Kaetzel Transfer Station Retaining Wall

Technical Specifications

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KAETZEL TRANSFER STATION RETAINING WALL

DIVISION I

SECTION 01000
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 replacement of a retaining wall at the Kaetzel Transfer Stations. 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 located in Washington County, Maryland Kaetzel Transfer Station – 2926 Kaetzel Road, Knoxville, MD 21758.

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 Kaetzel TRANSFER STATION RETAINING WALL REPLACEMENT and associated features. The work includes, but is not limited to, the following:

- Adherence to construction sequencing as indicated on the Contract Drawings.
- Stakeout and surveying during all construction activities for construction quality control, measurement and payment, and verification of constructed features.
- Installation of erosion and sediment control devices as shown on the Contract Drawings.
- Clearing, grubbing, stripping specified areas to the limit of work.
- Removal and Construction of the Retaining Wall
- Pavement removal and Placement
- 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 with out 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 1200.

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 approved 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 jurisdictive 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 2400, 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 if 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 2100 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 2100 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 arrange 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 VALUES

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

SECTION 1100
SITE CONDITIONS

PART 1 – GENERAL

1.1 DESCRIPTION

A. The Kaetzel Solid Waste Transfer Station is located at 2926 Kaetzel Road, Knoxville, MD 21758. The transfer station will be closed during construction; however, an occasional customer may enter the site. Customers shall be advised to use one of the other Solid Waste Facilities.

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 in the course of 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 appurtenances, 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 from January. 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.

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 001150
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 SUMMARY

A. Payment for Work performed under this Contract will be made as set forth herein under the individual Bid Items contained within the Bid Form.

B. If a Contract is awarded on a combination of Items, other than the total, the Work performed shall be complete and operable with each Item standing alone and in conformance with all provisions of the Contract Documents.

C. There shall be no Work or cost added to an Item which has been included under any other Item.

D. The Work included under each Item, shall consist of providing and installing the materials and/or equipment, complete, as enumerated below. Payment for each Item will be made at the Lump Sum or Fixed Unit Price bid in accordance with provisions of Part 3 of this Section.

E. The CONTRACTOR shall include in the price bid for each applicable Bid Item listed in the schedule of prices the cost of the following: coordination, labor, materials, tools and equipment, sheeting and shoring in trenches and pits, material and equipment testing, repairs to the roads due to construction damage, dewatering, control of stormwater, material processing, loading, transporting, placing, filling, backfilling, compacting, grading, pre and post work surveying, protection of adjacent work, displacement, replacement and/or repair of damage to any existing utility and/or structure by CONTRACTOR activity, "As-Built" drawings, inspections, meetings, submittals, scheduling, testing, and all other cost necessary to provide the completed Project.

F. Contingent Items - Contingent items will only be used when the CONTRACTOR is so directed by the ENGINEER or OWNER in writing. The unit price bid for contingent items shall not vary if quantities increase or decrease, except as described in the paragraph entitled "Estimated Quantities" of the GENERAL CONDITIONS section of these Specifications.

G. Work Items included with each schedule of prices are described in the following paragraphs.

PART 2 – PRODUCTS

2.1 BASE BID ITEMS DESCRIPTION, MEASUREMENT AND PAYMENT

ITEM 1.0 - 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; 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 two (2) 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, and recording and preparing as-built drawings.

2. Price for this Item shall be included as a lump sum in the Bid Form.

ITEM 3.0 – EROSION AND SEDIMENT CONTROL

1. Work under this item includes all work and materials required to provide, complete in place, and maintain all sediment and erosion control devices as shown on the Contract Drawings for the duration of construction including, but is not limited to, silt fence, super silt fence, stabilized construction entrances, riprap outlet protection, erosion control matting, filter dikes, standard inlet protection, earth dikes, and level spreaders. This item will also include any temporary controls that dictated by the County or MDE inspector as conditions dictate. Work and materials shall conform to provisions of the Contract Documents. 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 – PAVEMENT REMOVAL

1. Work under this item shall consist of all excavation, removal of asphalt pavement, subbase and all component parts, for all material, labor, equipment, tools, and incidentals necessary to remove the asphalt pavement as specified in the Contract Documents or as directed by the ENGINEER.

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

ITEM 5.0 – REMOVAL OF CONCRETE STRUCTURES

1. Work under this item shall consist of all excavation, removal of concrete and reinforcement and all component parts, for all material, labor, equipment, tools, and incidentals necessary to remove the concrete retaining wall and slabs as specified in the Contract Documents or as directed by the ENGINEER.

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

ITEM 6.01 – CONCRETE RETAINING WALL
ITEM 6.02 – CONCRETE SLAB

1. Work under this Item includes, but is not limited to, furnishing all labor, equipment and materials including concrete, steel reinforcing, tie wire, underdrain, stone backfill, stone subbase, forms and incidentals for the construction of the wall of slabs at the locations shown on the Contract Drawings. This Item includes performing necessary excavation, backfilling, formwork, reinforcing placement, concrete placement, removal of forms, sealing, joints, concrete finishing and all necessary incidentals required to complete the work. This item shall include the construction of the concrete retaining wall and concrete slabs. All Work shall be in accordance with the Contract Documents.

2. Price for this Item shall be included as a fixed unit price per cubic yard in the Bid Form.

ITEM 7.0 – 8" GRADED AGGREGATE BASE

1. This item of work shall consist of furnishing and placing Graded 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. Graded Aggregate will be measured and paid for at the Contract unit price bid per square yard.

ITEM 8.01 - HOT MIX ASPHALT 12.5mm (PG 70-22)
ITEM 8.02 - HOT MIX ASPHALT 19.0mm (PG 70-22)

1. This work shall consist of furnishing and installing Hot Mix Asphalt (HMA) Superpave courses as shown herein and/or as directed by the ENGINEER. HMA Superpave courses shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screening or a combination thereof combined with asphalt cement. The ENGINEER will permit the use of Superpave courses containing RAP material in the specified mixes. This material must meet MD State requirements.

