shrinkage and to avoid bridging of the geomembrane.

F. Seam Layout

Panels shall be placed such that the seam layout conforms as closely as practicable to the approved panel layout drawing. No panels may be seamed in the field without the ENGINEER's approval. In addition, panels not specifically shown on the seam layout drawing may not be used without the ENGINEER's prior approval. Seams shall be identified using the identification codes shown on the panel and seam layout drawing.

### 3.5 FIELD SEAMS

A. Seam Strength

All field seams shall meet or exceed the requirements of Table 3-29 22 00 for LLDPE Geomembrane Seam Properties.

B. Overlapping

Panels of geomembrane must have a finished overlap of a minimum of three (3) inches for extrusion welding and four (4) inches for fusion welding, but in any event, sufficient overlap shall be provided to allow peel tests to be performed on the seam.

Field seams shall have a minimum width of one (1) inch.

C. Weather Conditions for Seaming

1. Unless authorized in writing by the ENGINEER, no seaming shall be attempted at ambient temperatures below 32°F (0°C) or above 104°F (40°C). If seaming is authorized at temperatures below 32°F (0°C), pre-heating devices shall be placed on all welding machines, and seaming shall be performed in accordance with Geosynthetic Research Institute (GRI) Test Method GM9 Standard Practice "Cold Weather Seaming of Geomembranes."

2. Between ambient temperatures of 32°F (0°C) and 50°F (10°C), seaming may be carried out if the geomembrane is preheated by either the sun or a hot air device, and if there is not excessive cooling resulting from the wind. Above an ambient temperature of 50°F (10°C), no preheating is required.
3. In all cases, the geomembrane shall be dry and protected from wind damage.

#### D. General Seaming Procedures

Prior to seaming, the seam area shall be clean and free of moisture, dust, dirt, debris of any kind, and foreign material.

Seams shall be aligned with the fewest possible number of wrinkles and "fish mouths."

For seams which are to be extrusion welded, and as necessary for fusion welds, the seam overlap shall be ground in accordance with the Manufacturer's instructions, in a way that does not damage the geomembrane.

Welding speed and pressure, preheating temperature, nozzle (die) temperature, ambient air, and sheet temperatures, and extrudate bead thickness shall be consistent with Manufacturer's recommendations or welding criteria established during start-up operations unless approved by the ENGINEER.

### 3.6 PROTECTION

The CONTRACTOR and Installer shall take precautions as necessary to protect the geomembrane from damage due to exposure to the elements, or as part of deployment and seaming operations.

### 3.7 FIELD QUALITY CONTROL TRIAL SEAMS

Trial seams shall be performed in the presence of the ENGINEER. Trial seams shall be made on scrap pieces of geomembrane under the same conditions that production seaming will be performed to verify that seaming conditions are satisfactory. Trial seams shall be made, at a minimum, at least once every four hours or as directed by the ENGINEER for each seaming apparatus used that day. Each seamer shall make at least one trial seam each day.

The trial seam sample shall be at least three (3) feet long by one (1) foot wide (after seaming) with the seam centered lengthwise. Four adjoining specimens, each one (1) inch (25 mm) wide, shall be cut from the trial seam sample by the Installer at locations selected randomly by the ENGINEER. Two of the specimens shall be tested in peel and two tested in shear; none should fail in the seam.

### 3.8 FIELD NONDESTRUCTIVE SEAM TESTING

To check for seam continuity, the Installer shall nondestructively test 100 percent of field seams over their entire length using a vacuum test unit, air pressure test, or other approved method. Air pressure testing is only applicable to those processes which produce a double seam with an enclosed space, and shall follow GRI GM6, Pressurized Air Channel Test for Dual Seamed Geomembranes.

A. Vacuum Testing Equipment

Test equipment, including but not limited to the following shall be furnished by the Installer:

1. The vacuum box shall have a transparent viewing window on top and a soft, closed cell neoprene gasket attached to the bottom. The equipment shall be capable of inducing and holding a vacuum of 5 psig (10 in of Hg vacuum).
2. A steel vacuum tank and pump assembly equipped with a pressure controller and pipe connections; rubber pressure/vacuum hose with fittings; bucket and wide paint brush; soapy solution.

B. Vacuum Test Procedure

1. Energize the vacuum pump and adjust the tank vacuum to approximately 5 psig (10 in. of Hg vacuum) (35 kPa absolute); apply soapy solution to wet a strip of geomembrane; place the box over the wetted area; close the bleed valve and open the vacuum valve; ensure that a leak tight seal is created by the gasket; for a period of not less than 10 seconds, examine the geomembrane through the viewing window for the presence of soap bubbles; and if no bubbles appear after 10 seconds, close the vacuum valve and open the bleed valve, move the box over the next adjoining area with a minimum 3 inches (75 mm) overlap, and repeat the process.
2. All areas where soap bubbles appear indicate leaks or poor seam continuity and shall be marked, repaired, and retested.

C. Air Pressure Test Equipment

An air pump (manual or motor driven) equipped with pressure gauge capable of generating and sustaining a pressure between 25 and 30 psi (160 and 200 kPa); a rubber hose with fittings and connections; and a sharp hollow needle, or other approved pressure feed device.

D. Air Pressure Test Procedure

1. Seal both ends of the seam to be tested (to a maximum length of 300 feet); insert needle or other approved pressure feed device into the channel created by the dual track fusion weld; and energize the air pump to a pressure between 25 and 30 psi (160 and 200 kPa), close valve, and sustain pressure for a minimum of 5 minutes;
2. If pressure drop exceeds 2 psi (15 kPa), or does not stabilize, locate faulty area, repair, and retest; and
3. Remove needle or other approved pressure feed device and seal ends and needle puncture.

3.9 FIELD DESTRUCTIVE SEAM TESTING

A. Test Location

Destructive seam tests shall be performed at locations determined after seaming, at the ENGINEER's discretion. The Installer shall not be informed in advance of the locations where the seam samples will be taken.

B. Test Frequency

As a minimum, one test location shall be selected per 500 feet of seam length produced by each welding machine. (This minimum frequency is to be determined as an average taken throughout the entire facility.)

C. Procedure

A 42-inch (106 cm) long sample is taken by the Installer from the seam and cut into three individual 14-inch (36 cm) samples. Individual samples go to the CQC organization, the ENGINEER, and the COUNTY. The CQC organization shall cut their samples into 5 shear and 5 peel (alternating adjacent) test specimens and conduct the tests immediately in accordance with ASTM D 6392 or equivalent testing method. The remaining sample is archived by the OWNER. The OWNER will be responsible for storing the archive samples.

D. Geosynthetic Laboratory Testing

If destructive seam testing is to be performed off-site, packaging and shipping of destructive test samples shall be conducted in a manner which will not damage the test sample. The ENGINEER shall verify that packaging and shipping conditions are acceptable. This procedure shall be fully outlined prior to construction.

Testing shall include "Shear Testing" and "Peel Testing" (ASTM D6392). The minimum acceptable values to be obtained in these tests are those indicated in Table 3-10922, LLDPE Geomembrane Seam Properties. At least 5 specimens shall be tested for each test method. At least 4 of the 5 specimens tested shall meet or exceed the requirements indicated in Table 3.

The CONTRACTOR's laboratory test results shall be presented in writing to the ENGINEER and the OWNER as required by ASTM D 6392.

E. Procedures for Destructive Test Failures

All acceptable seams must be bounded by two locations from which samples passing laboratory destructive tests have been taken.

The following procedures shall apply whenever a sample fails a destructive test, whether that test is conducted by the ENGINEER, the Installer, the CONTRACTOR's independent QC laboratory, or by field tensiometer. The Installer has two options:

1. The Installer can reconstruct the seam between any two passing test locations;
2. The Installer can trace the welding path to an intermediate location (at 3 m or 10 feet minimum from the point of the failed test in each direction) and take a single specimen for an additional field test at each location. If these additional specimens pass the test, then full samples are taken. If these samples pass the

tests, then the seam is reconstructed between these locations. If either sample fails, then the process is repeated to establish the zone in which the seam should be reconstructed.

The installer shall notify the ENGINEER before beginning either option. The ENGINEER shall be present during this entire process to document all actions taken in conjunction with destructive test failures.

### 3.10 DEFECTS AND REPAIRS

#### A. Identification

The entire geomembrane, including seams, shall be visually examined by the ENGINEER for identification of visual defects. All areas showing defects and/or requiring repairs shall be repaired at no additional cost to the OWNER.

Work shall not proceed with any materials which will cover locations which have been repaired until the ENGINEER has re-examined the repaired area and applicable laboratory test results with passing values are available.

Panels or portions of panels which, in the opinion of the ENGINEER, are damaged beyond repair shall be removed from the site and replaced. Damage which, in the ENGINEER's opinion, can be repaired may be repaired or replaced.

#### B. Repair Procedures

Any portion of the geomembrane exhibiting a flaw or failing a destructive or nondestructive test, shall be repaired. Several procedures exist for the repair of these areas. The final decision as to the appropriate repair procedure shall be agreed upon between the Installer and ENGINEER. The procedures available include patching, grinding and rewelding, spot welding, capping, and removing a bad seam and replacing with a strip of new material welded into place.

#### C. Verification of Repairs

Each repair shall be nondestructively tested. Repairs which pass the non-destructive test shall be taken as an indication of an adequate repair. At the discretion of the ENGINEER, large repairs may require destructive test sampling.

#### D. Wrinkles

When seaming of the geomembrane is completed (or when seaming of a large area of the geomembrane is completed) and prior to placing overlying materials, the ENGINEER shall indicate which wrinkles shall be cut and resealed by the Installer.

#### E. Bridging

The LLDPE geomembrane shall be continuously supported on the accepted subgrade. Bridging (unsupported geomembrane) is not permissible. Installer shall take necessary steps to prevent bridging and repair or replace any geomembrane so affected.

### 3.11 PLACEMENT OF GEOCOMPOSITE DRAINAGE NET AND EARTHEN COVER

- A. The geomembrane shall not be left exposed (uncovered) to the elements for any period later than thirty (30) days.
- B. All materials placed over geosynthetics shall be installed without damaging the geosynthetics. Equipment used for placing soil shall not be driven directly on the geomembrane unless authorized in writing by ENGINEER. A minimum thickness of one (1) foot (0.3 m) of soil or drainage layer is required between a low ground pressure dozer and the geomembrane. Placement of material overlying the geosynthetics shall be in conformance with the following guidelines for equipment ground pressure:

<u>EQUIPMENT GROUND PRESSURE</u>		<u>MINIMUM SOIL THICKNESS</u>	
<u>kPa</u>	<u>(psi)</u>	<u>meters</u>	<u>(in.)</u>
<35	(<5)	0.30	(12)
35-45	(5-6)	0.38	(15)
45-60	(6-8)	0.45	(18)
60-85	(8-11)	0.60	(24)

- C. Placement of materials shall begin at the toe and proceed up the slope.
- D. Any geomembrane which is damaged during placement shall be repaired or replaced.

### 3.12 DOCUMENTATION OF CONSTRUCTION

Upon project completion, the ENGINEER shall prepare a Construction Documentation Report. This report will document that the work was accomplished according to the Construction Contract Documents and summarize quality control and quality assurance tests and inspection. At a minimum, the report shall contain the following information:

- A. Identification of parties and their roles and responsibilities with signatures of key personnel and an officer of their employer's company.
- B. Scope of work.
- C. Summary of the project construction activities.
- D. Quality assurance methodology.
- E. Test and inspection results.
  - 1. Results of prequalification testing (including extrudate);
  - 2. The results of all destructive and non-destructive seam tests.
  - 3. Subgrade acceptance forms.
- F. Quality assurance certification statement, sealed and signed by a licensed professional ENGINEER.



G. Geomembrane record drawings.

H. QA and QC records regarding panel deployment, seaming, and repairs.

The CONTRACTOR and Installer will provide necessary signatures, test results, record drawings, and inspection results as described by aforementioned items.

### 3.13 TABLES

A. Refer to Table 1-2922 for LLDPE Resin Properties

B. Refer to Table 2-2922 for Textured LLDPE Geomembrane Properties and the following:

1. UV Resistance High Pressure OIT:

- a. The condition of the test should be 20 hr. UV cycle at 75°C followed by 4 hr. condensation at 60°C. UV resistance is based on percent retained value regardless of the original HP-OIT value.
- b. Of 10 readings; 8 out of 10 must be  $\geq 7$  mils, and the lowest individual reading must be  $\geq 5$  mils.
- c. Interface friction angle tests: (also see Section 29 30 00)
  - 1) Soil within 2% of optimum moisture and a minimum of 90% of ASTM D698 compaction
  - 2) Test with GDN and cushion geotextile per ASTM D5321 at normal stresses of 100 psf, 200 psf, and 400 psf.
  - 3) Mist geomembrane surface or GDN contact surface with 20% (by wt.) of water during assembling and applying load for 24 hours prior to shearing.
  - 4) Minimum displacement 3 inches at a displacement rate of 0.04 inches per minute.
  - 5) Record asperity height, peak and residual shear strength values.
  - 6) Each interface shall be tested separately.
  - 7) ENGINEER may consider an equivalent shear strength based on friction angle plus adhesion value in complying with the minimum interface friction angle requirement.

