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# RIDGEWOOD ORCHARD SCHOOL SOIL REMEDIATION PROJECT

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## TECHNICAL SPECIFICATIONS

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*Prepared for:*



**RIDGEWOOD**  
PUBLIC SCHOOLS

Ridgewood Board of Education  
Ridgewood, NJ

*Prepared by:*



**WSP**  
Morristown, New Jersey

March 20, 2020

**RIDGEWOOD ORCHARD SCHOOL  
SITE REMEDIATION PROJECT  
TECHNICAL SPECIFICATIONS**

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**THE CONTRACT PRICE** The BOE agrees to pay the Contractor at the time and in the manner provided in this Contract, and in accordance with the price bid in the **SCHEDULE OF PRICES**.

**NOTE: The amount for Mobilization / Demobilization at the site shall not be more than 10% of the total bid price.**

**SCHEDULE OF PRICES**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT MEAS.</b>	<b>ESTIMATED QUANTITY</b>	<b>UNIT PRICE</b>	<b>AMOUNT</b>
1.4	Mobilization	1	Lump Sum	_____	_____
1.5	Demobilization	1	Lump Sum	_____	_____
1.7	Record Drawings	1	Lump Sum	_____	_____
2.1	Site Clearing and Grubbing	1	Lump Sum	_____	_____
2.2	Erosion and Sedimentation Control	1	Lump Sum	_____	_____
2.3	Excavation	2,810	Ton	_____	_____
2.4	Modified Fill, I-13, 6" Thick	12,100	Square Yard	_____	_____
2.5	Geotextiles, Type A	14,435	Square Yard	_____	_____
2.6	Coarse Aggregate	130	Ton	_____	_____
2.7	River Rock	29	Ton	_____	_____
2.8.1	Revegetation	12,100	Square Yard	_____	_____
2.8.1A	Revegetation – Option Sod	12,100	Square Yard	_____	_____
2.8.2	Topsoil 6" Thick	12,100	Square Yard	_____	_____

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2.8.3	Landscape Plants	1	Lump Sum	_____	_____
2.9.1	Timber Box and Mulch Cap, 18" Thick	300	Square Yard	_____	_____
2.9.2	Replace Fabric and Mulch Cap in Existing Mulch Beds	1,945	Square Yard	_____	_____
2.9.3	Timber Box, Existing Tree River Rock Beds	1	Lump Sum	_____	_____
2.10	Chain Link Fence	1	Lump Sum	_____	_____
3.1	Health and Safety Plan & Implementation	1	Lump Sum	_____	_____
3.2	Construction Plan & Adherence	1	Lump Sum	_____	_____

**TOTAL BID PRICE (2.8.1 REVEGETATION):** \_\_\_\_\_

**TOTAL BID PRICE (2.8.1A REVEGETATION – OPTION SOD):** \_\_\_\_\_

## Ridgewood Orchard Elementary School Site Remediation Project

### **1.1 Summary of Work**

The Ridgewood Board of Education (BOE) will be performing soil remediation activities associated with the former ash fill cover located at the Orchard Elementary School in the Village of Ridgewood, Bergen County, New Jersey. The general project location is shown in the location plan on the Drawings Title Sheet.

The soil remediation includes, but is not limited to installation of a new soil cap on top of existing grade, excavation and backfill with new soil cap, installation of new mulch on top of existing mulch surfaces with installation of a demarcation fabric, soil and erosion control, dust monitoring, restoration with grass or other landscaping, and other miscellaneous activities.

The BOE reserves the right to restrict work in permitted areas for a discrete period of time based on receipt of permit approvals. Contractor may be subject to a phased working schedule at no additional cost to the BOE.

**END OF SECTION**

## 1.2 General Requirements

### 1.2.1 Definitions

The terms used in the Specifications and Drawings have the definitions given in Section 2.0 of the RFP, as supplemented by those below. Wherever the words defined in this Section or pronouns used in their stead occur in the Specifications and Drawings, they shall have the meanings herein given.

#### Survey

The figures given on the Drawings or in the other Contract Documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the North American Vertical Datum 1988 (NAVD88).

The elevations indicated on the Drawings and other locations pertaining to design and construction (unless noted otherwise) indicate the finish grade/elevation. Contractor shall adjust subgrade elevations, bottom of trenches, etc., accordingly

All control points shall be tied horizontally to the New Jersey State Plane Coordinate System (NAD 1983) with horizontal accuracy to at least the nearest 0.01-foot and vertically to the North American Vertical Datum 1988 (NAVD88), with elevation accuracy to the nearest 0.01-foot. Mapping shall be scaled at 1" = 30' (or an appropriate scale to fit 22" x 34" sheets) with an elevation contour interval of 1-foot as well as spot elevations. A sketch generalizing the desired survey limits and typical content shall be included for clarity. Topographic mapping shall, at a minimum, show all final site features including structures, utility lines, drainage facilities (e.g., stormwater outfalls, combined sewer overflows, tide gates, etc.), tree and brush lines, banks, and all other significant physical and environmentally sensitive features evident at the time of survey. The Contractor shall establish and verify all ground control required for Surveying purposes.

### 1.2.2 Abbreviations

Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth.