2. Superpave Hot Mix Asphalt pavements will be measured and paid for at the Contract unit price bid per ton for the respective types of Superpave. The payment will be full compensation for furnishing, hauling, placing, field and laboratory testing, tack coat, labor, equipment, tools and incidentals necessary to complete the work.

3. All costs for constructing and removal of tie-ins, final or temporary, shall be considered incidental and included in the price bid per ton for Superpave courses.

4. An adjustment will be made to the final Contract unit price of Superpave if the price of liquid asphalt binder fluctuates significantly from the prevailing price as quoted in the Contract Documents to the date of placement. Adjustments will be in accordance with section 504.04.01 of the MSHA Supplemental Specifications and Provisions and shall be determined and paid for on a monthly basis. The CONTRACTOR shall submit his invoice for payment for bituminous pavement placed along with any corresponding price adjustment request for liquid asphalt binder for the affected material as well as calculations in order for a price adjustment to be recognized by the Owner.

   504.04.01 Price Adjustment for Asphalt Binder: A Price Adjustment (PA) will be made to provide additional compensation to the Contractor or a credit to the Administration for the fluctuation in the cost of asphalt binder.

   For adjustment purposes, the prevailing base index price will be the price specified for PG 64-22 Asphalt Binder posted at www.roads.maryland.gov (Business Center /Contracts Bids and Proposals) at time of bid opening. Cost differentials between PG 64-22

and a binder specified shall be included in the price bid per ton for Hot Mix Asphalt. A historical database will be maintained by the Administration.

The PA will be made when the index price for the month of placement increases or decreases more than 5 percent of the prevailing base index price. Computations will be as follows:

Percent Change = ((Pp – Pb)/ Pb) X 100
PA = T x Q x ((Pp – (D x Pb))

Where:

PA = Price Adjustment for the current month
T = Design target asphalt content expressed as a decimal
Q = Quantity of Hot Mix Asphalt placed for the current month
Pp = Index price for PG 64-22 Asphalt Binder per ton for the month of placement
D = 1.05 for increases over 5 percent; 0.95 for decreases over 5 percent
Pb = Prevailing base index price for PG 64-22 Asphalt Binder per ton

PA resulting in increased payment to the contractor will be paid under the item Price Adjustment for Asphalt Binder. The item amount will be established by the Administration and shall not be revised by the Contractor. PA resulting in a decreased payment will be deducted from monies owed the Contractor.

5. Superpave shall be compacted to an in-place density of 92.0 to 97.0 percent of the maximum density. If the CONTRACTOR obtains 92.0 to 97.0 percent densities, payment will be made at 100% of the Contract unit price bid per ton for the material at that density. Likewise, densities from 91.9 to 90.0 percent will be paid for at 93% of the Contract unit price bid per ton for the material at that density. In accordance with MSHA Specification Section GP-5.02, all densities falling below 89.9 percent shall either be milled out and replaced, or left in place at the ENGINEER's discretion. When the ENGINEER determines to reject a lot, the lot shall be replaced at no additional cost to the Owner.

2.2 CONTINGENT ITEMS

ITEM C-1 – CONTINGENT GRAVEL FOR DRIVEWAY (2" DEPTH)

1. This item of work shall consist of furnishing and placing Gravel 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. Gravel for Driveway will be measured and paid for at the Contract unit price bid per Ton.

ITEM C-2 – CONTINGENT TURF RESTORATION

1. Work under this Item includes, but is not limited to, furnishing of all seed, materials, equipment and work required to provide, complete in place, fine grading of areas to be landscaped; and application of permanent seed and mulch. All Work shall be in accordance with the Contract Documents.

2. Price for this Item shall be included as a fixed unit price per square foot in the Bid Form.

ITEM C-3 – 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-4 - 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

indicate clearly 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 1200
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 bench marks 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 01000.

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 reports 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 résumé 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 (on compact disk) in AutoCAD 2010 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

Not Used.

END OF SECTION

SECTION 1300
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 1400.

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 1400.

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 that the manufacturer has performed all required tests; that products to be supplied meet all test requirements; that tests have been performed within one (1) month of submittal of the certificate; and that 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 1400
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 corrections 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 and 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 to delay 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 runs 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 switch-gear, 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 reproducibles and one compact disk containing electronic versions in AutoCAD 2012 (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 1500
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 1400.

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 14 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 2400 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 insuring 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 2000 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 2100 and 2400. 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 any and 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 1600
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 period 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 1700
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 State Route 40. 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 cross roads 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 1800
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 comfort conditions. 68°F (20°C) heating and 76°F (23°C) cooling.

- 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 along with all necessary hardware and software required.
- 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 xl1 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.

Notes:

(1) 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.

(3) 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 1900
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 2400.

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 of the punch list items are resolved to the satisfaction of the ENGINEER.

END OF SECTION

KAETZEL TRANSFER STATION RETAINING WALL

DIVISION II

SECTION 2200
AGGREGATE FILL AND RIP-RAP

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope: The CONTRACTOR shall furnish and place structural fill, select fill, and rip-rap material of the types specified at locations and configurations indicated on the Contract Documents.

1.2 SUBMITTALS

A. Test Reports: The CONTRACTOR shall furnish representative test reports of each material to the ENGINEER and shall advise of the source location. Test reports shall be provided, at a minimum, for particle size analysis, permeability and calcium carbonate as required to meet the specifications herein.

B. Delivery Tickets: Provide certified delivery tickets for rip-rap and aggregate fill guaranteeing compliance with specified gradation requirements.

PART 2 – PRODUCTS

2.1 AGGREGATE FILL

A. Defined as clean, inorganic, naturally occurring soil with physical properties, which allow placement in thin, controlled lifts and which can support long-term structural loadings without excessive settlement or instability. Structural materials shall be approved by The ENGINEER prior to use.

PART 3 – EXECUTION

3.1 PLACING

A. Placement of aggregate fill and rip-rap shall conform to applicable requirements of Sections 2300 and as shown on the Contract Drawings.

