Agreement Exhibit 16

EARTHWORK

PART 1 GENERAL

1.01 CONTRACT REFERENCES

A. Attention is directed to the CONTRACT DOCUMENTS which are hereby made a part of this Section of the Specifications.

1.02 DESCRIPTION OF WORK

A. Furnish all labor, materials, equipment, supervision and incidentals necessary to perform all contaminated material excavation, backfill and grading required to complete the work shown on the Drawings and described herein. The work shall include, but not necessarily be limited to excavation work and grading as shown on the Drawings and as specified herein, and as directed by the Engineer.

1.03 SECTION INCLUDES

A. Submittals.

B. Products.

C. Excavation.

D. Handling of Contaminated Soil.

E. Grading.

1.04 RELATED SECTIONS

A. Exhibit 15: Site Preparation

B. Exhibit 17: Excavation of Contaminated Soil

C. Exhibit 18: Topsoil Placement, Seeding and Plantings

1.05 REGULATORY REQUIREMENTS

A. All excavation, shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P), State, and local requirements.

Where conflict between OSHA, State, and local regulations exists, the most stringent requirements shall apply.

1.06 SUBMITTALS

A. GENERAL

1. The Contractor shall forward submittals to the Engineer a minimum of 10 days prior to any planned work related to the Contractor's submittals.
2. The time period(s) for submittals are the minimum required by the Engineer to review, comment, and respond to the Contractor. The Owner may require resubmission(s) for various reasons. The Contractor is responsible for scheduling specified submittals and resubmittals so as to prevent delays in the work.
3. The Contractor's submittals shall be reviewed and accepted by the Engineer, prior to conducting any work.
4. Acceptance of the Contractor's submittals by the Engineer does not relieve the Contractor of the responsibility for the adequacy, safety and performance of the Work.

B. BACKFILL MATERIALS AND EQUIPMENT

1. For each type of soil to be utilized as backfill, the Contractor shall deliver a 50 lb. bag sample from each borrow source or supplier to the Engineer for review and laboratory testing. Do not import any material to the site unless accepted by the Engineer.

   If the materials are being supplied from a non-commercial borrow source, the Contactor shall submit all previously existing report(s) associated with an assessment of the source site as related to the presence of oil or hazardous material and the following chemical test data on the material. The cost of any required testing shall be borne entirely by the Contractor. The Contracting Officer will review the data and determine its acceptability for use on site.

   a. Total Petroleum Hydrocarbons (EPA Method 9071/418.1) every 100 cubic yards.
   b. Volatile Organic Compounds (EPA Method 8260) every 500 cubic yards.
   c. PCB and Pesticides (EPA Method 8080) every 500 cubic yards.
   d. Thirteen Priority Pollutant Metals (EPA Method 6000-7000 series) every 500 cubic yards.
   e. Acid-Base Neutrals (EPA Method 8270) every 500 cubic yards.
   f. TCLP (for a particular parameter) if the measured concentration for that particular parameter exceeds twenty times the RCRA Hazardous Waste TCLP Regulatory criteria.

2. All sampling of soils for chemical testing shall be performed by a person experienced in sample collection and either: a Professional Engineer or Licensed Site Professional registered in the Commonwealth of Massachusetts.

PART 2 PRODUCTS

2.01 SOILS

A. COMMON FILL

1. Common fill, shall be used as fill for excavations in the remediated soil areas. It shall be a natural, sand obtained from an off-site commercial source. It shall be free of ice, snow, roots, sod, rubbish, and other deleterious or organic matter, common fill shall meet the following grain size distribution requirements.

U. S. Standard Sieve Size	Percent Finer by Weight
4 inch	100
No. 10	30-90
No. 40	10-70
No. 200	0-15

PART 3 EXECUTION

3.01 GENERAL

A. Place erosion control measures including straw wattles and silt fence prior to the intrusive work activities.

B. Remove by pumping or other means water accumulated in excavations until earthwork operations are complete. All dewatering shall be performed at the Contractor's cost.

C. Soil that has been softened or eroded by flooding, equipment traffic or placement during unfavorable weather, shall be removed and replaced with suitable material at no cost to the owner.

D. Over excavation beyond that shown on Drawings shall be backfilled at the Contractor's expense and at the direction of the Engineer.

E. Excavated contaminated material, all excavated rock and surplus excavated soil not used to fulfill requirements of the Contract shall become the property of the Contractor and shall be removed from the site in accordance with the regulations and requirements of all municipalities or agencies having jurisdiction over the disposal sites and the route between the project and the disposal sites.