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association
AGMA	American Gear Manufacturer Association

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AIHC	American Industrial Health Council
AISC	American Institute of Steel Construction
AMCA	Air Moving and Conditioning Association
AMRL	American Material Reference Laboratory
ANS	American National Standard
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood-Preservers' Association
AWWA	American Water Works Association
BOE	Board of Education
CS	Commercial Standard
FTM	Federal Test Method
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers, Inc.
JIC	Joint Industry Conference Standards
KMUA	Kearny Municipal Utilities Authority
NRC	Nuclear Radiation Commission
NDB	National Bureau of Standards
NEC	National Electrical Code; latest edition

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NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NICET	National Institute for Certification of Engineering Technologies
NJDOT	New Jersey Department of Transportation
NSF	National Sanitation Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Services Administration, Washington, D.C.
125-lb. ANS	American National Standard for Cast-iron Pipe
250-lb. ANS	Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
AWG	American or Brown and Sharpe Wire Gage
NPT	National Pipe Thread
OS&Y	Outside screw and yoke
RFA	Request for Authorization
Stl. WG	U.S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
UL	Underwriters' Laboratories
USCE	United States Army Corps of Engineers
USSG	United States Standard Gage
WOG	Water, Oil, Gas

### 1.2.3 Handling and Distribution of Materials

The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work; shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage



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to materials and equipment furnished by them, throughout the duration of the contract.

Storage, transport, and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

### 1.2.4 Materials - Samples - Inspection

Unless otherwise expressly provided on the Drawings or in any of the other Contract Documents, only new materials shall be incorporated in the work. All materials furnished by the Contractor to be incorporated in the work shall be subject to the inspection of the LSRP. No material shall be processed or fabricated for the work or delivered to the work site without prior concurrence of the LSRP.

All costs for the storage, handling, testing and inspection of all materials shall be borne by the Contractor. Defective materials shall be removed immediately from the site of the work. The exception is that analytical sampling and testing for chemical composition will be performed by the LSRP.

Either prior to or after commencement of the work, the Contractor shall submit samples of materials to the LSRP, for confirmation of conformance with the specifications. Such samples, including but not limited to geosynthetic and soil samples, shall be furnished, taken, stored, packed, and shipped, as directed by the LSRP.

All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name of the work and location for which the materials are intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the LSRP by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples.

The Contractor shall submit data and samples, or place their orders, sufficiently early enough to permit consideration, inspection and testing before the materials and equipment are needed for incorporation in the work. The consequences of their failure to do so shall be solely the Contractor's responsibility.

When required, the Contractor shall furnish to the LSRP five sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials and equipment performance ratings and test data.

After review of the samples, data, etc., the materials and equipment used on the work shall in all respects conform therewith.

All acceptance testing shall be performed in the presence of the LSRP. The LSRP will independently perform confirmatory QA/QC chemical testing on imported fill (other than recycled aggregate), topsoil, and general fill. This testing will not excuse the Contractor from performing the testing as indicated in the specifications. If exceedances are found in any of the QA/QC tests, the

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Contractor will be responsible for segregating and properly disposing of the failing material at no cost to the BOE.

### 1.2.5 Contractor's Shop and Working Drawings

The shop drawings are interpretations of and are supplemental to the Contract Drawings and Specifications. Their intent shall demonstrate that this Contractor understands the design concept, and to provide the detailed information necessary for the fabrication, assembly, and installation of the products or materials specified. Neither the shop drawings nor comments placed on them by the LSRP shall be construed as being "Change Orders". If any deviations, discrepancies or conflicts between the Shop Drawings and the Contract Drawings and Specifications are discovered, either "prior to" or "after" the shop drawings have been reviewed, the Contract Drawings and Specifications shall have control and shall be implemented.

Prior to the first contractor submittal, the contractor will be required to coordinate with the BOE and LSRP for the submittal numbering system. The Contractor shall submit shop and working drawings of all materials, including but not limited to, river rock, demarcation fabric, materials fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested. Such submittals shall meet the requirements of Specification Section 1.3 - Submittals.

When shop and working drawings are required as specified below, the Contractor shall submit data in sufficient detail to enable the LSRP to determine whether the manufacturer and/or the supplier have the ability to furnish a product meeting the Specifications. The Contractor shall submit data relating to the materials and equipment it proposes to incorporate into the work in sufficient detail to enable the LSRP to identify and evaluate the particular product and to determine whether it conforms to the design concept and Contract requirements. Such data shall be submitted as specified for submission of shop and working drawings.

Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract.

When so specified or if considered by the LSRP to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted in place of shop and working drawings. In such case the requirements shall be as specified for shop and working drawings, insofar as applicable, except that five copies shall be submitted one of which shall be an original, two of which shall be returned to the Contractor.

The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings. Prior to the submittal of any shop drawings, the Contractor shall submit a schedule of proposed shop drawing transmittals. The schedule shall identify the subject matter of each transmittal, the corresponding specification section number and the proposed date of submission.

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No material or equipment shall be purchased or fabricated specifically for the Contract until the required shop and working drawings have been submitted as provided above and approved for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the work shall then be as shown in and represented by said drawings.

The LSRP shall review all shop and working drawings within 15 working days of their receipt and return marked up prints to the Contractor indicating approval, conditional approval or disapproval. Review time shall start upon receipt of the submittal by the LSRP. Until the necessary review has been made, the Contractor shall not order any materials nor proceed with any portion of the work, the design or details which are dependent upon the design or details of work, materials, equipment or other features for which review is required.

All shop and working drawings shall be submitted to the LSRP by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from their subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24-in. by 36-in. sheets, in AutoCAD Version 2000i or compatible, except those which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the BOE, Contractor, and building, equipment, or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above and a diskette containing the corresponding \*.DXF or \*.DWG files.

Only drawings which have been checked and corrected by the fabricator shall be submitted to the Contractor by their subcontractors and vendors. Prior to submitting drawings to the LSRP, the Contractor shall check thoroughly all such drawings to satisfy themselves that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the LSRP; other drawings shall be returned for correction.

If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in their letter of transmittal.

The review of shop and working drawings hereunder will be general only, and nothing contained in the Technical Specifications shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of fabrication and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified hereunder.

Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, they shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the BOE, shall do all work necessary to make such modifications.

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The marked-up reproducible of the shop and working drawings or two marked-up copies of catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when so requested.

### 1.2.6 Occupying Private Land

The Contractor shall not (except after written consent from the proper parties) enter or occupy with persons, tools, materials, or equipment, any properties outside of which BOE has secured access to for the Contractor. A copy of the written consent shall be given to the BOE.

### 1.2.7 Interference with and Protection of Streets/Roadways

The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, they shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore.

The Contractor shall, at least two weeks in advance, notify The Village of Ridgewood in writing, with a copy to the Village Engineer, if the closure of a street or road is necessary. The Contractor shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, to minimize confusion. The Contractor shall be responsible to provide, obtain and pay for all required permits, police officers, traffic control providers and vendors required, due to such closures. The costs to coordinate and obtain the police protection shall be borne by the Contractor.

### 1.2.8 Storage of Materials and Equipment

All materials and equipment to be incorporated in the work shall be placed so as not to injure any part of the work or existing facilities and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in the existing parking lot area at the school as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

### 1.2.9 Sanitary Regulations

The Contractor shall provide adequate sanitary facilities for the use of those employed or involved on the work, including the BOE and LSRP. Such facilities shall be made available when the first employees arrive on the site of the work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the work in suitable numbers and at such points and in such manner as may be required.

The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all

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times and shall enforce their use. The Contractor shall rigorously prohibit the committing of nuisances on the site of the work, on the lands of the BOE, or on adjacent property.

### 1.2.10 Lines, Grades and Measurements

The Contractor shall employ a competent surveyor licensed by the State of New Jersey as a Professional Land Surveyor. The Contractor shall require said surveyor to establish all lines, elevations, reference marks, batter boards, etc., needed by the Contractor during the progress of the work, and to verify such marks by instruments or other appropriate means.

The LSRP shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire work.

The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the work.

Separate payment will not be made for layout, measurement for payment, checking lines, grades, and measurements. The Contractor shall include such costs in individual line items.

### 1.2.11 Dimensions of Existing Structures

Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment, which is dependent on the correctness of such information. Such dimensions and locations shall be indicated on the Record Drawings.

### 1.2.12 Work to Conform

During its progress and on its completion, the work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the LSRP and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents, including approved change orders or field orders.

All work done without proper lines or levels, or performed during the absence of the LSRP, will not be estimated or paid for except when such work is authorized by the LSRP in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

### 1.2.13 Guarantees and Warranties

The Contractor shall warranty work for two (2) years from the date of Final Completion and shall promptly repair, correct, replace, and re-perform any work that fails to conform with the Bid Contract at no additional cost to the BOE. Neither the BOE's acceptance of said Work, nor final payment therefore, shall relieve Contractor of its responsibility to provide conforming Work.

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Contractor shall reimburse the BOE for any and all costs, expenses, and direct and reasonably foreseeable consequential losses incurred by the BOE due to non-conforming Work or any other failure by Contractor or any Subcontractor to comply with this Contract. Copies of required inspection certificates and guarantees or warranties shall be provided to the LSRP within 30 days after the installation of materials or products, in accordance with Section 1.3 and Table 1.3-1.

### 1.2.14 Computation of Quantities

Measurements for payment will be made in accordance with United States standard measure (National Bureau of Standards). The method of measurement and computations to be used in determination of quantities of work performed under the Contract are those methods generally recognized as conforming to good engineering practice. The methods of weight and measurement listed below may be used as an alternate method.

The method of measurement and computations to be used in determination of quantities of Work performed under the Contract are those methods generally recognized as conforming to good engineering practice.

Longitudinal measurements for area computations are made horizontally and deductions are not made for individual fixtures having an area of 9 square feet or less. Transverse measurements for area computations are the neat dimensions shown on the Plans or ordered in writing by the Engineer.

All items which are measured by the linear foot, such as pipe culverts, are measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation, the average end area method is used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing is measured in millimeters.

Materials measured by volume in the hauling vehicle are measured at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the LSRP, provided that the body is of such shape that the actual contents may be readily and accurately determined.

When requested by the Contractor and approved by the LSRP, in writing, material specified to be measured by the cubic yard may be weighed and such weights converted to cubic yard for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Net certified scale weights will be used as a basis of measurement for all imported soil and recycled aggregate, subject to correction when material has been lost, wasted, or otherwise not incorporated in the Work.

The term "lump sum" when used as a basis of payment means complete payment for the Work of that item, and that item will not be measured.

When standard manufactured items are specified, such as fence, wire, plates, rolled shapes, and pipe conduit, and these items are identified by gauge, unit weight, section dimensions, etc, such identifications are considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances indicated in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Whenever the phrase "quantity in the Proposal" is used in this Subsection, it is construed to mean the quantity in the Proposal adjusted for Change Orders.

When the quantity in the Proposal is specified to be the pay quantity, either the LSRP or the Contractor may request that the quantity be measured. If such a request is made by the Contractor, it shall be accompanied by drawings, calculations, or other information indicating that the quantity in the Proposal is not correct.

In computing volumes of excavation, the average end area method is used. When cut and fill areas are mixed, the separate volumes of cut and fill shall be computed using a straight line interpolation

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between the end areas. A reasonable spacing between end areas shall be selected by the Contractor and approved by the LSRP.

When the installation depth of an imported borrow fill is predetermined as with the cap components, measurement shall be in the square yard, horizontal projection, plan dimension. Measurement for payment for Demarcation Fabric shall be in the square yard, horizontal projection, plan dimension.