END OF SECTION

SECTION 02100
CLEARING AND GRUBBING / ABANDONMENT AND DEMOLITION

PART I – GENERAL

1.1 DESCRIPTION

This section includes requirements for the clearing and grubbing of all areas within the Contract limits of work and other areas indicated, including work designated in permits and other agreements, in accordance with the CONTRACT DOCUMENTS. This Section also includes requirements for the removal and disposal of existing designated items within the limit of work.

Definitions include:

- Clearing is the removal from the ground surface and disposal of trees, brush, shrubs, down timber, decayed wood, other vegetation, rubbish, and debris, as well as the removal of fences, piping and incidental structures.
- Grubbing is the removal and disposal of all stumps, buried logs, roots larger than 2 inches, matted roots, and organic materials.

PART II – MATERIALS

Not Applicable

PART III – EXECUTION

3.1 GENERAL

3.1.1 Perform all work in accordance with all Local, State and Federal environmental and safety regulations and any Site Specific Environmental Regulations included in the contract.

3.1.2 The Drawings define extent of demolition. Immediately notify ENGINEER of damage to structures and features not identified for demolition or beyond the limits of demolition as shown or as determined by CONTRACTOR.

3.1.3 Damage beyond the limits of disturbance shall be repaired or replaced using materials and methods appropriate for the particular location, as determined by ENGINEER.

3.1.4 Ensure that utility services and related meters and equipment are disconnected as necessary in a safe manner prior to beginning demolition.

3.1.5 Notify the OWNER and ENGINEER when utility lines that are not indicated on the drawings are encountered.

3.1.6 CONTRACTOR is responsible for damage to vegetation caused by CONTRACTOR operations, personnel, or equipment. Remove and replace damaged vegetation designated for protection with vegetation of same type and size at no additional cost to OWNER.

3.1.7 Protect any trees, plant growth, and site features not designated for removal or designated for protection. Remove only those plant growths required for the Work.

3.1.8 Do not disturb trees or shrubbery in public right-of-way or on property outside of the limits of disturbance shown on the Drawings.

3.2 CLEARING AND GRUBBING

Clear all items specified herein to the limits indicated and remove cleared and grubbed material from the site or stockpile as directed by the OWNER. Waste materials that may be encountered within the limit of the landfill shall be transported and disposed at the Forty West Landfill upon receiving written approval from the OWNER.

CONTRACTOR shall not start earthwork operations in areas where clearing and grubbing is not complete, with the exception that stumps and large roots may be removed concurrent with excavation. Comply with erosion and sediment control and stormwater management measures. Required measures shall be installed prior to earth-moving activities.

Clear and grub areas to be excavated, areas to receive fill, and areas upon which structures are to be constructed. Remove all trees, stumps, topsoil and root mats in these areas and dispose of them offsite at no cost to the OWNER. Depressions made by the removal of stumps or roots shall be filled with suitable backfill. Topsoil shall be stripped, removed, and placed at the onsite topsoil stockpile, in the location shown on the CONTRACT DRAWINGS or as specified by the OWNER.

The CONTRACTOR shall clear, grub, and strip the site area to the limits of disturbance shown on the CONTRACT DRAWINGS. Clearing and grubbing shall not be performed more than 60 days before excavation is to begin.

3.3 PRE-CONSTRUCTION SURVEY

A pre-construction survey shall be completed immediately following clearing and grubbing.

3.4 ABANDONMENT, DEMOLITION, REMOVAL AND DISPOSAL OF EXISTING ITEMS

The CONTRACTOR is to remove and appropriately dispose of the following items located within the limit of work and/or as designated on the CONTRACT DRAWINGS:

- Existing paved access roadways and roadway materials.

- Existing concrete structures, inlets, manholes, wet wells and other miscellaneous concrete structures as indicated on the CONTRACT DRAWINGS. Existing piping (may be salvaged and stockpiled onsite upon approval by the OWNER)

- The CONTRACTOR shall remove, salvage and reset the existing fence and gates to the extent necessary to perform the work. Any damage to the existing fence and gates shall be repaired by the CONTRACTOR at no additional cost to the OWNER.

END OF SECTION

SECTION 2300
EXCAVATION

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. This item shall consist of excavating required for establishing subgrades, installation of erosion and sediment controls and all other required site excavations.

2. The CONTRACTOR shall furnish all manpower, equipment, dewatering, disposal requirements, safety requirements, shoring, erosion control, testing, and all incidental items required to complete the work. The CONTRACTOR shall perform the work in accordance with the CONTRACTOR's approved Site Health and Safety Plan, as required by Section 1000.

1.2 INSPECTION

A. The ENGINEER will examine the areas and conditions under which excavating, filling, and grading are to be performed and notify the CONTRACTOR of conditions he may find that are detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the ENGINEER.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 EXCAVATION

A. The CONTRACTOR shall perform all excavation required to complete the Work as shown and specified. The CONTRACTOR shall anticipate encountering groundwater, perched water, and runoff during excavation and all subsequent fill placement activities and during the construction. All excavation is considered unclassified. Excavation includes all soils, 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. The presence or absence of water and/or rock shall not entitle the contractor to any

additional compensation. No sub-surface investigation has been completed at this site.

B. Stability of Excavations: Slope sides of excavations shall comply with codes and ordinances of agencies having jurisdiction. Shore and brace where sloping is not possible either because of space restrictions or stability of material excavated.

1. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

C. Material Storage:

1. Earth: Stockpile satisfactory excavated earth materials in approved areas, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage. Stockpiling activities shall comply with Section 2400.

a. Locate and retain soil materials away from edge of excavations.
b. Dispose of excess soil material and waste materials as specified herein.

D. Unsuitable Soils:

1. Defined as materials encountered during excavation that contain organic matter, miscellaneous debris, excessive moisture, or uncontrolled fill from previous activities. This material shall be excavated to a depth no more than 2 feet below the specified elevation and disposed of in designated on site areas as directed by the ENGINEER. The excavation shall be backfilled with structural fill.