C. Refer to Table 3-2922 for Textured LLDPE Geomembrane Seam Properties and the following:

1. The geomembrane shall yield before failure of the seam for shear tests. Seam separation shall not extend more than 10 percent into the seam for peel adhesion tests. Testing shall be discontinued when the sample has visually yielded.

2. At least 4 of 5 specimens tested in sheer and in peel shall exhibit a film tear bond (FTB) failure not in the seam area. Seam shear and peel strengths listed are for 4 out of 5 samples; the 5<sup>th</sup> specimen can be as low as 80% of the listed values.

D. ENGINEER may approve alternative test procedures, or modified procedures, as standard test methods are changed or updated frequently.

**TABLE 1-29 22 00**  
**LLDPE RESIN PROPERTIES**  
**(WITHOUT CARBON BLACK)**

Property	Qualified	Unit	Test Method	Specified Value
Polymer Specific Gravity	minimum	g/cc	ASTM D 792 Method A or ASTM D1505	≥0.91
Polymer Melt Index	range	g/10 min	ASTM D 1238 (Condition E 190/216)	<1.0

**TABLE 2A-29 22 00**  
**TEXTURED LLDPE GEOMEMBRANE PROPERTIES**

Property	Qualified	Unit	Test Method	Specified Value	Frequency
Thickness	min. avg. minimum	mils	ASTM D 5994	40 36	Per roll
Asperity Height	min.	mils	ASTM D 7466	16	Every 2 <sup>nd</sup> roll
Density	min. avg.	g/cc	ASTM D 792 or ASTM D 1505	0.939	200,000 lb
Tensile Properties (each direction)					
1. Break Strength	min.	lb/in	ASTM D 6693 Type IV	60	20,000 lb
2. Break Elongation	min.	percent		250	
2% Modulus	Maximum	lb/in	ASTM D 5323	2400	Per formulation
Tear resistance	min.	lbs	ASTM D 1004	22	45,000 lb
Puncture Resistance	min.	lbs	ASTM D 4833	44	45,000 lb
Axi-Symmetric Break Resistance Strain	Minimum	%	ASTM D 5617	30	Per formulation
Carbon Black Content	Range	percent	ASTM D 4218	2.0-3.0	45,000 lb
Carbon Black Dispersion	Rating	N/A	ASTM D 5596	Categories 1, 2, or 3 per GRI GM 13	45,000 lb
Oxidation Induction Time Standard OIT, or High Pressure OIT	min.	minutes minutes	ASTM D 3895 ASTM D 5885	100 400	200,000 lb
Oven Aging at 85°C Standard OIT, or High Pressure OIT	min.	% retained after 90 days	ASTM D 3895 ASTM D 5885	35 60	Per formulation
UV Resistance High Pressure OIT	min.	% retained after 1600 hours	ASTM D 5885	35	Per formulation
Interface Friction Angle	Minimum	degrees	ASTM D 5321	22	Per material and interface

**TABLE 2B-29 22 00**  
**MICRODRAIN LLDPE GEOMEMBRANE PROPERTIES**

Property	Qualified	Unit	Test Method	Specified Value	Frequency
Thickness	min. avg. minimum	mils mils	ASTM D 5994	47.5 42.5	Per roll
Asperity Height	min.	mils	ASTM D 7466	20	Every 2 <sup>nd</sup> roll
Drainage Stud Height	min.	mils	ASTM D 7466	130	Every 2 <sup>nd</sup> roll
Density	min. avg.	g/cc	ASTM D 792 or ASTM D 1505	0.939	200,000 lb
Tensile Properties (each direction)					
1. Break Strength	min.	lb/in	ASTM D 6693	105	20,000 lb
2. Break Elongation	min.	percent	Type IV	300	
2% Modulus	Maximum	lb/in	ASTM D 5323	3000	Per formulation
Tear resistance	min.	lbs	ASTM D 1004	30	45,000 lb
Puncture Resistance	min.	lbs	ASTM D 4833	55	45,000 lb
Axi-Symmetric Break Resistance Strain	Minimum	%	ASTM D 5617	30	Per formulation
Carbon Black Content	Range	percent	ASTM D 4218	2.0-3.0	45,000 lb
Carbon Black Dispersion	Rating	N/A	ASTM D 5596	Categories 1, 2	45,000 lb
Oxidation Induction Time	min.	minutes	ASTM D 3895	≥140	200,000 lb
Oven Aging at 85°C Standard OIT, or High Pressure OIT	min.	% retained after 90 days	ASTM D 3895 ASTM D 5885	35 60	Per formulation
UV Resistance High Pressure OIT	min.	% retained after 1600 hours	ASTM D 5885	35	Per formulation
Interface Friction Angle	Minimum	degrees	ASTM D 5321	22	Per material and interface

**TABLE 3 – 29 22 00**  
**TEXTURED LLDPE GEOMEMBRANE SEAM PROPERTIES**

Property	Qualified	Unit	Test Method	Specified Value
Seam Shear Strength <sup>(1)</sup>	min.	lb/in	ASTM D 6392	60
Peel Adhesion <sup>(1)</sup> :				
Fusion	min.	lb/in	ASTM D 6392	50
Extrusion	min.	lb/in	ASTM D 6392	44

3.14 CERTIFICATE

**CERTIFICATE OF ACCEPTANCE  
OF SOIL SUBGRADE BY INSTALLER**

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INSTRUCTIONS: This part of the certificate should be completed by the CONTRACTOR.

CONTRACTOR:

PROJECT:

NAME\_\_\_\_\_

LOCATION\_\_\_\_\_

ADDRESS\_\_\_\_\_

PROJECT\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LOCATION OF SOIL SUBGRADE SURFACE TO BE UTILIZED (INCLUDE SKETCH, IF NEEDED):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

CONTRACTOR AUTHORIZED REPRESENTATIVE:

NAME\_\_\_\_\_

TITLE\_\_\_\_\_

SIGNATURE/DATE\_\_\_\_\_

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INSTRUCTIONS: This part of the certificate should be completed by the LLDPE Geomembrane INSTALLER.

I THE UNDERSIGNED, DULY AUTHORIZED REPRESENTATIVE OF:

\_\_\_\_\_

(LLDPE GEOMEMBRANE INSTALLATION COMPANY)

DO HEREBY ACCEPT THE SOIL SUBGRADE (SOIL SUPPORTING THE GEOMEMBRANE) OR GEOTEXTILE AND SHALL BE RESPONSIBLE FOR ITS INTEGRITY AND SUITABILITY, IN ACCORDANCE WITH THE SPECIFICATIONS FROM THIS DATE TO COMPLETION OF THE INSTALLATION.

\_\_\_\_\_

INSTALLER AUTHORIZED REPRESENTATIVE:

NAME\_\_\_\_\_

TITLE\_\_\_\_\_

SIGNATURE/DATE\_\_\_\_\_

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END OF SECTION

09 22 00-16

**SECTION 29 30 00**  
**GEOCOMPOSITE DRAINAGE NET**

**PART 1 GENERAL**

**1.1 SUMMARY**

The work covered in this Section includes the manufacture, fabrication, testing, supply, and installation of the Geocomposite Drainage Net (GDN). The Contractor shall furnish all labor, materials, transportation, handling, storage, supervision, tools, incidentals, and other equipment that may be necessary to install and test the GDN as specified by the Contract Documents. All testing specified in this section is Construction Quality Control (CQC) testing and is the Contractor's responsibility.

**1.2 REFERENCES**

Unless otherwise noted, ASTM International standard test methods or practices are to be referenced for test methods and practices.

**1.3 SUBMITTALS**

**A. Product Information**

Submit the following product information to the Engineer for approval at least 30 days (unless otherwise specified) prior to procurement of the product:

1. Prequalification: Independent laboratory test results demonstrating compliance with the material properties listed in Tables 1 through 4 in Paragraph 3.8. The independent laboratory tests are to be performed once for each material. In addition, the manufacturer must provide a certificate of compliance which states that the material to be installed will use the same manufacturing techniques, resin type, and formulation as that for which test results are submitted.
2. Roll Layout Drawings: As a minimum, include a roll layout drawing and installation details. The roll layout drawing shall be drawn to scale and shall be coordinated with the geomembrane panel layout. Installation details shall include cross sections of toe drains, temporary anchorage, key trench and other terminations, and pipe penetrations.
3. Protection from Wind and Weather: Submit plans to protect the GDN from wind, dirt, and direct sunlight.
4. Material Data: Complete manufacturer's specifications, descriptive drawings, and literature for the geocomposite, including the product identification and suppliers of the polymer resin and recommended methods for handling and storage of all materials prior to installation. Describe the manufacturer's methodology to comply with the requirements specified for manufacturing quality control.
5. Manufacturing Quality Control (MQC): Complete description of the manufacturer's formal quality control/quality assurance programs for

manufacturing, fabricating, handling, installing, and testing. The description shall include, but not be limited to, polymer resin supplier and product identification, acceptance testing, production testing, installation inspection, installation techniques, repairs, and acceptance. The document shall include a complete description of methods for both roll end and roll side joining.

6. Installation Instructions: Samples of the GDN with a complete set of specifications, and manufacturer's complete written instructions for storage, handling, installation, and joining.
7. Qualifications: Manufacturer's qualifications for the GDN.
8. Resin: The name of the resin supplier, the production plant, the brand name, and name of resin used to manufacture the product.
9. Factory Visit: Upon request, arrange with the geocomposite manufacturer to allow the Engineer, or designated representative to visit to the manufacturing plant during the manufacture of material for this project, for the purpose of observing the manufacturing process and quality control procedures. Submit contact names, telephone numbers, addresses, and production schedule information.
10. Suppliers and/or manufacturers shall certify that geonet and geotextile are compatible with one another when bonded into the GDN.

B. Manufacturing Quality Control

The Contractor shall submit quality control test reports within 48 hours of completion of tests. Submit the following manufacturing quality control information to the Engineer prior to material shipment:

1. Production Dates: Submit statement of production dates for the GDN.
2. Test Reports: See Part 2 for tests and test frequencies.

C. Proof of Installer's Qualifications:

1. The name or names of the field superintendents who will be proposed for the project and a list of completed facilities for which the field superintendent has installed GDN totaling a minimum of 2,000,000 ft<sup>2</sup>.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER'S QUALIFICATIONS

Manufacturer shall have manufactured a minimum of 5,000,000 ft<sup>2</sup> of GDN.

A. Single Source

All drainage net or geonet used for construction of the GDN must be obtained from a single material supplier or manufacturer. All non-woven geotextile fused to the geonet and used for the construction must be obtained from a single material supplier. All fusion

of geonet to non-woven geotextile must be accomplished by a single material supplier or manufacturer. Suppliers and/or manufacturers shall certify that the geonet and geotextile will be compatible with one another.

## 2.2 DRAINAGE NET

The drainage net component of the GDN shall be manufactured by extruding strands of material into a counter-rotating die to form a three-dimensional structure or similar process approved by the Engineer to provide planar water flow.

### A. Material Properties

Drainage net shall meet the requirements of Table 1-10930, Geonet Resin Properties (Without Carbon Black) and Table 2-10930, Drainage Net Properties.

### B. Material Composition

The drainage net shall consist of new, first-quality products designed and manufactured specifically for the intended purpose designated in this contract, as satisfactorily demonstrated by prior use. The drainage net shall contain stabilizers to prevent ultraviolet light degradation. The material shall be unmodified HDPE containing no plasticizer, fillers, chemical additives, reclaimed polymers, or extenders, or equivalent material as approved by the Engineer. Carbon black shall be added to the resin for ultraviolet resistance. The only other allowable compound elements shall be antioxidants and heat stabilizers, of which up to one (1) percent total, as required for manufacturing, may be added.

## 2.3 GEOTEXTILE

The geotextile component of the composite drainage net shall be non-woven and shall meet the requirements of Table 3-29 30 00, Geotextile Properties.

## 2.4 GEOCOMPOSITE DRAINAGE NET

The material shall meet the requirements of Table 4-29 30 00, GDN Properties. It is comprised of three layers: a lower geotextile, a middle drainage net, and an upper geotextile. The lower and upper geotextiles shall be heat-bonded to the middle drainage net.

### A. Manufacture

The GDN shall be fabricated by heat bonding the geotextile to both sides of the drainage net. No burn through of geotextiles will be permitted. No glue or adhesive shall be permitted. The bond between the geotextile and the drainage net shall meet the requirements of Table 4-29 30 00, Geocomposite Drainage Net Properties.

### B. Labels

GDN shall be supplied in rolls, marked, or tagged with the following information:

1. Manufacturer's name

2. Product identification
3. Lot number
4. Roll number
5. Roll dimensions

C. Roll Dimensions

The GDN shall be supplied as a continuous sheet with no factory seams. During installation, the roll length shall be maximized to provide the largest manageable roll for the fewest field seams. Rolls shall be wound on a core, which shall be stable enough to support the rolls during handling and shipping.

D. Coefficient of Interface Friction

The GDN shall have a soil/geosynthetic and geosynthetic/geosynthetic interface friction angle meeting the requirements of Table 4-29 30 00. It is the responsibility of the Contractor to submit pre-qualified geosynthetic materials or soil samples to an approved laboratory for testing. Adhesion may be considered in determining the effective interface friction angle.

## 2.5 MANUFACTURING QUALITY CONTROL TESTING

All of the specified tests are the Contractor's responsibility. Testing during manufacturing shall be accomplished by the manufacturer's laboratory.