To allow for measurement of imported fill used to construct the cap which is to be measured on a square yard basis, the Contractor shall install measurement stakes, as approved by the LSRP, on a 70 ft x 70 ft grid, and at changes in grade. Stakes shall have markings showing the required thickness of the cap components. Costs for surveying, installation, removal, disposal and management of these stakes should be included in the prices bid for the imported fill material used for cap construction. All repairs will be made by the Contractor at no cost to the BOE.

Defined volumes of fill for structural items shall be calculated as in-situ volume as placed at the specified density or unit weight. When requested by the Contractor and approved by the LSRP in writing, materials specified to be measured by cubic yard may be weighed and such weights converted to cubic yards for payment.

All materials will be measured for payment. Factors for conversion from weight measurement to volume measurement will be determined and shall be agreed to by the LSRP before such method of measurement of pay quantities is used.

For estimating quantities in which the computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas. Measurement of Payment based on the horizontal plane will be based on the materials placed as measured from the two-dimensional area as depicted on the Contract Plans.

Net certified scale weights or weights based on certified volumes will be used as a basis of measurement for payment. The BOE reserves the right to correct tonnage amount subject if material has been lost, wasted, or otherwise not incorporated in the Work.

### 1.2.15 Precautions During Adverse Weather

During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the work may be properly accomplished and satisfactory in all respects at no additional cost to the BOE. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.

During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

#### 1.2.16 Temporary Heat

If temporary heat is required for the protection of the work, the Contractor shall provide and install suitable heating apparatus, shall provide adequate and proper fuel, and shall maintain heat as required and/or directed by the LSRP. Temporary heating apparatus shall be installed and operated in such manner that finished work will not be damaged thereby.

After the heating system has been installed, tested, and made ready for operation, the Contractor may, at the Contractor's own risk and expense, use it for providing heat for protection of the work. They shall provide and pay for all fuel and care necessary, and when the work is ready for acceptance, they shall, at their own expense, make any necessary repairs to the system, even to the extent of replacing worn or damaged parts as directed. Separate payment will not be made for temporary heating.

#### 1.2.17 Traffic Control

The Contractor shall submit a site-specific Traffic Control Plan as per Section 3.2.6. The Traffic Control Plan shall include, but not be limited to, on-site and off-site traffic control, the use of traffic flagmen, sign posting, cones, fencing, and barrier. The Traffic Control Plan shall in no way relieve the Contractor of any responsibility or liability which is a result of their operations under the terms of the contract. Payment for this item will be made under Payment Item 3.2.

All truck traffic entering and exiting the site shall use the following path: Maple Avenue to Ackerman Avenue to Doremus Avenue to Orchard Place. Traffic conditions are within a residential neighborhood at the site entrance on Orchard Place and deviations from this traffic patterns will not be permitted

#### 1.2.18 Pre-Construction and Post-Construction Video

The Contractor shall prepare Pre-Construction and Post-Construction videos to adequately document pre-existing and final conditions of all work areas and easements. The videos shall be in Digital Versatile Disc (DVD) format and the DVD shall be labeled with the date, job title and location where the video was taken. The videos shall be clear and shall thoroughly document all existing structures and landscaping. The LSRP shall be present during these activities and provided four copies of the DVDs.

Prior to the delivery of any equipment, materials or supplies to the site of any work, or to the beginning of any of the construction work, the Contractor shall provide preconstruction videos as specified herein for the purpose of establishing the surface conditions existing in all of the areas to be affected by the construction.

The Contractor shall provide color videos showing pre-construction site conditions within limits of disturbance. Pre-construction video coverage shall include, but not be limited to, all existing conditions such as site entrance, designated truck access route, and site features and structures such as landscaping, trees, fences, playground equipment.



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Post construction video coverage shall include, but not be limited to, to any proposed construction features such as timber boxes, constructed cap areas (following topsoil installation and seeding), and any other newly constructed features.

For preparation of pre-construction and post-construction videos, the Contractor shall furnish services of competent commercial videographer to clearly videotape the project area. The purpose of the color audio-video taping of the project is to provide the necessary information for restoration of surface features after completion of the project. The Contractor shall be responsible for repairing any damage or defect not documented as existing prior to construction.

Costs for pre-construction and post-construction videos shall be included in Section 1.4 Mobilization and Section 1.5 Demobilization, respectively.

### 1.2.19 Interference with Existing Works

The Contractor shall at all times conduct their operations so as to interfere as little as possible with existing works. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time when the demands on the facilities best permits such interference, even though it may be necessary to work outside of normal working hours to meet these requirements. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

The Contractor shall make such minor modifications in the work relating to existing structures as may be necessary, without additional compensation.

The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting his operations to meet the above requirements.

### 1.2.20 Permits, Access Agreements and Easements

The Contractor shall take out and maintain all necessary permits from the state, county, township or other public authorities; shall give all notices required by law; and shall post all bonds and pay all fees and charges incidental to the due and lawful prosecution of the work. The following are a list of some of the known permits which may be required to be obtained by the Contractor in the execution of the project.

- Local police, fire chief and construction approvals.
- All appropriate permits for transportation and disposal of wastes (solid or liquid), including transportation licenses, transfer station licenses, and Treatment, Storage and Disposal Facilities Permits.

The Contractor is required to comply with the following permits which will be obtained (Copies are

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included in Appendix B).

- NJDEP LURP GP #4
- Bergen County Soil Conservation District – Soil Erosion and Sediment Control Certification.
- Village of Ridgewood – DPW – Engineering Division – Major Soil Permit

### 1.2.21 Health and Safety

The attention of the bidders is directed to the fact that the submission of a site-specific Health and Safety Plan (HASP) is required for this project. Minimum requirements for the submittal are presented in Section 3.1 of these Specifications.