3.2 UNAUTHORIZED EXCAVATION

A. All excavation outside the lines and grades shown, and which is not approved by the ENGINEER, together with the removal and disposal of the associated material, shall be at the CONTRACTOR'S expense. The unauthorized excavation shall be filled and compacted by the CONTRACTOR at his/her expense.

3.3 DRAINAGE AND DEWATERING

A. General:

1. Prevent surface and subsurface water from flowing into excavations and from flooding from adjacent areas.

2. If water is encountered or ponded by the CONTRACTOR'S operations during the excavation to bottom of subgrade or during any type of fill placement, the ponded water will be removed from the work area. The CONTRACTOR will

determine what method best suits the then existing condition. The CONTRACTOR will verbally notify the ENGINEER of his/her proposed dewatering methods within 2 days of said activity. The ENGINEER will determine if the CONTRACTOR'S proposed activity negatively impacts any OWNER operation. If the ENGINEER determines the dewatering activity does impact the OWNER adversely, the CONTRACTOR will alter/modify and resubmit his/her dewatering operations.

3. Remove water from excavation as fast as it collects.

4. Maintain the groundwater level below the bottom of the excavation to provide a stable surface for construction operations, a stable subgrade for the permanent work, and to prevent damage to the Work during all stages of construction.

5. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

6. Obtain ENGINEER'S written approval before shutting down dewatering system for any reason.

B. Standby Requirements for Dewatering: Provide standby equipment to ensure continuity of dewatering operations.

C. Disposal of Water Removed by Dewatering System:

1. Dispose of all water removed from the excavation in such a manner as not to endanger public health, property, or any portion of the Work under construction or completed.

2. Dispose of water in such a manner as to cause no inconvenience to the OWNER, ENGINEER, or others involved in work about the site.

3. Convey water from the construction site in a closed conduit. Do not use trench excavations as temporary drainage ditches (except as approved by the ENGINEER).

3.4 SHEETING, SHORING, AND BRACING

A. General:

1. Excavations for pipelines shall be sheeted, shored, and braced where necessary to prevent injury to workmen, structures, or pipelines in accordance with OSHA Standards.

2. All municipal, county, state, and federal ordinances, codes, regulations, and laws shall be observed.

3. Used material shall be in good condition, not damaged or excessively pitted. New or used sheeting may be used for temporary shoring work.

4. All timber used for breast boards (lagging) shall be new or used, meeting the requirements for Douglas Fir Dense Construction grade or Southern Pine No. 2 Dense S3 and as required for site conditions.

5. All steel work for sheeting, shoring, bracing, etc. shall be designed in accordance with the provisions of the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings," of the AISC except that field welding will be permitted.

6. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

7. Unless otherwise shown, specified, or ordered, all materials used for temporary construction shall be removed when the Work is completed. Such removal shall be made in a manner not injurious to the structure or its appearance or to adjacent Work.

END OF SECTION

SECTION 2400
EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION

A. The Work covered by this Section consists of furnishing all materials, equipment tools and labor to construct erosion and sediment control systems.

B. The Work to be performed includes, but is not limited to silt fence, inlet protection and site surface drainage conveyances as specified herein and as shown on the Contract Drawings. **CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION SHOWN ON THE CONTRACT DRAWINGS.**

1.2 REFERENCES

A. Maryland Standards and Specifications for Soil Erosion and Sediment Control, 2011 Ed.

B. State Highway Administration Standard Specifications for Construction and Materials, 2008 Ed.

1.3 QUALITY ASSURANCE

A. All materials, procedures, operations, and methods shall be in strict conformance with the Contract Drawings and these Specifications, and shall be subjected to strict quality control monitoring as detailed herein. The installed erosion and sediment controls shall conform to the Contract Drawings and Specifications, except as otherwise authorized in writing by the ENGINEER.

B. Provide Quality Control in accordance with Section 1600. The CONTRACTOR shall comprehend and anticipate the QA/QC activities that are required by the CONTRACTOR and account for these activities in the installation schedule.

C. The CONTRACTOR shall provide the necessary straw bales, silt fence, and/or other temporary erosion control measures to contain all his/her work activities, and as shown on the Contract Drawings or as directed by the ENGINEER.

D. Erosion control measures as shown on the Contract Drawings shall be established at the beginning of construction and maintained during the entire period of construction. Onsite areas that are subject to severe erosion and offsite areas that

are especially vulnerable to damage from erosion and/or sedimentation are to be identified and receive special attention in a manner approved by the ENGINEER.

E. All land-disturbing activities are to be planned and conducted to minimize the size of the area to be exposed at any one time and the length of exposure.

F. Surface water runoff originating upgrade of exposed areas shall be controlled to reduce erosion and sediment loss during the period of exposure.

G. When the increase in peak velocity of storm water runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving stream, the CONTRACTOR shall provide measures to control both the velocity and the rate of release so as to minimize accelerated erosion and increased sedimentation of the stream. The ENGINEER shall approve such measures. All land-disturbing activities are to be planned and conducted to prevent offsite sedimentation damage.

H. Vegetative Stabilization: Seeding both Temporary and Permanent shall be in accordance with the Maryland Department of Environment specifications, as provided on the Contract Drawings, or as otherwise specified by the ENGINEER.

I. Erosion and sediment control systems shall be maintained in functional and satisfactory condition by the CONTRACTOR until all the disturbed areas are stabilized and approval is given by the ENGINEER.

J. Erosion and sediment control systems shall only be removed by the CONTRACTOR when the site has been fully stabilized and approved by the ENGINEER.