- A. Resin shall be tested at a frequency of one test per resin batch for compliance with Table 1-29 30 00, Drainage Net Properties. One batch is defined as one rail carload of resin. The finished rolls of the drainage net shall be identified by a roll number corresponding to the resin batch used.
- B. Drainage net shall be tested at the minimum frequencies specified during manufacturing for compliance with Table 2-29 30 00, Drainage Net Properties.
- C. Geotextile shall be tested at the minimum frequencies specified during manufacturing for the compliance with Table 3-29 30 00, Geotextile Properties.
- D. GDN shall be tested at the minimum frequencies specified during manufacturing for compliance with Table 4-29 30 00, Geocomposite Drainage Net Properties.
- E. The Contractor shall inspect every roll for bonding integrity between the drainage net and the geotextile. All poorly bonded and/or delaminated material shall be rejected.

## PART 3 INSTALLATION

### 3.1 FIELD QUALITY CONTROL

Field Joining: The Contractor shall inspect all roll end joints and roll edges. The results of these inspections shall be documented in the daily reports. Field joints shall comply with the



requirements of Table 5-29 30 00, Geocomposite Drainage Net Joining Methods.

A. Quality Control Reporting Procedures

All information regarding the installation of the composite drainage net shall be recorded in the Contractor's daily report. This information shall include:

1. Reference to product submittals, certifications, substitutions and approvals;
2. Dates of installation;
3. Location and quantity of materials installed (as-built drawing);
4. Statement whether materials were installed in accordance with the Technical Specifications; and
5. Additional information as required.
6. All product certifications, filed appropriately for future reference.

3.2 MANUFACTURER'S RECOMMENDATIONS

Geocomposite drainage net shall be installed in accordance with the contract documents and the manufacturer's recommendations. In case of a conflict between requirements, the more stringent shall apply.

3.3 CLEANLINESS

Both GDN and the underlying geomembrane shall be clean, dry, and free of dirt and dust during installation. If dirt, dust, or water is present, the Contractor shall clean the work area. GDN which is wet, dirty, or muddy shall be discarded and shall not be installed.

3.4 ROLL JOINING METHODS

Table 5-29 30 00, Geocomposite Drainage Net Joining Methods, summarizes acceptable roll joining methods.

A. Lap Seams

The bottom layer of geotextile shall be lap seamed. Lap seaming is accomplished by overlapping adjacent geotextile a minimum of 6 inches.

B. Nylon Ties

The GDN material shall be overlapped and fastened with nylon ties. Nylon ties shall be yellow or white in color to facilitate inspection.

C. Machine Sewn Seams

Sewing shall be accomplished with a chain-stitching sewing machine. The thread shall be polymeric thread which complies with geotextile manufacturer's recommendations and is a

color which contrasts with the color of the geotextile. The seam shall be placed a minimum of 4 inches from the geotextile edges.

### 3.5 ROLL JOINING REQUIREMENTS

The minimum requirements for joining rolls are specified in Table 5-29 30 00, Geocomposite Drainage Net Joining Methods.

#### A. Roll Ends

At roll ends the material shall be overlapped a minimum of 1 foot. Roll ends shall be shingled; the uphill roll end shall be overlapped one foot over the downhill roll end. At roll ends, the drainage net shall be tied every 2 feet (on centers) at a minimum. The bottom layer of geotextile shall be overlapped a minimum of six (6) inches. The upper layer of geotextile shall be machine sewn or leistered.

#### B. Adjacent Roll Sides

At roll sides the material shall be overlapped a minimum of 4 inches. The bottom geotextile shall be lap seamed. The GDN shall be overlapped and tied a minimum of 5 feet on center. The upper layer of geotextile shall be machine sewn.

### 3.6 INSTALLATION

The GDN shall be installed in accordance with the manufacturer's recommendations and as specified herein. In case of a conflict between requirements, the more stringent shall apply.

#### A. Orientation

GDN shall be rolled down the slope in such a manner as to continually keep the material in tension. If necessary, the material shall be positioned by hand after unrolling to minimize wrinkles. The material shall not be unrolled horizontally (i.e., across the slope).

#### B. Wind

The CONTRACTOR shall provide sufficient ballast and temporary anchorage to protect the material from wind damage or displacement. The CONTRACTOR is responsible for protecting the material from damage due to weather at all times.

#### C. Physical Damage

1. Personnel walking on the material shall not engage in activities or wear footwear that could damage the material. Smoking shall not be permitted on or near the geosynthetics.
2. Vehicular traffic shall not be permitted on the geosynthetics. Equipment shall not damage the material by handling, trafficking, or leakage of hydrocarbons. The surface shall not be used as a work area for storing tools and supplies, or other uses.

3. During deployment, pulling of GDN panels over textured geomembrane shall consider means and methods not to damage the geotextile or the geomembrane.

D. Bridging

The material shall be installed to avoid bridging.

E. Corners

In corners, where overlaps between rolls are staggered, an extra roll shall be installed from the top to the bottom of the slope to provide a smooth, protected surface.

F. Weather Protection

GDN shall be protected from direct sunlight or precipitation prior to installation. After installation this material shall have minimal exposure to direct sunlight and shall be completely protected from direct sunlight within 30 days of installation. Material which is exposed to direct sunlight for 30 days or more shall be replaced at the Contractor's expense.

It is the Contractor's responsibility to provide all labor and materials for protection of the GDN during the period of time prior to installation of overlying materials. The Contractor's protection method is subject to the approval of the Engineer.

### 3.7 REPAIRS

A. Limitations

Damaged, soiled, or delaminated GDN shall be removed and discarded.

B. Minor Damage

Minor damage is defined as a defect or hole in the material that is smaller than 2 inches in its lesser dimension. Minor damage may be repaired by snipping out any protruding drainage net and machine sewing or leistering a geotextile patch over the hole. The patch shall be a minimum of 12 inches larger than the damaged area in all directions.

C. Major Damage

Major damage is defined as a defect or hole in the material that is 2 inches or larger in its lesser dimension. Major damage shall be repaired as follows:

1. Place a GDN patch with at least 12 inches overlapping in all directions around the defect.
2. Place nylon ties every 6 inches around the outer edge of the patch to secure.
3. Leister or sew the geotextile fabric component at least 6 inches from the patch in all directions.

In some cases, the Engineer may request that the entire panel be replaced.

### 3.8 TABLES

- A. Refer to Table 1-2930 for Drainage Net Properties.
- B. Refer to Table 2-2930 for Drainage Net Properties Prior to Lamination.
- C. Refer to Table 3-2930 for Geotextile Properties and the following
- D. Refer to Table 4-2930 for Geocomposite Drainage Net Properties and the following:
  - 1. Transmissivity
    - a. Test with a normal stress of 1,000 psf; water at 20° (68°F); with a gradient of 0.1; a profile of upper load plate/Protective Soil Cover/GDN/Geomembrane/lower load plate; and a time period of 24 hours.
  - 2. Interface friction angle tests (also see Section 02922)
    - a. Soil within 2% of optimum moisture and a minimum of 90% of ASTM D698 compaction.
    - b. Test with LLDPE and cover soil at normal stresses 100 psf, 2,00 psf, and 4,00 psf along
    - c. Minimum displacement 3 inches at a rate of 0.04 inches/minute shall be used.
    - d. Engineer may consider an equivalent shear strength based on friction angle plus adhesion value in complying with the minimum interface friction angle requirement.
- E. Refer to Table 5-2930 for Geocomposite Net Joining Methods

**TABLE 1-29 30 00. DRAINAGE NET PROPERTIES**

Property	Qualifier	Unit	Value	Frequency
Polymer Specific Gravity (ASTM D 792 Method A or ASTM D1505)	minimum	g/cc	≥0.94	Per Formulation
Polymer Melt Index (ASTM D 1238 (Condition E 190/216))	range	g/10 min	<1.0	Per Formulation

**TABLE 2-29 30 00. DRAINAGE NET PROPERTIES (PRIOR TO LAMINATION)**

<b>Property</b>	<b>Qualifier</b>	<b>Unit</b>	<b>Value</b>	<b>Frequency</b>
Polymer Density, Resin plus Carbon Black (ASTM D1505)	Minimum	g/cm <sup>3</sup>	0.94	1 per 20 rolls
Carbon Black Content (ASTM D4218)	Minimum	Percent	2.0	1 per 20 rolls
Thickness (ASTM D5199)	Minimum	mil	250	1 per 20 rolls
Tensile Strength (MD) (ASTM D7179)	Minimum	lb/in	100	1 per 20 rolls
Compressive Strength (ASTM D6364)	Minimum	lb/sf	20,000	1 per 35 rolls

**TABLE 3-29 30 00. GEOTEXTILE PROPERTIES**

<b>Property</b>	<b>Qualifier</b>	<b>Unit</b>	<b>Value</b>	<b>Frequency</b>
Mass per Unit Area (ASTM D5261)	MARV	oz/yd <sup>2</sup>	8.0	1 per 35 rolls
Grab Tensile Strength (ASTM D4632)	MARV	lbs	220	1 per 35 rolls
Grab Elongation (ASTM D4632)	MARV	%	50	1 per 35 rolls
CBR Puncture Strength (ASTM D6241)	MARV	lbs	575	1 per 35 rolls
Trapezoid Tear Strength (ASTM D4533)	MARV	lbs	90	1 per 35 rolls
Permittivity (ASTM D4491)	MARV	1/sec	1.3	1 per 210 rolls
AOS (ASTM D4751)	Maximum	US sieve size	80	1 per 210 rolls
Water Flow Rate (ASTM D 4491)	Minimum	gpm/sf	95	1 per 210 rolls

**TABLE 4-29 30 00. GEOCOMPOSITE DRAINAGE NET PROPERTIES**

<b>Property</b>	<b>Qualifier</b>	<b>Unit</b>	<b>Value</b>	<b>Frequency</b>
Ply Adhesion (ASTM D7005)	MARV	lb/in	0.5	1 per 20 rolls
Transmissivity (ASTM D4716)	Minimum (1 x 10 <sup>-3</sup> )	m <sup>2</sup> /sec	1.5	One per Project
Interfacial Friction Tests w/Protective Soil Cover or Selected Geomembrane (ASTM D5321)	Minimum	degrees	22	One per Project

**TABLE 5-29 30 00. GEOCOMPOSITE DRAINAGE NET JOINING METHODS**

Location	Layer	Joining Method	Min. Overlap	Tying Frequency
Roll End	Upper geotextile	machine sewing or leister	4"	N/A
	Geonet	nylon ties	12"	2' on center
	Lower geotextile	overlap	6"	N/A
Roll Side	Upper geotextile	machine sewing	4"	N/A
	Geonet	nylon ties	4"	5' on center
	Lower geotextile	overlap	6"	N/A
Repair of minor damage*	Upper geotextile	machine sewing or leister	4"	N/A
	Geonet	N/A	N/A	6"

\* Minor damage is defined in paragraph 3.7.B

END OF SECTION

**SECTION 31 05 16**  
**AGGREGATES FOR EARTHWORK**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Coarse aggregate materials.
  - 2. Fine aggregate materials.
- B. Related Sections:
  - 1. Section 31 22 25 - Earthwork.
  - 2. Section 31 37 00 - Riprap.
  - 3. Section 33 41 00 - Storm Utility Drainage Piping.

**1.2 REFERENCES**

- A. American Association of State Highway and Transportation Officials:
  - 1. AASHTO M147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses.
- B. ASTM International:
  - 1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
  - 2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb f/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))
  - 3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

**1.3 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Samples: Submit, in air-tight containers, 10 lb sample of each type of fill to testing laboratory.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

#### 1.4 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with Washington County Department of Public Works Standard Specifications.

### PART 2 PRODUCTS

#### 2.1 COARSE AGGREGATE MATERIALS

- A. Coarse Aggregate: As indicated on Drawings, Conforming to MDSHA Standards Specifications for Construction and Materials.

#### 2.2 FINE AGGREGATE MATERIALS

- A. Fine Aggregate: Conforming to MDSHA Standards Specifications for Construction Materials.

#### 2.3 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Testing and inspection services.
- B. Testing and Analysis: Perform in accordance with Table 1 – 31 22 25: Earthwork.
- C. When tests indicate materials do not meet specified requirements, change material and retest.

### PART 3 EXECUTION

#### 3.1 STOCKPILING

- A. Stockpile materials on site at locations approved by ENGINEER.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Stockpile unsuitable materials on impervious material and cover to prevent erosion and leaching, until disposed of.

#### 3.2 FIELD QUALITY CONTROL

- A. Section 01 45 00 – Quality Control and 01 70 00 – Contract Closeout



- B. Request visual inspection of bearing surfaces by Engineer before installing subsequent work.
- C. Perform laboratory material tests and in place compaction tests at frequency specified in Table 2 – 31 22 25: Earthwork.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- E. Proof roll compacted fill surfaces under slabs-on-grade, pavers, and paving.

### 3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

## **SECTION 31 10 00 SITE CLEARING**

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Removing surface debris.
2. Removing designated trees, shrubs, and other plant life.
3. Removing abandoned utilities.

#### **1.2 SUBMITTALS**

- A. Section 01 33 00 - Submittal Procedures:** Requirements for submittals.
- B. Product Data:** Submit data for herbicide. Indicate compliance with applicable codes for environmental protection.