### 1.2.22 Utilities

Temporary water service is expected to be available from the Orchard Elementary School facility. Additionally, the Contractor will be required to set up an account with the service provider. No separate payment will be made for repairing hydrant or for water. Those costs are considered incidental to the work.

### 1.2.23 Cleaning Up

During its progress of the work and the adjacent areas affected thereby shall be kept clean and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and private property owners will be inconvenienced as little as possible.

Where material or debris has washed or flowed into, or been placed in, existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by them; shall remove all temporary works, tools, and machinery or other construction equipment furnished by them; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around toilet facilities, houses, and other buildings used by them; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by their operations, including temporary roads, staging and support areas, in a neat and satisfactory condition.

The Contractor shall thoroughly clean all materials and equipment installed by them and their subcontractors, and on completion of the work shall deliver it undamaged and in fresh and new-

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appearing condition. All mechanical equipment shall be left fully charged with lubricant and ready for operation.

The Contractor shall restore or replace any public or private property damaged by their work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall perform all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

### 1.2.24 If and Where Directed Items

The Price Schedule may request bids on one or more Pay Items to be incorporated into the Project "if and where directed" by the LSRP. Such items or quantities may not be located on the Plans. The estimated quantities set out in the Price Schedule for such items are presented solely for the purpose of obtaining a representative bid price but are not intended to indicate the BOE's anticipation as to the quantities of such items which are to be actually incorporated into the Project. Depending on field conditions, such "if and where directed" items may or may not be incorporated into the Project and if incorporated may be many times the estimated quantity or only a fraction thereof.

Incorporation of such items shall only be made on written directions of the BOE. In the absence of written directions, no such items shall be incorporated into the Project and if incorporated will not be paid for. The BOE may order incorporation of such items at any location within the Project, and at any time during the Contract Time. Claims for additional compensation shall not be made because of any increase, decrease or elimination of such items, nor because of an increase or decrease in the amount of work due to the field conditions encountered in incorporating such items into the Project.

### 1.2.25 Project Meetings

The Contractor shall anticipate attending the following meetings during construction. The Cost for attending these meetings shall be incorporated in the contract bid items. No additional payment will be made for attending meetings. Meetings may occur: at the site; Village of Ridgewood offices; the Contractor's office; or offices of the subcontractors or suppliers.

#### 1.2.25.1 Pre-Construction and Construction Conferences

Before construction is started, preconstruction conferences shall be held. During the first conference The BOE, the LSRP, and the Contractor will discuss the procedures to be followed by the Contractor during the construction process.

A second conference, if necessary, may include representatives of The BOE, LSRP, Contractor, State and Local Authorities and would concern compliance with State and Federal regulations and the environmental plans and specifications.

#### 1.2.25.2 Job Meetings

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During construction, job meetings shall be held to review construction and restoration progress and to resolve difficulties, which might delay completion of the work. Attendees at these meetings shall include representatives of the BOE, the LSRP, the Contractor, and any appropriate subcontractors.

The LSRP may schedule regular job meetings at least weekly during the life of the Contract. The time and location of meetings is to be set by the LSRP. The Contractor, unless otherwise notified by the LSRP, is to have an authorized representative attend each meeting.

The purpose of these meetings is for maintaining communication between the BOE, LSRP and Contractor, including the Contractor's subcontractors and suppliers. The meetings are to be used to coordinate various parts of the work, update construction schedules, prepare progress estimates and respond to questions that may be raised by the various participants.

**END OF SECTION**

**1.3 Submittals**

The following, Table 1.3-1 is a representative list of submittals to the LSRP that are required of the Contractor. The list may not be definitive and is included so the Contractor will be aware of the large number of submittals required of them. The Contractor shall submit shop and working drawings in accordance with section 1.2.6 of these specifications. Material and sample requirements shall comply with Section 1.2.4 of these specifications. Separate payment will not be made for this task.

**TABLE 1.3-1  
SUBMITTALS**

<b>Item</b>	<b>Tech. Spec. Section No.</b>	<b>Time of Submittal</b>
1. Initial Project Schedule		Within 21 calendar days of the effective date of the Agreement
2. Construction Plan, including Site Operation Plan and Schedule, description of major construction activities, Environmental Pollution Control, Dust and Vapor Mitigation Control Plan, Spill and Discharge Control Plan, Security Plan, Traffic Control Plan, Construction Water Management Plan, Decontamination Facilities, Construction Quality Control Plan	3.2	Within 21 calendar days of the effective date of the Agreement. Prior to any site activities (except for mobilization)
3. Health and Safety Plan	3.1	Within 21 calendar days of the effective date of the Agreement. Prior to any site activities (except for mobilization)
4. Disposal of any Materials Off-Site	3.3	Within 5 working days after disposal. Copy of disposal agreement (prior to disposal) Bills of Lading Disposal Receipts 1 original,
5. Erosion and Sediment Control Plan	2.1, 2.2, 3.3	Within 21 calendar days of the effective date of the Agreement. Prior to any site activities (except for mobilization)
6. Clean Fill Documentation for any imported Soils	2.4, 2.6, 2.7, 2.8	*
7. Temporary Protective Fence	1.4	*