1.4 SUBMITTALS

A. Product data shall be submitted as indicated in Section 1400.

B. Submit weekly/rain event checklists with Daily Construction Reports.

PART 2 – PRODUCTS

A. EROSION AND SEDIMENT CONTROL

1. DESCRIPTION: Refer to Section 308.01 of the MSHA Specification Booklet, Supplemental Specifications, and Standard Specifications for Soil Erosion and Sediments Control, dated 1994.
2. MATERIALS: Refer to Section 308.02 of the MSHA Specification Booklet, Supplemental Specifications, and Standard Specifications for Soil Erosion and Sediments Control, dated 1994.

3. CONSTRUCTION: Refer to Section 308.03 of the MSHA Specification Booklet, Supplemental Specifications, and Standard Specifications for Soil Erosion and Sediments Control, dated 1994.

B. SILT FENCE

1. DESCRIPTION: Refer to Section E, 15.0 of the Standard Specifications for Soil Erosion and Sediments Control, dated 1994 and the Contract Drawings.
2. MATERIALS: Refer to Section E, 15.0 of the Standard Specifications for Soil Erosion and Sediments Control, dated 1994 and the Contract Drawings.
3. CONSTRUCTION: Refer to Section E, 15.0 of the Standard Specifications for Soil Erosion and Sediments Control, dated 1994. This item shall also include any and all maintenance, removal of sediment and inspection during construction and removal of the Silt Fence at the close of Construction

C. CONTINGENT UNSUITABLE MATERIAL EXCAVATION

1. DESCRIPTION: 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. MATERIALS: Borrow materials shall conform to Section 916 of the MSHA Specification Booklet.
3. CONSTRUCTION:
   A. All voids created by the removal of unsuitable material shall be backfilled to the lines and grades specified in the Contract Documents.
   B. Prior to placing backfill in the above described area, the Owner will take Cross-Sections or field measurements to determine the amount of excavation and borrow required to perform this item of work.
   C. Failure on the part of the Contractor to give the Owner the required notice or placing backfill prior to taking of cross-sections, does so at his own risk and expense.

PART 3 – EXECUTION

3.1 TRANSPORTATION, HANDLING AND STORAGE

A. Materials shall be handled in such a manner as to prevent damage to the material. Materials shall not be dropped or dragged over the ground. Any materials damage shall be replaced at no expense to the OWNER.

3.2 MAINTENANCE

A. CONTRACTOR shall inspect **all** erosion and sediment control devices immediately following all storm events and provide the ENGINEER with written documentation that identifies any erosion and sediment control device that is in need of repair or in which sediment or debris has accumulated.

END OF SECTION

SECTION 2500
PAVEMENT

PART 1 – GENERAL

1.1 DESCRIPTION

This item of work shall consist of furnishing and placing Graded Aggregate and Hot Mix Asphalt (HMA) Superpave courses as shown on the plans, as specified herein and/or as directed by the ENGINEER. HMA Superpave courses shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screening or a combination thereof combined with asphalt cement. The ENGINEER will permit the use of Superpave courses containing RAP material in the specified mixes. This material must meet MDSHA requirements.

PART 2 - PRODUCTS

2.1 GRADED AGGREGATE BASE

Graded Aggregate for Base Course	Section 901
Portland Cement	Section 902, Type I or IA
Emulsified Asphalt	Section 904.05
Water	Section 921.01
Moisture & Dust Control Agents	Section 921.02

2.2 HOT MIX ASPHALT SUPERPAVE

Refer to MSHA Supplemental Specifications and Provisions Section 504.02 provided herein and the following:

A. Hot Mix Asphalt Superpave Mixes shall meet the requirements of Standard Specification for SUPERPAVE Volumetric Mix Design, AASHTO Designations MP2-99, and be subject to approval by the Engineer.

B. The Contractor shall submit a certificate of analysis showing conformance with Performance Graded Asphalt Binder Specification, MP1 for the following mixes:

Mix	Binder
HMA Superpave 12.5 mm	PG 70-22
HMA Superpave 19.0 mm	PG 70-22
HMA Superpave 25.0 mm	PG 70-22

(Job mix formulas will be required for the above mixes prior to placing)

Tack Coat	Section 904.03

C. Mixes shall be designed for an Equivalent Single Axle Load (ESAL) 50.0 million ESAL's (compaction level 2) and a seven (7) Day Average Design Air Temperature < 39^0C.

D. The allowable percentage of recycled asphalt pavement (RAP) and its suitability for use shall be in conformance with MSMT 412. The allowable amount of RAP in the specified

mixes shall not exceed 15%. When using 15% or less of RAP, binder viscosity adjustments are not required. Documentation of RAP stockpile quality and traceability shall be submitted to the Engineer for an approval prior to use.

E. Crushed glass and roofing shingles shall not be used in the Superpave mixes.

PART 3 - EXECUTION

3.1 GRADED AGGREGATE BASE

Refer to Section 501.03 of the MSHA Specification Booklet and Supplemental Specifications.

A. The Contractor shall protect the subgrade and base against damage from all causes. Any part of the subgrade or base that is damaged shall be repaired or replaced by and at the Contractor's expense, in a manner acceptable to the Engineer.

B. All equipment, including the production plant and on-site equipment, shall be subject to approval by the Engineer. The plant shall be ready for inspection by the Engineer at least 48 hours prior to the start of construction operations.

C. Mixed base materials shall be handled and transported in a manner that minimizes segregation and loss of moisture. All loads shall be covered in conformance with state laws.

D. The base material shall be uniformly spread without segregating the coarse and fine particles, in layers of approximately equal thickness, to provide the specified depth.

E. The surface of the base material shall be shaped to the required lines, grades and cross-sections shown on the plans.

3.2 HOT MIX ASPHALT SUPERPAVE

Refer to MSHA Supplemental Specifications and Provisions Section 504.03 provided herein and the following:

A. Prior to placing Superpave, the Contractor, Engineer, Inspector, and Paving Foreman shall hold a meeting for the Contractor to outline the schedule of paving. Subsequent meetings may be held on a weekly basis, at the direction of the Engineer.

B. Tie-Ins shall be constructed in accordance with Plans and MSHA Supplemental Specifications and Provisions Section 504.03.09.