#### **1.3 QUALITY ASSURANCE**

- A. Perform Work in accordance MDSHA Standards Specifications for Construction and Materials.**
- B. Conform to applicable code for environmental requirements and disposal of debris.**

### **PART 2 PRODUCTS - Not Used.**

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Section 01 30 00 - Administrative Requirements:** Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.**
- C. Identify waste area for placing removed materials.**

#### **3.2 PREPARATION**

- A. Call Miss Utility service not less than three working days before performing Work.**
1. Request underground utilities to be located and marked within and surrounding construction areas.

### 3.3 PROTECTION

- A. Locate, identify, and protect utilities indicated to remain, from damage.
- B. Protect trees, plant growth, and features designated to remain, as final landscaping.
- C. Protect benchmarks, survey control points, groundwater monitoring wells, landfill gas monitoring probes, and existing structures from damage or displacement.

### 3.4 CLEARING

- A. Remove trees and shrubs. Remove stumps, main root ball, and surface rock.
- B. Clear undergrowth and deadwood, without disturbing subsoil.

### 3.5 TOPSOIL STRIPPING

- A. Strip and stockpile topsoil in area(s) designated by the OWNER so that topsoil will be available for future use and will not interfere with other activities.

### 3.6 REMOVAL

- A. Debris from past activities at the site which collected during site preparation, and waste materials resulting from regrading or excavation shall be buried within the landfill area and covered with a minimum of one foot of Intermediate Cover. Waste materials must be covered by Intermediate Cover at the end of each Working Day.
- B. Brush, timber, stumps, and root balls resulting from site clearing must be removed from the site and properly disposed in accordance with applicable laws, regulations and permits. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- C. Leave site in clean condition.

END OF SECTION

## SECTION 31 22 25 EARTHWORK

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. The work in this section includes all labor, materials, equipment, construction quality control (CQC) testing, and incidentals required to perform earthwork for site grading. Earthwork includes, but is not limited to the following:
  - 1. Excavation, filling, backfilling, and compacting earthen materials to achieve final grades for all related earthen features. This includes backfilling of trenches and anchor trenches; sheeting and shoring; construction of vegetative support layer; dewatering; general backfilling and compacting, and grading around structures; segregating, stockpiling, screening, and other material processing of excavated materials for on-site use; disposing of earth materials, as required to complete construction, and associated features shown on the PLANS.
  - 2. Erosion and sediment control, construction of temporary and permanent access roads, diversion berms, storm drainage structures and related structures as shown on the PLANS and as specified herein and in the General Conditions.
  - 3. CONTRACTOR's Construction Quality Control (CQC) observations, field testing, sampling, laboratory testing of earthwork, as specified herein, to establish compliance with material and performance requirements.
- B. No classification of type of excavated material will be made. Excavation includes all soil, boulders, waste materials (if encountered), rock, organic material, and other material from areas to be graded, regardless of type, character, composition, moisture, or condition thereof.
- C. CONTRACTOR is responsible for all construction layouts and staking.
- D. Related Sections:
  - 1. Section 31 05 16 - Aggregates for Earthwork
  - 2. Section 31 23 17 - Trenching: Backfilling trenches.
  - 3. Section 31 37 00 – Riprap
  - 4. Section 32 91 19 - Landscape Grading: Smooth grading
  - 5. Section 32 92 19 - Seeding: Finish ground cover.

#### 1.2 DEFINITIONS

- A. Excavation means the removal of soil, waste, rock, debris, and other materials to the proposed grading limits indicated on the Drawings, and as required to excavate within designated borrow areas to supply the required volume and quality of soil for the construction.

- B. Unauthorized excavation consists of removal of materials beyond indicated areas without specific direction of the ENGINEER. Unauthorized excavation shall be at CONTRACTOR's expense. Unauthorized excavations shall be backfilled and compacted as specified for authorized excavations at no additional cost to the Owner.
- C. Additional Excavation: When excavation has reached required elevations, notify the ENGINEER, who will make an inspection of conditions. If the ENGINEER determines that bearing materials at required elevations are unsatisfactory, continue excavation until satisfactory bearing materials are encountered. Replace excavated material with suitable fill material as directed by the ENGINEER.
- D. Maximum Dry Density: Maximum dry weight in pounds per cubic foot (pcf) of a specific soil material as determined by Standard Proctor ASTM D698.
- E. Optimum Moisture Content: The moisture content at which the maximum dry density of a soil material is determined by Standard Proctor ASTM D698.
- F. Fill material is material used for trench backfill, structural fill and backfill and embankment.
- G. Filled areas are areas that have received trench backfill, structural fill or embankment materials, placed and compacted as specified herein.
- H. Paved areas are areas over which paving exists, or is to be placed under this Contract, or areas designated on the Drawings to receive future paving.
- I. Open areas are all areas other than the following: paved areas, areas within the public right-of-way, and areas upon which structures are to be constructed.
- J. Reference Standards: Test methods widely used by the industry including those methods published by ASTM International.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- C. Sheeting, shoring, and bracing shall be designed and signed by a registered professional Engineer and submitted for approval.
- D. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients

### 1.4 SAFETY

- A. All excavation guidelines shall comply with CONTRACTOR's Site Health and Safety Plan and the applicable requirements as stated in the:
  - 1. OSHA excavation safety standards.

2. State and County construction safety regulations.
3. Trench safety guidelines as specified by the Landfill Gas Division of the Solid Waste Association of North America (SWANA).
4. Contact "Miss Utility" to obtain clearance prior to any excavation work.

## 1.5 QUALIFICATIONS

- A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Maryland.

## 1.6 PROJECT CONDITIONS

- A. Site Information: The CONTRACTOR shall be responsible for having determined to his/her satisfaction, prior to the submission of the bid, the conformation of the ground, the characteristics and quality of the substrata, the types and quantities of materials to be encountered, the nature of the rock and groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract.
  1. Additional test borings, soil testing, and other exploratory operations may be performed by CONTRACTOR, at the CONTRACTOR's option; however, the OWNER will not pay for such additional exploration.
- B. Existing Structures: Shown on the Drawings are certain surface features and underground structures adjacent to and within the work area. This information has been obtained from existing records. It is not guaranteed to be correct or complete and is shown for the convenience of the CONTRACTOR. The CONTRACTOR shall explore ahead of the required excavation to determine the exact location of all structures. They shall be supported and protected from injury by the CONTRACTOR. If they are broken or injured, they shall be restored immediately by the CONTRACTOR at his expense.
- C. Protection of Persons and Property
  1. Barricade open excavations or trenches occurring as part of this work and post warning signs or lights, as appropriate.
  2. CONTRACTOR shall plan and conduct operations to prevent damage or disturbance to existing structures and utilities, buried utilities, existing monitoring wells, paved roads, signs, trees, and benchmarks.
  3. Protect existing slopes, embankments, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
  4. Failure of ENGINEER to order the use of bracing or sheeting or shoring shall not in any way or to any extent relieve the CONTRACTOR of any responsibility concerning the condition of excavations or of his obligations under this Contract.
  5. Work is restricted to the area provided for CONTRACTOR's use.

6. Side slopes shall be maintained in stable condition under all normal anticipated weather conditions for the period that the excavation will be open. The CONTRACTOR shall regrade side slopes to be a more stable configuration if so directed by ENGINEER.
- D. Dust Control: The CONTRACTOR shall conduct operations and maintain the area of his activities, including sweeping and sprinkling of roadways, so as to minimize the creation and dispersion of dust to the satisfaction of the OWNER.

## 1.7 QUALITY CONTROL

- A. All materials and labor furnished under this section shall comply with OSHA, ASTM, MSHA, NEC, ANSI and other applicable Federal, State and COUNTY codes and regulations including revisions to the date of the Contract.
- B. CONTRACTOR to provide CQC.
- C. Use adequate number of skilled workmen who are thoroughly trained and experienced in the specified requirements and the methods needed for proper performance of the work in this Section.
- D. Testing and Analysis: Perform in accordance with Table 1 – 31 22 25: Earthwork.
- E. When tests indicate materials do not meet specified requirements, change material and retest.
- F. Furnish each material from single source throughout the Work.
- G. Perform Work in accordance with MDSHA Standards Specifications for Construction and Materials.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. General Fill:
  1. General Fill is not available on-site from designated areas. Screening, crushing, or segregation may be required as part of excavation to remove oversize particles or rock.
  2. General Fill shall be inorganic soil, that is not excessively wet or saturated, free of stone, rock, or gravel larger than three (3) inches in any dimension, and free of debris, waste, frozen materials, vegetation, organic materials, roots, and other deleterious matter. The satisfactory excavated soil materials shall be capable of maintaining its stability on all slopes. Excess or unsatisfactory material shall be removed and disposed as directed by the ENGINEER to the designated on-site stockpiles.

3. General Fill shall be used for backfilling and filling as shown on the Drawings, and for areas as otherwise directed by the ENGINEER.
- B. Controlled Fill:
1. Controlled Fill refers to select inorganic soil materials that are classified as CL, CL-ML, SM, SP, SC, or SW as defined by Unified Soil Classification System, or otherwise approved by the ENGINEER. The ENGINEER or OWNER shall designate areas on-site to separately stockpile potential Controlled Fill materials.
  2. Controlled Fill shall be used in the last five (5) feet of filling for access roads and building structures (if any) outside of the limits of waste.
- C. Vegetative Support Layer
1. Use General Fill to achieve a minimum 90% of Standard Proctor at  $\pm 4$  percent optimum moisture content (ASTM D698). The lower 9 inches of the layer shall have a maximum particle size of 2-inches.
- D. Other Materials: All other materials, not specifically described, but required for proper completion of the work shall be selected by the CONTRACTOR and approved by the ENGINEER.

## 1.2 ACCESSORIES

- A. Geotextile Fabric: Non-biodegradable, non-woven, as indicated on Drawings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 02 00 00 – Site Conditions: Verification of existing conditions before starting work.
- B. Verify site conditions under provisions of Section 02 00 00 – Site Conditions.
- C. Verify survey benchmark and intended elevations for the Work are as indicated on Drawings.

### 3.2 PREPARATION

- A. Call Local Utility Line Information service not less than three working days before performing Work.
  1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.



- D. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- E. Protect benchmarks, survey control point, groundwater monitoring wells, landfill gas monitoring probes, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Site Clearing, Grubbing, and Stripping:
  - 1. Prior to construction, all areas to receive fill or to be excavated shall be cleared and grubbed of vegetation, roots, organic soil, peat, trash, debris, or other deleterious materials as specified in Section 31 10 00 – Site Clearing.
- G. Dewatering
  - 1. The CONTRACTOR shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations and shall keep such excavations dry so as to obtain a satisfactory foundation condition until the fill, structures, or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels.
  - 2. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottom, and soil changes detrimental to stability of subgrades and foundations. Subgrade soils, which become soft, loose, "quick", or otherwise unsatisfactory for support of structure as a result of inadequate dewatering or other construction methods shall be removed and replaced by crushed stone as required by the ENGINEER at the CONTRACTOR's expense. The bottom of excavations shall be rendered firm and without standing water before placing structures or pipes. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
  - 3. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.
  - 4. Disposal of Water Removed by Dewatering System:
    - a. Dispose of water in such a manner as to cause no inconvenience to the OWNER, the ENGINEER, or others involved in work about the site.
    - b. Trench excavations shall not be used as temporary drainage ditches.
- H. Construction Quality Control (CQC)
  - 1. CQC testing and observations shall be provided by a qualified testing firm that is approved by the OWNER.

2. OWNER shall provide pre-construction material verification and Quality Control testing of earth materials as indicated in Table 1-31 22 25.

### 3.3 EXCAVATION

#### A. General:

1. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Drawings.
2. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against hazards and in accordance with the Health and Safety Plan. Excavations shall provide adequate working space and clearances for the work to be performed therein. If walls of the excavation cannot be kept stable, the excavation shall be properly shored and braced.
3. CONTRACTOR may need to screen, crush, or segregate excavated material during excavation to remove oversize particles and rock, and to set aside material that will be suitable for use in construction.
4. If subgrade "pumping" is encountered during excavation, perform the following:
  - a. Excavate and remove the underlying unsuitable material for a minimum depth of 12 inches.
  - b. Proof-roll and compact by appropriate heavy equipment for at least 6 passes and approved by the ENGINEER.
  - c. Backfill with General Fill or Controlled Fill material as directed by the ENGINEER and compact to a stable condition approved by the ENGINEER.
5. Excavation shall conform to the limits indicated on the Drawings and as specified herein. This work shall include shaping, sloping, grading and other work necessary in bringing the site to the required grade, alignment, and cross-section.
6. Unsatisfactory materials shall be removed to the required depth and replaced to the satisfaction of the ENGINEER with General Fill or Controlled Fill. Unsatisfactory materials shall be removed and disposed of off-site.
7. Satisfactory excavated materials shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

### 3.4 STABILITY OF EXCAVATIONS

- A. General: Comply with local codes, ordinances, and requirements of agencies having jurisdiction including OSHA.
- B. Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of

space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

- C. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and bracing in excavations during period excavations will be open. Extend shoring and bracing as excavation progresses.