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Item	Tech. Spec. Section No.	Time of Submittal
8. Geotextiles - material information, product data	2.5	*
9. Coarse Aggregate (#57), material information, source, and preliminary laboratory analysis	2.6	*
10. Product Data Sheets and all requested relevant information, including proposed guarantees and warranties	---	At least 14 calendar days prior to intended installation. Product data sheets must be approved by LSRP prior to installation.
11. Testing and Inspection Reports	---	Within 12 hours of completion
12. Laboratory Testing Results	---	Within 12 hours of testing
13. Field Inspection and Testing Reports	---	At end of each work day
14. Guarantees, Warranties, Inspection Certificates, Installation Instructions, Permits, and Quality Control Manuals for all installed products	---	Within 30 days of installation
15. Regulatory Inspection Certificates	---	Within 30 days of installation
16. Survey Data	1.4, 2.3, 2.8	Within 7 calendar days of survey completion
17. Survey/Record Drawings	1.7	Within 15 calendar days of Substantial Completion. 3 Reproducible Sets and copies of the Digital File Version
18. Health and Safety Closeout Report	1.5, 3.1	Within 15 calendar days of Substantial Completion
19. Pre-Construction and Post-Construction Video	1.4, 1.5	Prior to mobilizing on site and at Final Construction Completion
20. Silt Fence	2.2	*
21. Straw Bales	2.2	*
22. Stabilized Construction Entrance (aggregate and geotextile type B)	2.2	*

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<b>Item</b>	<b>Tech. Spec. Section No.</b>	<b>Time of Submittal</b>
23. Imported Fill (Modified I-13) – Source information and preliminary test results	2.4	Within 15 days of anticipated delivery to Site
24. Topsoil - material information, source, testing	2.8	*
25. Straw Mulching, Interim Crop Cover	2.8	*
26. Fertilizer, Seed, Lime	2.8	*

\* - At least fifteen days prior to intended installation. Shop drawings must be approved by LSRP prior to installation.

**END OF SECTION**

## 1.4 Mobilization

### 1.4.1 General Description

Mobilization shall consist of preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to the Project Site, and other work performed, or costs incurred prior to beginning Work.

Installation of temporary protective fence as indicated in the drawings, shall be included in Mobilization. Temporary fencing shall consist of blaze orange, ultraviolet stabilized HDPE with a minimum tensile strength of 5000 lbs/in<sup>2</sup> in accordance with ASTM D648. Posts shall be flanged leg U-bar or flanged leg channel section having a uniform thickness of 0.118 inches or more. Posts shall be of sufficient length and reasonably anchored to support the entire barrier fence. Blaze orange construction fencing shall be installed as depicted on the plans.

### 1.4.2 Pre-Construction Site Survey

Site features may be altered since the survey information was gathered. The grading design included in the drawings is based on the old survey. To avoid unnecessary / excessive filling of the Site, minor grading edits may be revised upon receipt of the Contractor's survey to meet the intent of the project.

During mobilization the Contractor shall perform a Pre-Construction Survey and provide the results to the LSRP to revise the Site as needed. Based on the Pre-Construction Survey performed by the Contractor, the proposed site grading may be revised by the LSRP. The LSRP will provide the Contractor revised plans within one calendar week (7 days) of receipt of an approved survey by the Contractor.

The Contractor may continue with all work while the revised plans are prepared by the LSRP; however, no additional costs or change orders will be considered for work underway or completed during this time that needs to change based on the revised plans. Any work that needs to be re-done based on the final grading shall be responsibility of the Contractor. Minor changes in work quantities of items may occur as part of the plan revisions which may require a change order. Additionally, the Contractor is made aware that the grading may be adjusted further to avoid excessive cuts and/or fills to meet final grades.

The scope of services for the survey shall include survey of the existing conditions in a proposed construction area. The following items detail the services:

#### SURVEY SCOPE OF WORK

Tasks that will be performed by the surveyor are detailed below.

All surveys must be signed, sealed and certified by a New Jersey Licensed Land Surveyor, and mapping shall follow the basic standards as described in Geographic Information System, Digital Data Standards (NJDEP, May 1998). The basis of bearings and elevations of all surveys generated



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shall be in accordance with the New Jersey State Plane Coordinates (1983 Datum) and North American Geodetic Vertical Datum (NAGVD) of 1988. All coordinates, elevations and distances shall be in feet. The surveyor is responsible for obtaining sufficient documentation and evidence to render survey plats which are correct and accurate. The Contractor shall assume that work can be performed in Level D.

Typical tasks to be completed by surveyor shall include, but not be limited to the following:

- Location of permanent site features such as buildings, roads, surface water bodies, etc within the Contractor's Limit of Disturbance;

### Adjacent Boundary

In order to confirm property lines identified in township file searches etc., the surveyor shall provide the property lines of the school site and only intersecting property lines of adjacent properties.

The information collected from the Boundary Survey shall be included on the topographic Site Map, clearly depicting the site property boundaries and corners, adjacent property corners intersecting the landfill site, onsite easements, right-of-ways, and structures. Current tax parcel information (Block, Lot) for the site and adjacent properties must also be clearly indicated.

All boundaries/corners shall be defined in terms of the New Jersey State Plane Coordinates. The acreage is to be rounded to the nearest one-thousandth of an acre. All straight line courses will be defined by bearings and distances. Curves will be defined by radius, arc length, chord bearing and chord length. All work shall, at a minimum, include the requirements as set forth in the State Board of Professional Engineers and Land Surveyors Administrative Rules and Regulations, Chapter 40, Subchapter 5, Paragraph 13:40-5.1.

### Topographic Survey and Mapping

A topographic/existing conditions map shall be produced using topographic information from a ground survey. The map will include all areas that are included within this project's Limit of Disturbance as shown on the Drawings Existing Condition Plan Sheet, and shall be scaled at 1" =30' with an elevation contour interval of 1 foot. In order to obtain topography, the surveyor shall perform a detailed ground survey over the school property on a 50 ft grid, with additional spot elevations added between points as necessary (such as toe of slope, edge of road, etc.). Mapping shall, at a minimum, show all existing features including structures, streams, ditches, locations of all known surface and subsurface utilities based on existing available documents and markouts, water bodies, streets, fences, and other significant physical and environmentally sensitive features.