C. At anytime during the period of the contract, the Engineer may increase, decrease, delete, or substitute Superpave tonnage listed herein at his discretion.

END OF SECTION

SECTION 02729
UNDERDRAIN

PART 1 – GENERAL

1.1 DESCRIPTION

This section includes the requirements for construction of an underdrain system to the lines and grades shown on the contract drawings. The system is comprised of the following components: Aggregate, pipe annulus aggregate, non-woven geotextiles and HDPE Pipe.

The Work includes furnishing all materials, tools equipment, labor and supervision necessary to construct the underdrain system described in these specifications and shown on the Contract Drawings.

1.2 QUALITY ASSURANCE

Testing requirements for components of the under drain are as set forth in the applicable referenced specifications and as required herein.

1.2.1 General

A. Geotextile Fabrics – Testing requirements for non-woven geotextile fabrics are specified in this specification.

B. Collection Pipe – Testing requirements for all High Density Polyethylene (HDPE) pipes and fittings are specified in this specification.

C. Aggregate – Testing requirements for all aggregates and pipe annulus stone are specified in this specification.

1.3 STANDARDS

1.3.1 Comply with applicable as well as specified provisions and recommendations of MSHA and ASTM.

1.4 SUBMITTALS:

1.4.1 Product Data Sheets: Submit official data sheets to the Engineer for review from manufacturers of products that are intended to be used and meet these specification requirements.

1.4.2 Test Reports: Submit to the Engineer for review all test reports for work performed on the project.

PART II –MATERIALS

2.1 AGGREGATES

2.1.1 Aggregate: Acceptable aggregates for backfill and pipe annulus material shall meet the gradation provided in Table 2.1 and Table 2.2 and may include aggregate designations; AASHTO #8, #67 or #57. Approved aggregate materials shall satisfy the requirements in these specifications throughout the delivery and use of the materials. The Contractor shall submit certified test reports from the approved geotechnical laboratory.

All Aggregate and pipe annulus material for use shall be naturally occurring, or screened gravel, or crushed stone, durable, sound, inorganic, environmentally clean, possessing a compacted permeability of no less than 4.0×10^{-2} cm/sec when compacted to at least 75% relative density. The aggregate and pipe annulus materials shall not contain miscellaneous fill or deleterious matter. Shales, clay stone, siltstone, or other degradable materials will not be accepted for use in construction.

The Contractor shall submit certified laboratory test reports for each proposed source materials stating said material meets or exceeds the quality and durability requirements for coarse aggregates as specified by ASTM and these specifications.

Table 2.1 – Aggregate

U.S. Standard Sieve Opening	Percent Finer
4 inch	100
No. 100	0-10
No. 200	0.2

Table 2.2 – Pipe Annulus

U.S. Standard Sieve Opening	Percent Finer
2 inch	100
1.5 inch	90-100
1 inch	20-55
¾ inch	0-15
3/8 inch	0-5

2.2 GEOTEXTILE FABRICS

2.2.1 Acceptable Geotextile Fabrics shall be in accordance with Table 2.3. Geotextile

Fabrics shall be 6 oz. nonwoven, medium weight geotextile for drainage and filtration applications.

Table 2.3

Property	Test Method (ASTM)	Minimum Average Roll Value
Weight (Typical)	D5261	6 oz/sy (203 g/sm)
Grab Tensile	D4632	160 lbs (0.711 kN)
Grab Elongation	D4632	50%
Trapezoid Tear Strength	D4533	65 lbs (0.267 kN)
CBR Puncture Resistance	D6241	410 lbs (1.82 kN)
Permittivity	D4491	1.5 sec-1
Water Flow	D4491	110 gpm/sf (4480 l/min/sm)
AOS	D4751	70 U.S. Sieve (0.212 mm)
UV Resistance	D43355	70%/500 hours

2.3 HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

2.3.1 Pipe and fittings shall be of the same size and material and shall be furnished by the same manufacturer. Each Pipe length must be clearly marked with the manufacturer's name or trademark, specification designation and pipe class. All pipe and fitting shall have a standard dimensional ratio SDR-17 and shall be pressure rated to 100 psi for all diameters 2" to 18". HDPE Pipe material shall conform to the current requirements of ASTM D3350. Fabricated fittings shall be pressure rated to 10 feet of water maximum. Special molded fittings shall be manufactured in conformance with ASTM F714.

2.3.2 HDPE pipe shall be butt-welded to provide a watertight joint. All welding will be performed according to ASTM D2657 Section 9, by a trained individual and according to pipe manufacturer's recommendations.

PART III-EXECUTION

3.1 INSTALLATION OF PIPE

3.1.1 Inspection of Delivered Material: Pipe and fittings delivered to the work site will be inspected by the Contractor and the Engineer prior to installation. When accepted by the Engineer for installation, such materials will be marked. Non-accepted and damaged pipe and fittings shall not be installed but shall be removed or repaired, if repairable, as directed by the engineer.

3.1.2 Handling of Pipe and Fittings After Delivery: All pipe and fittings shall be handled with proper equipment, avoiding impact blows, especially during cold weather.

Specials and appurtenances shall be unloaded and handled with a crane or backhoe of proper capacity with appropriate slings to protect exterior of the pipe. Gaskets shall be stored in a cool place out of direct sunlight. Pipe will be inspected before installation. If damage occurs during handling, such pipe shall be rejected, removed, replaced or repaired, if repairable at the Engineers discretion and at the Contractor's expense.

3.1.3 Trench excavation and backfill shall be specified on the drawings. Before pipe installation, excavate sufficient trench in advance that reasonable changes in line and grade can be made as to assure that no unforeseeable obstructions exist. Work required by failures to take such precautions shall be performed at no cost to the Owner.

Provide granular bedding in accordance with the drawings.

3.1.4 Placement: Prior to pipe installation, each length of pipe shall be flushed clean with water to remove residual plastic and shavings remaining from the pipe manufacturer and perforation process. The Engineer shall be present for supervision of the cleaning process. Immediately before joining, clean joint surfaces, square (face) end of each pipe to be fused, then butt weld the pipe together according to the manufacturer's recommendations. Allow welds sufficient time to cool before working the pipe.