### 3.5 STORAGE OF EXCAVATED AND BORROW MATERIALS

- A. Stockpile materials where directed by the OWNER. Place, grade, and shape stockpiles for proper drainage.
  - 1. Locate and retain excavated soil and backfill materials away from edge of excavations. No excavated materials or other construction materials shall be placed within thirty (30) feet of the edge of pavement of any public road.
  - 2. Comply with all erosion and sediment control requirements of State and local authorities.

### 3.6 BACKFILL AND FILL

- A. General: Place soil material in layers to required elevations, for each area classification listed below, using materials specified in Part 2 of this Section.
  - 1. For general site grading, use General Fill or Controlled Fill unless otherwise indicated.
- B. Backfill excavations as promptly as work permits.
- C. Compact subgrade to density requirements for subsequent backfill materials.
- D. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Controlled fill and compact to density equal to or greater than requirements for subsequent fill material.
- E. Scarify subgrade surface so that fill materials will bond with existing surfaces.
- F. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.
- G. Backfill areas to contours and elevations with unfrozen materials.
- H. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- I. Place geotextile fabric as indicated on Drawings.

### 3.7 PLACEMENT AND COMPACTION

- A. General:

1. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or scarify surfaces so that fill materials will bond with existing surfaces.
  2. Waste or unsuitable materials shall not be used as backfill materials.
  3. Place backfill and fill materials in horizontal layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated equipment. Thickness of layers may be increased or decreased provided the equipment and methods used are proven by field density and moisture content testing, or test pads, to be capable of compacting thicker or thinner layers to specified densities and moisture range, and only as approved by the ENGINEER.
  4. Before compaction, moisten or aerate and process (e.g., disking and mixing) each layer as necessary to provide suitable moisture contents. Compact each layer to required percentage of maximum dry density or relative dry density and moisture range for each area classification. Do not place backfill or fill material on surfaces that are submerged, soft, muddy, frozen, or unstable.
  5. Recompect areas or lifts if soil density and moisture tests indicate inadequate compaction and/or moisture. No additional compensation shall be given to the CONTRACTOR due to re-working of failed areas. The extent of area for repair shall be determined by the ENGINEER.
  6. Place backfill and fill materials evenly adjacent to structures or piping to required elevations. Prevent wedging action of backfill against structures or displacement of piping by carrying material uniformly around structure or piping to approximately same elevation in each lift.
- B. Moisture Control: Where subgrade or fill material must be moisture conditioned before compaction:
1. Uniformly apply water to surface of subgrade or fill material. Apply water as necessary to prevent free water from appearing on surface during or subsequent to compaction operations. The CONTRACTOR shall process soil materials so that moisture is uniformly mixed into soils.
  2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density and moisture range. Stockpile or spread soil material that has been removed because it is too wet to permit compaction. Assist drying by disking, harrowing, or pulverizing until moisture content is reduced uniformly to a satisfactory value.
- C. Compaction Requirements: Compact fill materials and aggregates not less than the following percentages of maximum dry density in accordance with ASTM D 698, unless otherwise approved by the ENGINEER, as follows:
1. Before placement of General Fill, Controlled Fill, Vegetative Support Layer and

Aggregates, the existing subgrade compaction shall be achieved by appropriate heavy compaction equipment with a minimum of 6 passes and approved by the ENGINEER, unless otherwise specified.

2. General Fill and Vegetative Support Layer: Minimum 90 percent compaction of ASTM D698.
3. Controlled Fill: Minimum 95 percent compaction within 4 percent optimum of moisture content.

### 3.8 GRADING

- A. Perform grading operations so that the excavation will be well drained at all times. Maintain drainage ditches and keep them open and free from soil, debris, and leaves until final acceptance of the work. Finish all grading on neat, regular lines conforming to the sections, lines, grades, and contours shown on the PLANS or if not shown in accordance with the criteria set forth hereinafter. Perform grading work in proper sequence with all other associated operations.
- B. Structures and pavement: bring finished subgrade to the elevation as shown on the drawings. Bring entire areas to the finished subgrade elevation before excavating for footings.
- C. Uniformly grade all areas disturbed by the project, at trench locations, excavated and fill areas and adjacent transition areas so that finished surfaces are at the proposed grade or are approximately at preexisting grades, adjusted as required to provide positive drainage.

### 3.9 MAINTENANCE

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.
- C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density and moisture range prior to further construction.
- D. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work and eliminate evidence of restoration to greatest extent possible.

### 3.10 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Dispose of excess soil and waste materials to designated areas on-site as directed by the ENGINEER.

### 3.11 RELOCATION OF WASTE MATERIALS

- A. Waste material, consisting primarily of rubble fill from previous site operations is expected to be encountered in areas beyond the planned limits of the membrane cap. Waste that is encountered shall be excavated and relocated within the limits of the landfill cap in accordance with the following:
1. CONTRACTOR shall excavate waste materials using appropriate equipment.
  2. Notify the CQA inspector to observe the waste material and confirm its presence.
  3. During excavation, field screening will be conducted to classify the materials as soil, rubble, vegetative waste, or unacceptable waste, as well as to observe the material for indications of obvious environmental contamination (e.g., visible staining or unusual odors).
  4. Unacceptable waste shall be segregated by the CONTRACTOR and hauled to an appropriate receiving facility. The remaining materials may be relocated to an area within the limits of landfill capping.
  5. Relocated waste materials shall be covered with a minimum of two feet of soil prior to geomembrane placement.
- B. During waste excavation the CONTRACTOR shall manage the excavation area as if it was the working face of a rubble landfill. To the extent waste materials are exposed during excavation, they must be covered with clean soil or another suitable cover material at the end of the day if no operations are planned for the next day.

### 3.12 FINISHING WORK

- A. The CONTRACTOR shall maintain all final surfaces to be free of ruts, depressions, and damage resulting from the hauling and handling of any material, equipment, tools, etc.
- B. All drainage structures shall be constructed and maintained as necessary along the completed section.
- C. Unless otherwise specified by the ENGINEER, the elevation of all constructed grades, structures, and pipes shall be to the following tolerances:
1. Constructed Alignments:  $\pm 0.50$  feet
  2. Constructed grades within landfill footprint:  $+ 0.10$  feet
  3. Constructed grades outside landfill footprint:  $\pm 0.25$  feet
  4. Piping and manholes:  $\pm 0.01$  feet

**Thicknesses of all cap components (e.g., vegetative support layer) are minimum values.**

- D. After berms, ditches, swales, shoulders, and embankments are completed, the disturbed areas shall be finish graded. Any lumber, undesirable materials, and rocks larger than the 3 inches in size shall be removed from the surface immediately and the surface shall be prepared for final landscaping.

- E. Paved and grass areas disturbed by the operations under this section shall be restored as indicated on the Drawings and/or specified in the Specifications.

### 3.13 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request visual inspection of bearing surfaces by Architect/ENGINEER before installing subsequent work.
- C. Perform laboratory material tests and in place compaction tests at frequency specified in Tables 1 and 2.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
- E. Proof roll compacted fill surfaces under slabs-on-grade, pavers, and paving.

### 3.14 PROTECTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- C. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- D. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.
- E. Reshape and re-compact fills subjected to vehicular traffic.

**TABLE 1-31 22 25  
PRECONSTRUCTION EARTH MATERIALS TESTING**

<b>Granular Materials (Bedding for Pipe, Gravel Roads)</b>			
<b>Test</b>	<b>Method</b>	<b>Minimum Frequency</b>	<b>Comment</b>
Sulfate Soundness	ASTM C88	1 per source	Provided by supplier
Percent Finer than No. 200 Sieve	ASTM C117	1 per source	Provided by supplier
LA Abrasion	ASTM C131/C535	1 per source	Provided by supplier
Sieve Analysis	ASTM C136	1 per source	Provided by supplier
<b>Fine-Grained Soils (General Fill, Controlled Fill, Trench Backfill, Vegetative Support Layer)</b>			
Water Content	ASTM D2216	1/5000 yd <sup>3</sup> /soil type	ENGINEER may reduce frequency if results are consistent and a single source used
Particle Size Analysis	ASTM D422	1/5000 yd <sup>3</sup> /soil type	ENGINEER may reduce frequency if results are consistent and a single source used

<b>Granular Materials (Bedding for Pipe, Gravel Roads)</b>			
<b>Test</b>	<b>Method</b>	<b>Minimum Frequency</b>	<b>Comment</b>
Standard Proctor Compaction	ASTM D698	1/5000 yd <sup>3</sup> /soil type	ENGINEER may request additional tests; not required for Vegetative Support Layer
Percent Finer than No. 200 Sieve	ASTM D1140	1/5000 yd <sup>3</sup> /soil type	May be eliminated if same information provided by ASTM D422
Atterberg Limits	ASTM D4318	1/5000 yd <sup>3</sup> /soil type	ENGINEER may reduce frequency if results are consistent and a single source used

Note: If similar soils are used for the various material/layer types, then preconstruction soil test results may be combined for multiple material/layer types.

**TABLE 2- 31 22 25**  
**EARTH MATERIALS CQC TESTING**

<b>Granular Materials (Bedding for Pipe, Gravel Roads)</b>			
<b>Test</b>	<b>Method</b>	<b>Minimum Frequency</b>	<b>Comment</b>
Percent Finer Than No. 2 Sieve	ASTM C117	1/500 yd <sup>3</sup> or 1 per 500 linear feet of trench/road	Excludes riprap
Sieve Analysis	ASTM C136	1/500 yd <sup>3</sup> or 1 per 500 linear feet of trench/road	Excludes riprap
<b>Fine-Grained Soils (General Fill, Controlled Fill, Trench Backfill, Vegetative Support Layer)</b>			
Sand Cone Density Test	ASTM D1556	1 per 20 nuclear density tests to validate nuclear device results	Test frequency may be reduced or eliminated if results of first 5 sand cone tests are consistent with nuclear gauge
Hydraulic Conductivity	ASTM D5084	1 per acre	Not required for General Fill, Controlled Fill, Trench Backfill, or Vegetative Support Layer
Nuclear Density Test	ASTM D2922	5 tests/acre/lift or 1 per 500 linear feet of trench	1 test per acre for Protective Cover Layer; Not required for Vegetative Support Layer
Water Content (Nuclear Method)	ASTM D3017	5 tests/acre/lift or 1 per 500 linear feet of trench	

END OF SECTION



## **SECTION 31 23 17 TRENCHING**

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Excavating trenches
2. Compacted fill from top of bedding to subgrade elevations.
3. Backfilling and compaction.

**B. Related Sections:**

1. Section 31 05 16 - Aggregates for Earthwork: Aggregates for fill.
2. Section 31 22 25 - Earthwork: General building excavation and backfilling.
3. Section 31 37 00 - Riprap.
4. Section 32 91 19 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.
5. Section 33 41 00 - Storm Utility Drainage Piping: Storm sewer piping and bedding.

#### **1.2 REFERENCES**

**A. American Association of State Highway and Transportation Officials:**

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

**B. ASTM International:**

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb f/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
3. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.
- C. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- D. Samples: Submit, in air-tight containers, 10 lb sample of each type of fill.
- E. Materials Source: Submit name of imported fill materials suppliers.
- F. Manufacturer's Certificate: Certify Products meet or exceed specified requirements

### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with MDSHA Standards Specifications for Construction and Materials

### 1.5 QUALIFICATIONS

- A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Maryland.

### 1.6 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

### 1.7 COORDINATION

- A. Section 02 00 00 - Site Conditions: Coordination and project conditions.
- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

## PART 2 PRODUCTS

### 2.1 FILL MATERIALS

- A. As indicated on Drawings.

### 2.2 ACCESSORIES

- A. Geotextile Fabric: Geotextile shall be a 10 ounce per square yard, needle-punched, nonwoven geotextile made of 100% polypropylene staple fibers.

## PART 3 EXECUTION

### 3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
  - 1. ENGINEER reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

### 3.2 PREPARATION

- A. Call Miss Utility service not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- D. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Maintain and protect above and below grade utilities indicated to remain.
- F. Establish temporary traffic control when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

### 3.3 TRENCHING

- A. Excavate subsoil required for utilities.
- B. Remove lumped subsoil, boulders, and rock up of 1/6 cubic yard, measured by volume.
- C. Do not advance open trench more than 200 feet ahead of installed pipe.
- D. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.
- E. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.
- F. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- G. Do not interfere with 45 degree bearing splay of foundations.
- H. When Project conditions permit, slope side walls of excavation starting 2 feet above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this section.

- I. When subsurface materials at bottom of trench are loose or soft, notify ENGINEER, and request instructions.
- J. Cut out soft areas of subgrade not capable of compaction in place. Backfill with General Fill and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim excavation. Remove loose matter.
- L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by ENGINEER.
- M. Stockpile subsoil in area designated on site and protect from erosion.

### 3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

### 3.5 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place geotextile fabric as indicated on Drawings.
- D. Place and compact material in continuous layers per requirements in Section 31 22 25 - Earthwork or Section 31 05 16 – Aggregates for Earthwork, as appropriate.
- E. Employ placement method that does not disturb or damage surrounding or underlying materials.
- F. Maintain optimum moisture content of fill materials to attain required compaction density.
- G. Do not leave more than 50 feet of trench open at end of working day.
- H. Protect open trench to prevent personnel and visitors to site.