The topographic map shall include the following significant topographic, physical and environmentally sensitive features mapped at a scale of 1" =30':

- Topography represented with 1-foot contour intervals and spot elevations;
- Locations of all existing buildings/permanent structures, roadways, streams, ponds, and ditches;

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- Property boundary lines of the Site.

### Deliverables

An electronic file deliverable shall either be in AutoCAD native format (also known as DWG format), or in AutoCAD's drawing exchange format (also known as DXF format). Electronic delivery of the topographic site map shall include a digital coverage of each layer in New Jersey State Plane Coordinates suitable to be uploaded directly into NJDEP's Geographic Information System. Contours shall be zero-width 3D polylines, layer separated into intermediate and index intervals and contour labels shall follow the same scheme. All contours shall be assigned elevations. Spot elevations shall be AutoCAD points with appropriate Z-values. All entities on the topographic map shall be included in separate layers with appropriate names, such as "property lines", etc.

Final delivery for the Site will include one electronic file of the topographic site map on a CD-ROM.. In addition, hardcopies of the following backup information will be required within 15 days from the acceptance of any electronic deliverable.

- Copies of all field notes and calculations;
- Tie details for all established benchmarks and ground control; and
- Copies of documents, deeds, etc., found during the record search for the Site and boundary survey.

### 1.4.3 Signs

Signs shall consist of purchase, delivery, and installation and construction and directional signs, including sign supports. The following sign shall be provided as shown on the Drawings and posted no later than two weeks prior to the initiation of field activities associated with the Site:

Two (2) new "NO ACCESS PERMITTED" signs are to be located as directed by the LSRP. The project sign shall meet the following specifications (see the drawings for sign content):

1. Size - The project signs shall be 2 feet high x 3 feet wide x 3/4 inches thick. The entire surface of the sign shall be primed in white. The reverse side of the sign will be finished in white paint.
2. Material - The sign will be exterior grade plywood with an aluminum overlay. The aluminum overlay will cover the entire front surface of the sign and its four edges. The aluminum overlay shall be type 040 with a factory-baked white enamel finish.
3. Lettering - Lettering will be upper case in Standard Block Fashion. Letter size and sign design shall be determined by the bidder with final approval by the BOE.
4. Color - The sign will have a yellow background with black letters and a black border. All paint shall be high quality fade and weather resistant formulated for exterior applications.

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5. Posts - The post will be 10 feet high x 4 inches wide x 4 inches thick pressure treated wood. They will be primed and finished in white paint.

6. Hardware - All hardware will be first quality rust resistant cadmium plated. All hardware will be 3/8 inches in diameter.

### 1.4.4 Temporary Fence

Temporary fencing shall consist of blaze orange, ultraviolet stabilized HDPE with a minimum tensile strength of 5000 lbs/in<sup>2</sup> in accordance with ASTM 648. Posts shall be flanged leg U-bar or flanged leg channel section having a uniform thickness of 0.118 inches or more. Posts shall be of sufficient length and reasonably anchored to support the entire barrier fence. Temporary fencing shall be installed as depicted on the plans. Temporary fence shall be maintained as directed during construction and shall be removed and disposed of/ recycled when no longer required on the Project.

### 1.4.5 Measurement and Payment

The Contractor will not be permitted to proceed with mobilization until the Contractor's Health and Safety and Construction Plans are complete. Furthermore, no payments for any line item work will be processed until these plans are completed. Mobilization shall consist of preparatory work and operations, necessary for the initiation of the Contract, movement of personnel, equipment, supplies and incidentals to the Project site, and other work performed or costs incurred prior to beginning work. Mobilization shall also include a pre-construction site survey, pre-construction video, establishing electric power, temporary chain link fence, and water for the construction trailers. Mobilization shall also include providing and installing the required signs.

Payment for Mobilization will be made on a lump sum basis upon completion of all the work items listed above, regardless of the fact that the Contractor may have, for any reason, shut down his work on the Project or moved equipment away from the Project and back again.

Payment for Bid Item 1.4 will be made in accordance with the following schedule:

- Upon completion of work required under Mobilization - the price bid for Mobilization, up to 5% of the Total Bid Price will be paid;
- Upon substantial completion of all work on the Project, payment for the amount bid for Mobilization in excess of 5% of the Total Bid Price will be made.

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.4	Mobilization	Lump Sum

**END OF SECTION**

## 1.5 Demobilization

### 1.5.1 General Description

Site cleanup shall be performed in accordance with Section 1.2.28 and with any requirements in the Site Access/Use Agreements. A pre-final inspection will then be conducted to identify any remaining tasks to be completed. From these tasks, a punch list of remaining tasks will be prepared. These items must be finished before Demobilization is completed. With an exception to Record Drawings submissions, any final submission (paper work, warranties, health and safety closeout report, etc.) are required as part of this task. Requirements for Record Drawings are described in specification section 1.7. Payment for Record Drawings will be made under Pay Item 1.7.

All areas occupied and/or disturbed by the Contractor in connection with the work shall be cleaned of all rubbish, excess materials, geotextiles, trailers, temporary structures and other equipment or materials and the area shall then be restored to the condition that existed prior to mobilization.

### 1.5.2 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.5	Demobilization	Lump Sum

Payment for final cleanup and Demobilization will be made on a lump sum basis upon completion of all the work items listed in this section and the post-construction DVD (per Section 1.2.21).

**END OF SECTION**

## 1.6 Geotechnical Testing

### 1.6.1 Description

The Contractor shall retain an Independent Testing Agency (ITA), as approved by the LSRP, to perform QA/QC testing as described in sections 1.6.1 through 1.6.6. The ITA shall perform or subcontract QA/QC tests to a qualified laboratory as approved by the LSRP. Testing locations shall be as designated and/or approved by the LSRP.