3.02 EXCAVATION

A. Excavation shall be unclassified and no consideration shall be given to the nature of the materials. Unclassified excavation shall comprise and include the satisfactory removal and disposal of all materials encountered regardless of the nature of the materials and shall be understood to include but not limited to rock, earth, hardpan, fill, foundations, footings, bricks, concrete, and debris. Excavation shall extend to depths of approximately two feet below grade. If visually impacted soils extend to depths greater than two feet below grade, the excavation depth will extend to the bottom of the visually impacted soils.

B. General

1. All backfilling for contaminated soil excavation areas shall be performed until completion of pre or post characterization testing has indicated that remediation criteria are met.
2. The Contractor shall maintain temporary devices and structures to control erosion of soils in and around wetland resources.
3. Excavation work will not be conducted during periods of high wind (over 20 mph).
4. Exercise care to preserve the material below and beyond the lines of excavation. Where excavation is carried out, through error, below indicated grade or beyond the lines of excavation, backfill to the indicated grade with acceptable materials at no additional cost to the Owner.
5. Woody vegetation (trees, shrubs and vines) will be removed during the excavation process.
6. Large boulders and concrete foundation pieces will be managed within the Limits of Work and shall remain in the excavation upon completion.
7. Trucks and excavation equipment will be located outside the limits of excavation and the 100 foot buffer zone.
8. Excavated soil will be placed carefully into dump trucks to avoid spilling of soil onto non impacted areas. No over filling will be allowed.
9. A layer of 6 millimeter thick plastic sheeting will be placed on the ground between the excavation area and the dump truck.
10. Upon completion of the construction day, temporary plastic sheeting shall be placed and secured over excavated soil areas to prevent exposure to disturbed soil.
11. The temporary plastic sheeting shall remain in place over excavated soil areas until pre or post characterization testing has indicated that remediation criteria are met.
12. Straw wattles are to be placed downslope of the excavations and soil management areas to minimize potential for transportation of impacted soils outside of the planned excavation areas.
13. Dump trucks are to use dust covers and are to be driven at speeds less than 5 mph on site.

3.04 PLACEMENT OF MATERIALS

A. Compaction

1. No compaction shall be done when the material is too wet. If the compacted surface of the fill layer is determined to be too smooth to provide an adequate bond with the succeeding layer, the layer shall be loosened by scarifying or disked to allow interlocking with the overlying lift.

2. Each layer of Granular Fill material shall be compacted to secure a dense, stable, and thoroughly compacted mass.

3. If at any time, the Engineer judges the degree of compaction being obtained is insufficient; the Engineer may at her/his discretion order that a compaction test be taken. Tests in each area shall be performed at the Contractor's expense. No less than three tests per lift will be conducted in each area to confirm that adequate compaction has been achieved. Areas found to be deficient in degree of compaction shall be reworked, recompacted, regraded, and retested if required, at the sole expense of the Contractor.

B. Lift Thickness and Compaction Requirements

1. Fill material may be placed in lifts of no more than 1 foot and compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557.

2. Topsoil shall be placed in 6-inch lifts to finish grade, proof-rolled with two passes.

A. General Requirements

1. Protect fill area from flooding and provide a smooth surface, which will readily shed water. Grade the surface of the areas in such a manner as to prevent ponding of surface runoff water in areas to receive topsoil.
2. Placement of fill shall not begin prior to observation and approval of subgrade conditions by the Engineer.
3. Fill shall extend to a depth of 0.5 feet below the existing ground surface to allow for a sufficient (0.5 foot) layer of topsoil.
3. Upon completion of work, the final ground surface shall be left in a condition similar to the site prior to the commencement of work and free from ruts. Repair disturbed areas caused by equipment traffic at no cost to the Owner.

3.05 OBSERVATION AND TESTING

A. The Owner shall retain the Engineer to perform on-site observation and testing during the earthwork phase of the construction operations. A schedule shall be coordinated with the Contractor. The Contractor shall allow sufficient time to make observations and tests. The service of the retained Engineer shall include, but not be limited, to the following:

1. Observation during excavation of contaminated soil areas.
2. Observation during backfilling within the contaminated soil areas.
3. Laboratory testing and analysis of fill materials specified, as required.
4. Sampling of the excavation area for the contaminants of concern.

3.06 FINISHED GRADES

A. All areas covered by the project, including excavated and filled areas and adjacent transition areas shall be uniformly graded to meet the surrounding topography. Areas to receive future topsoil shall be graded to allow for such material.

B. Final grading shall be done by manual methods.

C. Final grading shall be performed in such manner as to provide proper drainage from the project site In no case shall drainage from the project site be so altered or controlled as to result in damage or the potential for damage, to adjacent property, or to any portion of the Work executed under this Contract from erosion or flooding.