### 3.6 TOLERANCES

- A. Section 01 45 00 - Quality Control.
- B. Top Surface of Backfilling Under Paved Areas: Plus, or minus 1 inch from required elevations.
- C. Top Surface of General Backfilling: Plus, or minus 1 inch from required elevations.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform laboratory material tests in accordance with Table 1 – Section 31 22 25: Earthwork.
- C. Perform in place compaction tests in accordance with Table 2 – Section 31 22 25: Earthwork.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

### 3.8 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Contract Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

## **SECTION 31 25 13 EROSION CONTROLS**

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Diversion Channels
2. Rock Energy Dissipator
3. Sediment Ponds
4. Sediment Traps

**B. Related Sections:**

1. Section 31 05 16 - Aggregates for Earthwork
2. Section 31 10 00 - Site Clearing
3. Section 31 22 25 – Earthwork
4. Section 31 37 00 – Riprap
5. Section 32 91 19 - Landscape Grading
6. Section 32 92 19 – Seeding
7. Section 33 41 00 – Storm Utility Drainage Piping

#### **1.2 REFERENCES**

**A. American Association of State Highway and Transportation Officials:**

1. AASHTO T88 - Standard Specification for Particle Size Analysis of Soils.
2. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

**B. American Concrete Institute:**

1. ACI 301 - Specifications for Structural Concrete.

**C. ASTM International:**

1. ASTM C127 - Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.

2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb f/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
  3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
  4. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- D. Precast/Prestressed Concrete Institute:
1. PCI MNL-116S - Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittals: Requirements for submittals.
- B. Product Data: Submit data on joint filler, joint sealer, admixtures, curing compounds, geotextile.
- C. Submit proposed mix design for review prior to commencement of Work.
- D. Samples:
  1. Submit two samples of rock, minimum 5 tons each or one-half total project quantity, whichever is smaller. Provide one sample in place at construction site and provide another sample at quarry. Construction site sample may be incorporated into the Work. Samples will be used as reference for judging size, and gradation of rock supplied and placed.
- E. Test Reports: Indicate certified test results for precast concrete at manufacturing facility, cast-in-place concrete in field, and granular backfill.
- F. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

### 1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Contract Closeout: Requirements for submittals.

### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with requirements of Section 31 05 16, Section 31 10 00, Section 31 37 00, Section 31 22 25, Section 32 91 19, Section 32 92 19, Section 03 30 00, and Section 03 41 00.
- B. Perform Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version.

### 1.6 PRE-INSTALLATION MEETINGS

- A. Section 02 00 00 – Site Conditions: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

#### 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Section 02 24 00 – Environmental Protection: Environmental conditions affecting products on site.
- B. Do not place grout when air temperature is below freezing.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

### PART 2 PRODUCTS

#### 2.1 ROCK AND GEOTEXTILE MATERIALS

- A. Furnish materials in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version.

#### 2.2 CONCRETE MATERIALS AND REINFORCEMENT

- A. Furnish in accordance with Section 03 30 00 – Cast-in-Place Concrete and Section 03 41 00 – Precast Concrete Utility Structures.

#### 2.3 AGGREGATE, AND SOIL MATERIALS

- A. Aggregate: As specified in Section 31 05 16.
- B. Soil Backfill: As specified in Section 31 22 25.

#### 2.4 PLANTING MATERIALS

- A. Seeding and Soil Supplements: As specified in Section 32 92 19 and on Drawings.
- B. Mulch: As specified in Section 32 92 19 - Seeding.

#### 2.5 PIPE MATERIALS

- A. Pipe: Furnish materials in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version.

#### 2.6 ACCESSORIES

- A. Furnish materials in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version.

#### 2.7 SOURCE QUALITY CONTROL (AND TESTS)

- A. Section 01 45 00 - Quality Control: Testing, inspection, and analysis requirements.



- B. Perform tests on cement, aggregates, and mixes to ensure conformance with specified requirements.
- C. Allow witnessing of inspections and test at manufacturer's test facility. Notify ENGINEER at least seven days before inspections and tests are scheduled.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 02 00 00 – Site Conditions: Verification of existing conditions before starting work.
- B. Verify compacted subgrade and/or granular base is acceptable and ready to support devices and imposed loads.
- C. Verify gradients and elevations of base or foundation for other work are correct.

### 3.2 DIVERSION CHANNELS

- A. Install Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version.

### 3.3 ROCK ENERGY DISSIPATOR

- A. Install Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version, and as indicated on Drawings.

### 3.4 SEDIMENTATION POND

- A. Install Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version, and as indicated on Drawings.

### 3.5 SEDIMENT TRAPS

- A. Install Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version, and as indicated on Drawings.

### 3.6 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile height shall not exceed 35 feet. Slope stockpile sides at 2:1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
  - 1. During non-germinating periods, apply mulch at recommended rates.

2. Stabilize disturbed areas which are not at finished grade, and which will be disturbed within one year in accordance with Section 32 92 19 temporary seeding at percent of permanent application rate with no topsoil.
  3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 32 92 19 permanent seeding specifications.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 45 00 – Quality Control and 01 70 00 - Contract Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.
- C. Field test concrete in accordance with Section 03 30 00.
- D. Compaction Testing: As specified in Section 31 22 25 - Earthwork.
- E. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

### 3.8 CLEANING

- A. Section 01 70 00 - Contract Closeout Requirements: Requirements for cleaning.
- B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove, and dispose of sediment.
- C. Do not damage structure or device during cleaning operations.
- D. Do not permit sediment to erode into construction or site areas or natural waterways.
- E. Clean channels when depth of sediment reaches approximately one-half channel depth.

### 3.9 PROTECTION

- A. Section 01 70 00 – Contract Closeout Requirements: Requirements for protecting finished Work.
- B. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.
- C. Do not permit construction traffic over paving for 7 days minimum after finishing.
- D. Protect paving from elements, flowing water, or other disturbance until curing is completed.

END OF SECTION

**SECTION 31 37 00**  
**RIPRAP**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Riprap placed loose.
- B. Related Sections:
  - 1. Section 31 05 16 - Aggregates for Earthwork.
  - 2. Section 31 23 17 – Trenching
  - 3. Section 32 91 19 - Landscape Grading: Topsoil placement.

**1.2 SUBMITTALS**

- A. Section 01 33 00 - Submittals: Requirements for submittals.
- B. Product Data: Submit data for riprap and geotextile fabric.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

**1.3 QUALITY ASSURANCE**

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version and MDSHA Standards Specifications for Construction and Materials.

**PART 2 PRODUCTS**

**2.1 MATERIALS**

- A. Furnish materials in accordance with MDSHA Standards Specifications for Construction and Materials.
- B. Geotextile Fabric: As indicated on Drawings.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

- A. Section 02 00 00 – Site Conditions: Verification of existing conditions before starting work.

### 3.2 PLACEMENT

- A. Place geotextile fabric over substrate, lap edges and ends a minimum of 12 inches.
- B. Place riprap as indicated on Drawings.
- C. Installed Thickness: As indicated on Drawings.
- D. Place rock evenly and carefully to minimize voids, do not tear bag fabric, place rock in one consistent operation to preclude disturbance or displacement of substrate.

END OF SECTION

**SECTION 32 31 13**  
**CHAIN LINK FENCES AND GATES**

**PART 1 GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Fence framework, fabric, and accessories.
2. Excavation for post bases.
3. Concrete foundation for posts.
4. Manual gates and related hardware.

**B. Related Sections:**

1. Section 03 30 00: Concrete anchorage for posts.

**1.2 REFERENCES**

**A. ASTM International:**

1. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
3. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
4. ASTM A1011 - Standard Specification for Steel, Sheet, and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
5. ASTM B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
6. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
7. ASTM F567 - Standard Practice for Installation of Chain-Link Fence.
8. ASTM F668 - Standard Specification for Poly (Vinyl Chloride) (PVC)-Coated Steel Chain Link Fence Fabric.
9. ASTM F900 - Standard Specification for Industrial and Commercial Swing Gates.
10. ASTM F934 - Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.

11. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.

B. Chain Link Fence Manufacturers Institute:

1. CLFMI - Product Manual.

1.3 SYSTEM DESCRIPTION

- A. Fence Height: as indicated on Drawings.
- B. Line Post Spacing: At intervals not exceeding 10 feet.
- C. Fence Post and Rail Strength: Conform to ASTM F1043 Light Industrial Fence quality.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittals: Requirements for submittals.
- B. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
- C. Product Data: Submit data on fabric, posts, accessories, fittings, and hardware.
- D. Samples: Submit two samples of fence fabric, in size illustrating construction and colored finish  
Manufacturer's Installation Instructions: Submit installation requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Contract Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Accurately record actual locations of property perimeter posts relative to property lines.
- C. Operation and Maintenance Data: Procedures for submittals.

1.6 QUALITY ASSURANCE

- A. Supply material in accordance with CLFMI - Product Manual.
- B. Perform installation in accordance with ASTM F567.
- C. Perform Work in accordance with MDSHA Standards Specifications for Construction and Materials.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years' experience.

- B. Installer: Company specializing in performing work of this section with minimum three years' experience.

## 1.8 DELIVERY, STORAGE AND HANDLING

- A. Section 01 45 00 – Quality Control: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.
- C. Identify each package with manufacturer's name.
- D. Store fence fabric and accessories in secure and dry place.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, minimum yield strength of 25 ksi; coating conforming to ASTM F1043 Type A on pipe exterior and interior.
- B. Fabric Wire (Steel): ASTM A392 zinc coated wire fabric.
- C. Concrete: Type specified in Section 03 30 00.

### 2.2 COMPONENTS

- A. Line Posts: As shown on Drawings.
- B. Corner and Terminal Posts: As shown on Drawings.
- C. Gate Posts: As shown on Drawings.
- D. Top and Brace Rail: As shown on Drawings, plain end, sleeve coupled.
- E. Gate Frame: As shown on Drawings.
- F. Fabric: 2-inch diamond mesh interwoven wire, 9 gage thick, per MDSHA Standards Specifications for Construction and Materials.
- G. Tension Wire: 9 gage thick steel, single strand.
- H. Tie Wire: Aluminum alloy steel wire.

### 2.3 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners, and fittings.

- C. Gate Hardware: Fork latch with gravity drop; 180-degree gate hinges for each leaf.

## 2.4 GATES

### A. General:

1. Gate Types, Opening Widths and Directions of Operation: As indicated on Drawings.
2. Factory assemble gates.
3. Conform to requirements specified for PVC coated steel chain link fence except that PVC coated aluminum alloy framing conforming to ASTM B429 may be used.
4. Design gates for operation by one person.

### B. Swing Gates:

1. Fabricate gates to permit 180-degree swing.
2. Gates Construction: ASTM F900 with welded corners. Use of corner fittings is not permitted.

## 2.5 FINISHES

- A. Components and Fabric: Vinyl coating, green color in accordance with ASTM F934.
- B. Vinyl Components: as selected.
- C. Hardware: Galvanized to ASTM A153/A153M, 2.0 oz/sq ft coating.
- D. Accessories: Same finish as framing.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install framework, fabric, accessories, and gates in accordance with MDSHA Standards Specifications for Construction and Materials.

### 3.2 ERECTION TOLERANCES

- A. Section 01 4 00 - Quality Control: Tolerances.
- B. Maximum Variation from Plumb: 1/4 inch.
- C. Maximum Offset from Indicated Position: 1 inch.

END OF SECTION



## **SECTION 32 91 19 LANDSCAPE GRADING**

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Final grade topsoil for finish landscaping.

**B. Related Sections:**

1. Section 31 23 17 - Trenching: Backfilling trenches.
2. Section 32 92 19 - Seeding and Soil Supplements: Finish ground cover.

#### **1.2 QUALITY ASSURANCE**

- A. Perform Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version.**

### **PART 2 PRODUCTS**

#### **2.1 MATERIAL**

- A. Topsoil: Soil that contains sufficient organic material and nutrients to sustain a vegetative cover over time.**

#### **2.2 SOURCE QUALITY CONTROL**

- A. Section 01 45 00 - Quality Control: Testing, inspection, and analysis requirements.**
- B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.**
- C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.**

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Section 02 00 00 – Site Conditions: Verification of existing conditions before starting work.**
- B. Verify trench backfilling has been inspected.**
- C. Verify substrate base has been contoured and compacted.**

### 3.2 PREPARATION

- A. Protect landscaping and other features remaining as final Work.
- B. Protect existing structures, fences, utilities, and paving.

### 3.3 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 2 inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

### 3.4 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, is required, and as shown in Drawings. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material over 1 inch in dimension while spreading.
- D. Manually spread topsoil close to existing features to prevent damage.
- E. Lightly compact placed topsoil.

### 3.5 TOLERANCES

- A. Section 01 45 00 - Quality Control: Tolerances.
- B. Top of Topsoil: Thickness of installed topsoil layer on landfill shall be no less than 6-inches, measured perpendicular to the slope.

### 3.6 PROTECTION OF INSTALLED WORK

- A. Section 01 70 00 - Contract Closeout Requirements: Requirements for protecting finished Work.
- B. Prohibit construction traffic over topsoil.