Foreign matter shall be removed from each pipe, fitting and appurtenances before placement in the trench. Should foreign matter be observed in previous pipe installed pipe, fittings or appurtenances, work shall cease until foreign matter is removed. Open ends of pipes and fittings shall be closed with a watertight cap or plug when work is not proceeding.

Prior to pipe installation, bring bedding material to grade along the entire length of pipe to be installed. Excavate bell hole as required. Install pipe to a true uniform line and grade as indicated with continuous bearing of the barrel material. Install pipe upgrade with bell and groove (if applicable) pointing upstream. Place each section of pipe in such a manner as to form a close concentric joint with the adjoining section and to prevent sudden offsets in the flow line.

Lengths of welded pipe to be handled as one section shall not exceed 400 feet. Place sufficient backfill on each section of installed pipe to hold firmly in place. The Engineer or the QA Representative shall be notified prior to any pipe being installed in trenches in order for him/her to have an opportunity to inspect the following items:

- All butt and saddle fusion
- Pipe integrity
- Trench Excavation for rock and foreign material
- Trench contours to ensure the pipe will have uniform and continuous support.

Any irregularities found 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 and testing, segment tie-ins and/or backfilling.

END OF SECTION

SECTION 02933
LAWNS AND GRASSES

PART I – GENERAL

1.1 DESCRIPTION

This section includes requirements for seeding and mulching as required for restoration and restabilization of any and all disturbed areas, stockpiles, and as directed by the ENGINEER, in accordance with the Contract Documents.

1.2 SUBMITTALS

Submit certificates of compliance before delivery of materials as specified in SECTION 01400 – QUALITY CONTROL for the Seed, Sod, Fertilizer, Lime and Mulch.

1.3 REFERENCE DOCUMENTS

A copy of the requirements of Maryland Turf Grass Law and Regulations and Maryland Seed Law and Regulations, available from Maryland Department of Agriculture, Turf and Seed Section, College Park, Maryland 20742, phone (301) 261-8106, shall be obtained and maintained on the work site at all times by the CONTRACTOR.

PART II – MATERIALS

2.1 SEED

Unless otherwise specified herein, seed shall be certified by the Maryland Department of Agriculture and shall conform to requirements of Maryland Seed Law and Regulations. All seed, Permanent and Temporary, shall be accordance with the seeding notes as described on the Contract Drawings.

2.2 FERTILIZER

For sites with a disturbed area less than 5 acres, the CONTRACTOR may submit soil samples to an approved soils testing laboratory for fertilizer recommendations. Recommendations shall be submitted to and approved by the ENGINEER before implementation. For site with a disturbed area greater than 5 acres, the Contractor shall submit soil samples for analysis and shall receive fertilization requirements for the site per the MDE Standard Specifications for Vegetative Stabilization.

Fertilizer shall be uniform in composition, free-flowing, and delivered to the site fully labeled according to applicable state fertilizer laws and shall bear the name, trade name or trademark,

and warranty of the producer. All fertilizer, for permanent and temporary applications, shall be accordance with the seeding notes as described on the Contract Drawings.

2.3 LIME

Lime shall be ground limestone containing at least 50% total oxides, calcium oxide plus magnesium oxide. Limestone shall be ground to fineness such that at least 50% will pass through a 100 mesh sieve and 98% will pass through a 20-mesh sieve. All lime applications, for permanent and temporary applications, shall be accordance with the seeding notes as described on the Contract Drawings

2.4 MULCH

Mulch for protection of permanent seeding shall conform to the following requirements:

- Straw shall be clean, weed free, unrotted, applied at a rate of 70 to 90 pounds per 1,000 ft^2, 1.5 to 2.0 tons per acre, and shall be anchored by one of the following methods. Mulching anchoring tool for flat slopes, mulch netting, cut back and emulsified asphalt applied five gallons per 1,000 ft^2, Curasol AH applied five gallons per 1,000 ft^2, Petroset applied per Manufacturer's recommendations, RMH Plus Tackifier applied per manufacturer's recommendations, or other equivalent binding solutions. Increase application rate on slopes 8 feet or more high as recommended by the manufacturer.

- Mulch utilized as temporary protection and stabilization shall conform to the above material requirements. Rate of application shall be directed by the ENGINEER. Stone mulch will be permitted at the option of the CONTRACTOR.

PART III – EXECUTION

3.1 PERMANENT SEEDING

Harrow, disc, or otherwise loosen subsoil to a depth of 4 inches. Remove objectionable material such as stones, 2 inches or larger, clods, brush, roots, and trash from the top 4 inches of soil. Apply fertilizer and lime at the rates specified herein. Thoroughly mix into the top 6 inches of soil. Scarify and rake the area until the surface is leveled to provide a maximum of 2 inches in variation, and until the soil is friable and has a uniform fine texture.

Immediately prior to seeding, apply additional fertilizer at the rates specified herein, and work into the top 2 inches of the soil. Apply seed mixture uniformly with mechanical power driven seeders, mechanical cyclone hand seeders, or hydroseeding equipment. Slurry for hydroseeder may contain seed and fertilizer only. Disc the seed 1 inch into the soil in floodplain areas. Rake, roll, or drag the seedbed in all other areas if hydroseeder or cyclone seeder is used. Apply mulch at the rates specified herein.

3.2 TIME RESTRICTIONS

When permanent seeding is specified or directed but seeding is not allowed because of specified time restrictions, utilize one or more of the following methods to prevent erosion and sedimentation until such time as permanent seeding or sodding is allowed:

- Place and anchor straw mulch or wood chips.
- Apply temporary seeding.
- Prepare soil as for permanent seeding and then mulch as specified; overseed during next seasonal seeding period.
- Provide other erosion control measures acceptable to the ENGINEER.