END OF SECTION

## **SECTION 32 92 19 SEEDING**

### **PART 1 GENERAL**

#### **1.1 SUMMARY**

**A. Section Includes:**

1. Fertilizing
2. Seeding
3. Hydroseeding
4. Mulching
5. Maintenance

**B. Related Sections:**

1. Section 31 22 25 - Earthwork: Rough grading of site
2. Section 31 23 17 - Trenching: Rough grading over cut
3. Section 32 91 19 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for the Work of this section

#### **1.2 REFERENCES**

**A. ASTM International:**

1. ASTM C602 - Standard Specification for Agricultural Liming Materials

#### **1.3 DEFINITIONS**

- A. Weeds:** Vegetative species other than specified species to be established in given area.

#### **1.4 SUBMITTALS**

- A. Section 01 33 00 - Submittals:** Requirements for submittals.
- B. Product Data:** Submit data for seed mix, fertilizer, mulch, and other accessories.
- C. Manufacturer's Certificate:** Certify Products meet or exceed specified requirements.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Section 01 70 00 - Contract Closeout Requirements:** Requirements for submittals.

- B. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

#### 1.6 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.
- B. Perform Work in accordance with Maryland Standards and Specifications for Soil Erosion and Sediment Control, latest version and MDSHA Standards Specifications for Construction and Materials.

#### 1.7 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years' experience.
- B. Installer: Company specializing in performing work of this section with minimum three years' experience.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 45 00 – Quality Control: Product storage and handling requirements.
- B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

#### 1.9 SPECIAL PROJECT WARRANTY

- A. Warranty grassed areas (that were seeded by CONTRACTOR) for a one (1) year period from the date of substantial completion of clearing and seeding, and until final acceptance by ENGINEER.
- B. A final warranty inspection will be conducted at the end of the warranty period to determine acceptance or rejection. Reseed areas not meeting the requirements for a good stand of grass.
  - 1. A good stand of grass is defined as an area having grass covering more than 95% of the area. Percentage coverage is based on visual inspection by the ENGINEER.
  - 2. Date of substantial completion of clearing and seeding shall be agreed upon in writing by OWNER and CONTRACTOR.

### PART 2 PRODUCTS

## 2.1 SEED MIXTURE FOR TOP DECK OF LANDFILL

- A. Shall be fresh, clean, new crop seed. Seed lots shall be state certified and blended under the supervision of the Maryland Department of Agriculture, Turf and Seed section. All seed lots shall have been pre-tested by the Maryland Seed Laboratory to ensure compliance with these specifications.
- B. All seed used in the mix shall be a variety recommended in the latest edition of the "Agronomy Update" issued by the University of Maryland, Maryland Cooperative Extension, for use in Maryland.
- C. Final mix to be submitted to Owner or designated representative for review and approval seven (7) days prior to ordering.
- D. All seed and labeling shall fully comply with the Maryland Seed law and these specifications.
- E. Seed shall be packed in 50-lbs. net weight, in new, clean, poly woven bags, tightly woven to prevent leaking and contamination. Each container shall have an accurate analysis tag, and a certification tag permanently affixed to it.
- F. All seed shall be delivered within 48 hours after the seed is mixed and tagged.
- G. Seed mixes shall be composed of the following varieties mixed in the proportion shown and tested to the following minimum percentages of purity and germination.
- H. Seed mixture shall be as shown on the Drawings. Seed shall be Maryland Certified with seed certification tags provided prior to installation.

All seed varieties shall meet the following minimum specifications:

- |    |                     |      |
|----|---------------------|------|
| 1. | Minimum Purity      | 98%  |
| 2. | Minimum Germination | 85%  |
| 3. | Maximum Other Crop  | 0.1% |
| 4. | Maximum Weed Seed   | 0.1% |
| 5. | Noxious Weeds       | None |

## 2.2 SEED MIXTURE FOR LANDFILL SIDE SLOPES AND OTHER AREAS

- A. Comply with seed mix for Permanent Vegetative Stabilization in Drawings (Erosion & Sediment Control Notes and Details).

## 2.3 ACCESSORIES

- A. Mulching Material: Per MDSHA Standards Specifications for Construction and Materials.
- B. Fertilizer: Per MDSHA Standards Specifications for Construction and Materials.

- C. Lime: Per MDSHA Standards Specifications for Construction and Materials.
- D. Water: Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of grass.
- E. Erosion Fabric: Per MDSHA Standards Specifications for Construction and Materials.
- F. Flexible Growth Medium (FGM): Provide Flexterra FGM or approved equal. The FGM shall be used as necessary for the landfill capping area to protect and maintain seed growth.
- G. Stakes: Softwood lumber, chisel pointed.
- H. String: Inorganic fiber.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 02 00 00 – Site Conditions: Verification of existing conditions before starting work.
- B. Verify prepared soil base is ready to receive the Work of this section.

### 3.2 FERTILIZING

- A. Apply lime at application rate indicated by soil testing under Section 32 91 19 – Landscape Grading.
- B. Apply fertilizer at application rate indicated by soil testing under Section 32 91 19 – Landscape Grading.
- C. Apply after smooth raking of topsoil.
- D. Do not apply fertilizer at same time or with same machine used to apply seed.
- E. Mix fertilizer thoroughly into upper 2 inches of topsoil.
- F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

### 3.3 SEEDING

- A. Apply seed at rate as shown on the Drawings, evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season: As shown on the Drawings.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

- E. Immediately following seeding, apply mulch per MDSHA Standards Specifications for Construction and Materials.
- F. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

#### 3.4 HYDROSEEDING

- A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder. Rates of application shall be in accordance with information above.
- B. FGM shall be used in conjunction with hydroseeding. FGM shall be applied in accordance with manufacturer's instruction at a rate of 3,500 lb/acre.
- C. After application, apply water with fine spray immediately after each area has been hydroseeded. Saturate to 4 inches of soil and maintain moisture levels two to four inches.

#### 3.5 SEED PROTECTION

- A. Cover seed where necessary, with erosion fabric. Roll fabric onto ground without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6-inch-deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36-inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

END OF SECTION

**SECTION 33 41 00**  
**STORM UTILITY DRAINAGE PIPING**

**PART 1 GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Storm drainage piping.
2. Accessories.
3. Underground pipe markers.
4. Catch basins and plant area drains.
5. Cleanouts.
6. Bedding and cover materials.

**B. Related Sections:**

1. Section 31 05 16 - Aggregates for Earthwork: Aggregate for backfill in trenches.
2. Section 31 23 17 - Trenching: Execution requirements for trenching required by this section.
3. Section 31 22 25 - Earthwork: Requirements for backfill to be placed by this section.

**1.2 REFERENCES**

**A. American Association of State Highway and Transportation Officials:**

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

**B. ASTM International:**

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb f/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
2. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
3. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
4. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).



5. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

### 1.3 SUBMITTALS

- A. Section 01 33 00 - Submittals: Requirements for submittals.
- B. Product Data: Submit data indicating pipe and pipe accessories.
- C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- E. Shop Drawings: Shop drawings for the following items shall be submitted for approval at least 5 days before installation.
  1. Corrugated High Density Polyethylene (HDPE) slope drain layouts, inlets, and discharge points.
  2. End/headwall details

### 1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents:
  1. Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
  2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with MDSHA Standards Specifications for Construction and Materials.

### 1.6 PRE-INSTALLATION MEETINGS

- A. Section 02 00 00 – Site Conditions: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

## PART 2 PRODUCTS

### 2.1 STORM DRAINAGE PIPING

- A. HDPE Pipe and Down chutes: HDPE pipe and down chutes shall be as indicated on plans or other equivalent product as approved by the ENGINEER.
- B. Corrugated HDPE Storm Drainpipes:
  - 1. ADS N-12, Hancor Blue-Seal or approved equal.
  - 2. Joints: Joints for solid-wall pipe shall be watertight. Provide ADS N-12 WT IB joints with rubber gaskets or approved equivalent watertight joints. Joints for perforated pipe shall be soil tight. Provide ADS N-12 ST IB joints with rubber gaskets or approved equivalent soil-tight joints.
  - 3. End Sections: Standard, flared-end sections.
  - 4. Visible defects such as cracks, creases, splits, obstructions to flow in perforations or in tube, uncolored or “pale” tubing, and obvious thin spots are not permissible.

## 2.2 ACCESSORIES

- A. Filter Fabric: Non-biodegradable, as indicated on Drawings.
- B. Lubricants: The lubricant used for assembly shall have no detrimental effect on the gaskets or on the pipes.

## 2.3 CATCH BASINS AND PLANT AREA DRAINS

- A. As shown on the plans.

## 2.4 BEDDING AND COVER MATERIALS

- A. Bedding: General Fill as specified in Section 31 22 25.
- B. Cover: General Fill as specified in Section 31 22 25.

# PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Section 02 00 00 – Site Conditions: Verification of existing conditions before starting work.
- B. Verify trench cut/excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

## 3.2 PREPARATION

- A. Hand trim excavations to required elevations.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

### 3.3 BEDDING

- A. Excavate pipe trench in accordance with Section 31 23 17 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

### 3.4 INSTALLATION – DRAINAGE STRUCTURES

- A. End sections shall be constructed in conformity with the Drawings. The HDPE Pipe to end section connection shall be per the pipe manufacturer's standard details and recommendations.
- B. Diversion dikes, berms, and earthen channels shall be installed in accordance with applicable Maryland E&S standards and specifications.

### 3.5 INSTALLATION – PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321. Seal joints watertight.
- B. Soil around and under the entrance end section shall be hand tamped to the top of the diversion dike.
- C. Pipes shall not be secured on landfill side slopes with stakes or other material embedded in the soil. Embedding material may damage the landfill cap system.
- D. The interior of all pipes and fittings shall be thoroughly cleaned of all foreign matter prior to being installed.
- E. Jointing shall be installed in accordance with joint manufacturer's recommendations.
- F. Whenever the pipe laying is discontinued, such as end of workday or weekend, the unfinished work shall be protected from displacement due to caving of the banks, runoff, or other damages
- G. Refer to Section 31 22 25 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.
- H. Install Work in accordance with Washington County Standard Specifications and as indicated on Drawings.

### 3.6 INSTALLATION - CATCH BASINS AND CLEANOUTS

- A. Install Work in accordance with Washington County Standard Specifications and as indicated on Drawings.

### 3.7 FIELD QUALITY CONTROL

- A. Section 01 45 00 - Quality Control and 01 70 00 - Contract Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request inspection prior to placing aggregate cover over pipe.

- C.     Compaction Testing: In accordance with Table 2 – 31 22 25: Earthwork.
- D.     When tests indicate work does not meet specified requirements, remove work, replace, and retest.
- E.     Frequency of Compaction Tests: Per Table 2 – 31 22 25: Earthwork.

### 3.8     PROTECTION OF FINISHED WORK

- A.     Section 01 70 00 - Contract Closeout Requirements: Protecting finished Work.
- B.     Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
  - 1.     Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
  - 2.     Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION

**SECTION 35 15 05**  
**LFG PIPE AND PIPE FITTINGS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Scope of Work: The CONTRACTOR shall supply all materials, equipment, and labor needed to install complete and make ready for use pipe, pipe fittings, and valves as specified herein and as indicated on the Plans.

**1.2 SUBMITTALS**

- A. The CONTRACTOR shall prepare and submit to the ENGINEER, for review and approval, certificates of compliance on materials furnished and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, inspection, maintenance, and repair of each type of pipe, pipe fitting, and valve furnished.
- B. The CONTRACTOR shall prepare and submit Shop Drawings to the ENGINEER for review and approval. The Shop Drawings shall show all dimensions, slopes, and invert elevations at connections.
- C. Pipe Dimensions for each pipe size used:
  - 1. Average outside diameter.
  - 2. Average inside diameter.
  - 3. Minimum average wall thickness.

**1.3 REFERENCE**

The publications listed below form a part of this specification to the extent referenced in the text:

- A. ASTM International
- B. American National Standard Institute (ANSI)
- C. Plastics Piping Institute (PPI)

**PART 2 – PRODUCTS**

**2.1 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS**

- A. All PVC pipe and pipe fittings shall be Schedule 80 PVC. PVC pipe and pipe fittings shall be manufactured from a compound which meets the requirements of Type 1, Grade 1, Polyvinyl Chloride PVC 1120, Class 12454-B. A Type 1, Grade 1 compound is characterized as having the highest requirements for mechanical properties and chemical resistance.

1. Compound from which pipe is produced shall have a design stress rating of 2000 psi at 73 degrees F, listed by the Plastic Piping Institute.
2. Materials from which pipe and pipe fittings are manufactured shall have been tested and approved.
3. Pipe shall be homogenous throughout and shall be free from cracks, holes, foreign inclusions, and other defects.
4. Paint for exposed PVC pipe shall be Krylon® Fusion for Plastic® paint, Khaki colored, or Engineer approved equivalent. Primer (if necessary) shall be as recommended by the manufacturer as the paint.

## 2.2 HIGH DENSITY POLYETHYLENE (HDPE) PIPE

### A. General:

1. HDPE pipe and fittings shall be Standard Dimension Rating (SDR) 17 high-density polyethylene pipe using a 3408-type resin or approved equal, unless otherwise noted on the Plans.
2. Pipe shall be extruded from a Type III, Class C, Category 5, Grade P34 compound. It shall have the material designation of PE 3408. Manufacturer's literature shall be adhered to when "manufacturer's recommendations" are specified. All pipe and fittings shall be provided by one manufacturer.

### B. HDPE Fittings

1. Fittings shall be manufactured from polyethylene compound having cell classification equal to or exceeding the compound used in the pipe.
2. All fittings 12 inches and smaller shall be molded, unless approved by the ENGINEER.

### C. All pipe and fittings must be supplied by the same manufacturer.

## 2.3 TRANSITION FITTINGS

- A. Fittings shall be manufactured from PVC and HDPE as described above.
- B. If a steel coupling is used for transition, it shall be manufactured from Stainless Steel.

## 2.4 PIPE MARKINGS

- A. All PVC and HDPE pipe shall be stamped by the manufacturer with the following information:
  1. Manufacturer name or trademark

2. Nominal pipe size
3. Type of plastic (e.g., PE 3408)
4. Standard dimension ration (SDR) or Schedule (SCH) value
5. ASTM designations

## PART 3 EXECUTION

### 3.1 GENERAL

- A. Pipe shall be stored or stacked so as to prevent damage by marring, crushing, or piercing. Maximum stacking height shall be limited to 6 feet.
- B. Pipe and pipe fittings shall be handled carefully in loading and unloading. They shall be lifted by hoists and lowered on skidways in such a manner as to avoid shock. Derricks, ropes, or other suitable equipment shall be used for lowering the pipe into the extraction well borings. Pipe and pipe fittings shall not be dropped or dumped.

### 3.2 FIELD QUALITY CONTROL

- A. Pipe may be rejected for failure to conform to the Specifications or for the following reasons:
  1. Fractures or cracks passing through pipe wall, except single crack not exceeding 2 inches spout in length at either end of the pipe which could be cut off and discarded. Pipes within one shipment shall be rejected if defects exist in more than 5 percent of shipment or delivery.
  2. Cracks sufficient to impair strength, durability, or serviceability of pipe.
  3. Defects indicating improper proportioning, mixing, or molding.
  4. Damaged ends, where such damage prevents making a satisfactory joint.
  5. Scratches or gouges of depth greater than 10 percent of pipe wall thickness.
- B. Acceptance of fittings, stubs or other specially fabricated pipe sections shall be based on visual inspection at job site and documentation of conformance to these Specifications.
- C. The OWNER and ENGINEER shall be notified by CONTRACTOR prior to burial of pipe.
- D. The OWNER and ENGINEER reserve the right to require destructive testing of any fusion weld on HDPE pipe.

### 3.3 PVC PIPE STORAGE

- A. For storage of PVC pipe and fittings over 5 days, a location shall be chosen out of direct sunlight, or the piping and fittings shall be covered.

- B. At the end of each day, all open ends of joined pipe shall be capped or otherwise covered to prevent the entry by animals or debris.

### 3.4 PVC PIPE INSTALLATION

- A. PVC pipe installation shall conform to these specifications and the manufacturer's recommendations.
- B. If perforations in slotted pipe are made in the field by CONTRACTOR, CONTRACTOR shall remove all pipe shavings from the ground and dispose of them in a trash receptacle.

### 3.5 JOINING OF PVC PIPE

- A. Joining of pipe shall be in accordance with manufacturer's recommendations.
- B. Preparation:
  - 1. All pipes shall be inspected for cuts, scratches, or other damage prior to installation. Pipe with imperfections shall not be used. All burrs, chips, etc. shall be removed from pipe interior and exterior.
  - 2. The interior of the pipe shall be cleared of foreign matter, e.g., loose dirt, tape, and paper. All loose dirt and moisture shall be wiped from the interior and exterior of the pipe end and the interior of the fitting.
  - 3. All pipe cuts shall be square, perpendicular to the center line of pipe. Pipe ends shall be beveled prior to applying primer and solvent cement so that the cement is not wiped off during insertion into the fitting socket.
- C. Solvent Welding:

A coating of primer as recommended by pipe supplier shall be applied to the entire interior surface of the fitting socket and to an equivalent area on the exterior of the pipe prior to applying solvent cement. The solvent cement shall be applied in strict accordance with manufacturer's specifications. Pipe shall not be primed, or solvent welded during precipitation or when atmospheric temperature is below 40 degrees F or above 90 degrees F.
- D. Curing:

After solvent welding, the pipe shall remain undisturbed until cement has thoroughly set. As a guideline for joint setting time, use 1 hour for ambient temperatures 60-90 degrees F, or 2 hours when ambient temperature is 40-60 degrees F.
- E. Alignment:

Pipe and pipe fittings shall be selected so as to minimize the linear deviation at the joints, and so that inverts present a smooth surface. Pipe and fittings which do not fit together to form a tight fitting will be rejected.
- F. Painting:

Exposed pipe shall be prepared in accordance with paint manufacturer's recommendations. Paint shall be installed to provide a uniform thickness throughout. A minimum of two coats of paint shall be installed on exposed pipe.



### 3.6 HDPE PIPE HANDLING

- A. HDPE pipe shall not be bent more than the minimum radius recommended by the manufacturer for type, grade, and SDR. Care shall be taken to avoid imposing strains that will overstress or buckle the HDPE piping or impose excessive stress on the joints.
- B. Joining HDPE Pipe:
  - 1. Only two methods shall be utilized to join HDPE pipe: heat fusion and mechanical joining.
    - a. Mechanical Joining shall be accomplished with HDPE flange adapters, neoprene gaskets, and ductile iron back-up flanges, and shall be used only where shown on the Drawings. Refer also to Part 3.9.
    - b. Heat Fusion joints shall be made in accordance with manufacturer's step-by-step procedures and recommendations.
      - 1) Fusion equipment and a trained operator shall be provided by the CONTRACTOR. Pipe fusion equipment shall be of the size and nature to adequately weld all pipe sizes and fittings necessary to complete the project.
      - 2) Branch saddle fusions shall be made in accordance with manufacturer's recommendations and step by step procedures. Branch saddle fusion equipment will be of the size to facilitate saddle fusion within the pipe trench.
      - 3) Heat fusion shall be performed outside of the trench whenever practical.
      - 4) Before heat fusing pipe, each length shall be inspected for the presence of dirt, sand, mud, shavings, and other debris. Any foreign material shall be completely removed.
      - 5) At the end of each day, all open ends of fused pipe shall be capped or otherwise covered to prevent entry by animals or debris.
    - c. As per the manufacturer's instructions, no fusion shall be performed in precipitation unless a shelter is provided.

### 3.7 HDPE PIPE INSTALLATION

- A. Pipe installation shall comply with manufacturer's recommendations.
- B. Lengths of fused pipe to be handled as one segment shall not exceed 500 feet.
- C. The OWNER and ENGINEER shall be notified prior to any pipe being installed in the trench in order to have an opportunity to inspect the following items:

1. All butt and saddle fusions.
  2. Pipe integrity.
  3. Trench excavation and bedding material for rocks and foreign material.
  4. Proper trench slope.
  5. Trench contour to ensure the pipe will have uniform and continuous support.
  6. Proposed backfill sand and soil.
- D. Any irregularities found by the ENGINEER during this inspection must be corrected before lowering the pipe into the trench. Pipe shall be allowed sufficient time to adjust to trench temperature prior to any testing, segment tie-ins, and/or backfilling.
- E. Tie-ins shall be made out of the trench whenever possible. When tie-ins are to be made only in the trench, a bell hole shall be excavated large enough to ensure an adequate and safe work area.
- F. Below grade piping shall be marked with metallic locator/warning tape to be buried in the trench above the pipe as indicated on the Plans.
- G. CONTRACTOR shall collect all pipe shavings and discard in a trash receptacle. Shavings shall not be left on the ground.

END OF SECTION

**SECTION 35 26 71**  
**LFG PASSIVE VENTS**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Scope of Work: The CONTRACTOR shall provide all equipment, materials, and labor needed to install landfill gas (LFG) passive vents on the landfill.
- B. It is expected that combustible methane gas will be venting from boreholes drilled to install the vents. The CONTRACTOR shall provide for equipment and procedures necessary to safely install vents under this condition.

**1.2 SUBMITTALS**

- A. The CONTRACTOR shall prepare and submit to the ENGINEER for review and approval catalog cuts on materials furnished, and manufacturer's brochures containing complete information and instructions pertaining to the storage, handling, installation, and inspection of vents.
- B. The CONTRACTOR shall submit to the ENGINEER for review and approval samples of all well backfill materials and the name of the vendor(s) and source of materials furnished.
- C. The CONTRACTOR shall prepare and submit to the ENGINEER for review and approval, prior to drilling, shop drawings showing dimensions, materials, and configuration of the wellhead assembly. Included with the shop drawings, the CONTRACTOR shall provide a schedule showing coordinates and ground surface elevations for well locations as well as proposed boring depths.
- D. The CONTRACTOR shall survey and provide vent coordinates.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Backfill Materials:
  - 1. Gravel fill shall be washed river gravel between 1/2-inch and 1-1/2-inches in diameter, and shall be composed of clean, hard, and durable fragments, free of silt, clay, dirt, vegetation, and other objectionable matter. Gravel shall be a minimum of 85 percent non calcium carbonate material.
  - 2. Soil backfill material shall be General Fill material.
  - 3. “Bentonite Plug” shall refer to a well seal comprised of hydrated sodium bentonite pellets or chips. Bentonite material shall consist of clay greater than 85% sodium montmorillonite, without additives.

- B. PVC Pipe: Piping shall be Schedule 80 PVC. The slots may be field-fabricated or supplied by the factory.
- C. Vent Screen: A PVC fitting manufactured with an integrated #10 stainless steel mesh to prevent bugs from entering/nesting in vent.

## PART 3 – EXECUTION

### 3.1 EXCAVATION

- A. The CONTRACTOR shall coordinate the start of excavation with the ENGINEER.
- B. The CONTRACTOR shall provide thoroughly experienced, competent personnel during all excavation operations.
- C. The CONTRACTOR shall survey and stake the vent locations prior to drilling. The surveyed elevations should be written on the stakes in the field by the surveyor along with the vent number. The surveyor should provide the survey data (northing, easting, and elevation) to the Design ENGINEER and CQA Consultant. Vent locations must be approved and may be adjusted by the ENGINEER or the OWNER prior to beginning drilling.
- D. Vents are to be excavated to the depth provided in writing by the OWNER prior to drilling, unless changed during the submittal process. Under no circumstances are the depths to be exceeded unless approved by the ENGINEER in advance.
  - 1. Wet Borings:
    - a. If water is encountered in a vent excavation, the CONTRACTOR may be directed to excavate beyond the point at which it was encountered. If wet conditions remain, the vent excavation may be terminated, and the length of perforated pipe adjusted by the ENGINEER. If wet conditions cease (e.g., due to a perched water layer), then excavation shall continue to the design depth.
    - b. If water is encountered in a vent excavation at a shallow depth, the ENGINEER may decrease the vent depth and length of perforated pipe or relocate the vent.
  - 2. Abandoned vent locations: If, in the opinion of the ENGINEER, the vent hole has not reached a sufficient depth to function as an effective vent, the CONTRACTOR shall abandon this vent hole by backfilling it with cuttings removed during excavation. If cuttings are unsuitable as backfill (for example, box springs, tires, etc.) the CONTRACTOR shall use General Fill. A 2-foot-thick bentonite plug will be placed in the hole when the depth is 4 feet below the existing grade. The remaining 2 feet of the hole will then be filled with soil material and compacted to approximately match the elevation of the existing grade. Compensation for abandoned vent locations shall be at 1/3 the unit price for this pay item.

- E. The vent pipe shall be installed in the center of the vent hole. The CONTRACTOR shall take all necessary precautions to maintain the vent pipe vertically plumbed during the backfill operation of the hole to the satisfaction of the ENGINEER. If the pipe installed is out of plumb, as determined by the ENGINEER, the CONTRACTOR, at his own expense, shall correct the alignment.

### 3.2 JOINING OF PIPES

- A. Pipes shall be joined as specified in Section 35 15 05 – LFG Pipe and Pipe Fittings. In addition, lag screws shall be installed at each coupling to secure vertical piping during placement in well boring. Four sheet metal screws per coupling or two screws per bell fitting shall be installed. The length of the lag screws shall equal the sum of the pipe and coupling (or bell fitting) wall thicknesses.

### 3.3 BACKFILLING

- A. Backfilling of the vent shall commence immediately after vent excavation is completed and the vent piping has been installed. Backfill materials shall be placed carefully within the vents and as approved by the ENGINEER. The ENGINEER, on the basis of a visual examination, may reject gravel and soil backfill containing foreign material.
- B. Soil backfill shall be compacted in the boring to provide even distribution and compaction.
- C. The ENGINEER shall inspect the extraction vent installations 4 to 8 weeks after completion. Excessive settlement (6" or more below surrounding grade) shall be repaired by the CONTRACTOR by adding compacted fill around the vent casing at no additional cost to the OWNER.

### 3.4 PASSIVE VENT GOOSENECK

- A. The CONTRACTOR shall install a “gooseneck” on the riser pipe of the vent to allow passive venting of LFG through the riser pipe. Vent screen shall be installed in the open end of the gooseneck.

### 3.5 WASTE DISPOSAL

- A. The CONTRACTOR shall dispose of excavated materials by grading the waste into the Landfill and covering with a minimum of one foot of Intermediate Cover. The CONTRACTOR shall remove spoils daily and shall be responsible for controlling odors from the spoils.
- B. Construction waste shall be disposed of at an off-site location in accordance with laws, regulations and permits.

END OF SECTION