Remove straw or wood chips used as temporary mulch or work into subsoil at a minimum depth of 6 inches prior to initiation of permanent seeding application.

3.3 MAINTENANCE OF SEEDED OR SODDED AREAS

Maintain seeded areas until accepted in writing by the ENGINEER.

Water seeded areas as necessary to maintain adequate moisture in the upper 4 inches of soil and keep mowed to a height of 2 to 3 inches. Do not remove more than one third of the grass leaf during initial mowing.

Inspect seeded areas for failures in need of repairs due to poor vegetative growth, traffic or equipment damage, weather damage, or erosion.

Provide repairs or replacements during the specified planting seasons for areas where they are deemed necessary by the ENGINEER at no cost to the OWNER. This shall include repairs and replacements due to erosional or weather-related damage.

If a stand of turf is inadequate as determined by the ENGINEER, overseed and fertilize using half of the rates originally applied, or resod. If the stand is over 60% damaged, as determined by the ENGINEER, reestablish following original lime, fertilizer, seed bed preparation, and seeding recommendations.

END OF SECTION

KAETZEL TRANSFER STATION RETAINING WALL

DIVISION III

SECTION 03300
CONCRETE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope of Work: The Contractor shall provide all labor, materials, equipment and incidentals required to install complete and ready concrete structures as specified herein and as indicated on the Contract Drawings.

1.2 QUALITY ASSURANCE

A. Provide manufacturer's certificates that materials not subject to specified tests meet or exceed minimum requirements as specified.

B. Guarantee concrete structures for one (1) year against becoming unserviceable, cracked or objectionable in appearance as a result of being defective and/or nonconforming, after acceptance of the project.

C. Prepare and submit reports from the approved testing laboratory for concrete tests.

1.3 STANDARDS

A. Comply with applicable as well as specified provisions and recommendations of MSHA, ASTM and American Concrete Institute (ACI) standards.

1.4 SUBMITTALS:

A. Shop Drawings: Submit shop and working drawings for all fabricated items to the ENGINEER for review. Do not fabricate any work until the ENGINEER advises of approval or no objection to the submitted item. Shop drawings are required for all steel bar reinforcement, steel tie-down anchors and other fabrications.

B. Product Data Sheets; Submit official data sheets to the ENGINEER for review from manufacturers of products that are intended to be used and that meet these specification requirements.

C. Test Reports: Submit to the ENGINEER for review all test reports for work performed on the project.

PART 2-MATERIALS

2.1 CONCRETE

A. Concrete shall be Portland Cement, strength as specified on the plans.

2.2 STEEL REINFORCEMENT

A. Steel bars shall conform to MSHA Section 908; ASTM A615, Grade 60; and ACI 318.

B. Welded Wire Fabric shall conform to ASTM A185.

2.3 ANCHOR BOLTS

A. Anchor bolts for equipment anchors shall be galvanized carbon steel conforming to ASTM A-307 for headed bolts and ASTM F1554 Grade 36 for threaded anchor rods.

2.4 FORM WORK

A. Comply with MSHA requirements.

2.5 CONSTRUCTION JOINTS

A. Joints in concrete shall only be permitted where indicated on the drawings or approved shop drawings. All joints in the weir wall shall be provided with waterstops. Steel reinforcement shall not extend through construction/contraction joints in weir wall stem. Waterstops shall be continuous extrusions of Polyvinylchloride in an approved cross-section, in accordance with MSHA requirements. Hydrophilic waterstops may be used on the riser house foundation. All reinforcing shall be continuous through construction joints on the Riser House foundation.

2.6 PRECAST CONCRETE PRODUCTS

A. Precast concrete products shall meet or exceed the requirements of MSHA Section 305.

2.7 REINFORCED CONCRETE PIPE

A. Reinforced concrete pipe shall meet or exceed requirements of ASTM C76. Pipe class shall be as specified in the CONTRACT DRAWINGS.

PART 3-EXECUTION

3.1 GENERAL

A. Formwork, concrete placement, protection, and curing shall be in conformance with the current issue of American Concrete Institute -318. The concrete surfaces shall be form finish.

3.2 CONCRETE TESTING:

A. Concrete testing, as described herein, shall be performed on concrete samples taken from each truck- mixer at time of placing. ENGINEER shall employ independent testing laboratory to perform inspection and testing services specified in ACI-301. Testing Lab will make and have tested all required field compression test specimens. Should concrete strengths shown by tests fall below specified strength, the ENGINEER shall have the right to order tests to be made of that portion of structure where questionable concrete has been placed. Tests are to be made at no increase in Contract Price. In event tests indicate concrete placed does not conform to Contract Specifications, measures directed by the ENGINEER, shall be taken by the CONTRACTOR to correct deficiency at no increase in Contract Price.

B. Compression Tests:

1. Each test shall consist of four (4) concrete test cylinders to be tested under compression in accordance with ASTM C39. One cylinder shall be tested at age seven (7) calendar days after making and two (2) cylinders shall be tested at age twenty-eight (28) calendar days. Strength results of all cylinders tested at seven (7) calendar days shall achieve a minimum of seventy (70%) percent of ultimate design strength and at twenty-eight (28) calendar days, one hundred (100%) percent. Make no less than one test set of cylinders for each work segment of more than five (5) cubic yards up to 15 cubic yards.

C. Test cylinders used for testing other than compressive strength, such as to determine when forms may be stripped shall be paid for by the CONTRACTOR requesting same.

D. Slump Tests:

1. Consistency shall be determined at Project site by means of slump test in accordance with ASTM C-143. Results of slump test shall be included in test reports. Slump tests shall be made at same time as test cylinders are made and when so directed by the ENGINEER.

E. Air Content Tests:

1. Air content shall be determined in field on fresh concrete in accordance with ASTM C-231 or alternate method upon approval of the ENGINEER.

F. Density Tests:

1. Standard weight structural concrete shall have a minimum dry density of one hundred and forty-eight (148) pounds per cubic foot.

END OF SECTION