### 1.6.2 Reference Standards

- A. NJDOT Standard Specifications.
- B. ASTM Standards for Soil and Rock; Building Stones Section 4, Volume 04.08.
- C. ASTM Standards for Concrete and Aggregates
- D. AASHTO Standards for soils, aggregates, pavement structures.
- E. USCE Manual - EM1110-2-1906, Appendix VII and X.
- F. OSHA Standards for Health and Safety issues.

### 1.6.3 Independent Testing Agency

The Independent Testing Agency shall provide qualified experienced personnel as necessary to perform field testing and sampling of on and off-site materials. At a minimum these personnel shall have at least two (2) years experience in the sampling and testing of construction materials as applicable to the assigned task of responsibility.

The agency's laboratory shall be adequately equipped and manned to meet the requirements of testing, be accredited by the American Materials Reference Laboratory (AMRL) and participate in yearly AMRL reviews.

The testing agency shall at a minimum be capable of performing the following testing.

#### 1. ASTM Standard Tests:

- D4318: Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)
- D422: Standard Test Method for Particle-Size Analysis of Soils (Withdrawn 2016) (AASHTO T27)
- D698 e12e: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>))

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D1556:	Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method (or D2167)
D1557:	Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
D2216:	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D5084:	Standard Test Methods for Measurement of Hydraulic Conductivity of Saturate Porous Materials Using a Flexible Wall Permeameter
D6938:	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
D2937:	Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method
D4767:	Standard Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils
C127:	Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate

### 2. Other tests: Type and frequency specified herein.

Testing equipment shall be calibrated in accordance with manufacturer recommendations and frequency or at a minimum once per year. Certificates of calibration shall be available for the LSRP's review.

The Testing Agency laboratory shall be adequately staffed with qualified personnel to perform required testing in sufficient turnaround time so as not to delay or interfere with the Contractor schedule. Minimum testing turnaround time capabilities shall be defined as part of the subcontractor (testing agency) bid to the general Contractor. It shall be the Contractor's responsibility to meet construction schedules as approved by the LSRP.

The ITA shall maintain an in-house P.E. to review all testing reports and data prepared by ITA.

#### 1.6.4 Testing Agency Responsibilities

Procure samples as required by the testing and sampling requirements of each work item. Sample locations shall be as approved by the LSRP.

Perform specified inspection, sampling, and testing of products in accordance with specified standards.

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Test materials and mixes for the compliance requirements of the Contract Documents.

Promptly report testing results to the BOE/LSRP and Contractor within the agreed upon turnaround time in accordance to the requirements of Section 1.3.

### 1.6.5 Testing and Inspection Reports

A. Laboratory testing results shall be submitted to the LSRP and Contractor in duplicate within 12 hours of completion of testing. Reports shall include at a minimum the following:

1. Name, address and phone number of testing agency
2. Project title and number
3. Name of inspector/sampler/person performing analysis
4. Date, time, location, and description of sample
5. Date, type and procedure of testing performed
6. Testing results
7. Report date

B. Field Inspection and Testing Reports shall be completed and submitted to the LSRP at the end of each day in the form of a Daily Field Report (DFR). DFR's shall be completed by each individual inspector on-site and may be accompanied by a summary report prepared by the inspection supervisor. Daily Field Reports shall include at a minimum:

1. Name of testing agency
2. Project title and number
3. Name of Inspector/name and classification of person completing the report.
4. Testing that may have been performed that day, along with results, location and material tested.
5. Date and weather conditions
6. Contractor, Supervisor and equipment
7. Duration of time on-site
8. Signature of person completing report
9. Detailed documentation of activities observed, monitored and tested during the day and any problems that may have arisen and corrective action taken.

Submittals shall be in accordance with Section 1.3.

### 1.6.6 Limits of Testing Agency Authority

- A. Testing Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Testing Agency may not approve or accept any portion of the work.
- C. Testing Agency may not assume any duties of Contractor.

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D. Testing Agency has no authority to stop the work.

1.6.7 Contractor Responsibilities

- A. It shall be the Contractor's responsibility to provide full cooperation to the Testing Agency, BOE, and LSRP in accessing areas of testing and inspection.
- B. Provide incidental labor, equipment and facilities to provide access for QA/QC personnel for work to be tested, to obtain and handle samples at the site or at source of products to be tested, and to facilitate tests and inspections, storage and curing of test samples.
- C. Notify LSRP and testing agency 24 hours prior to expected time for operations requiring inspection and testing services.

1.6.8 Schedule of Tests and Inspections

- A. Inspection and testing requirements are detailed in the individual sections of these specifications.

1.6.9 Testing Frequencies

The following Table 1.6-1 provides general testing frequencies. Individual specification sections may provide additional testing and frequency requirements. Contractor shall perform the more stringent testing frequency required in the event there is a contradiction between Table 1.6-1 and the individual material specification section.

TABLE 1.10-1  
TESTING FREQUENCIES

<b>Material</b>	<b>Testing Frequency</b>	<b>Specification Section</b>
Fill I-13	1 Sieve Analysis and 1 Modified Proctor per 10,000 Cubic Yards and Proposed Borrow Source  1 Compaction Density Test/2,500 Square Feet of Each Lift	2.4
Geotextiles	Refer to Section 2.14 and Table 2.14-1	2.5
Coarse Aggregate #57	1 Sample/3000 Tons	2.6
River Rock	1 sieve analysis / Proposed Source	2.7
Topsoil	One 10 Pound sample/Source	2.8
Seeding	1 Soil Test / 2,500 Square Yard	2.8

1.6.10 Measurement and Payment



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The cost of performing the required testing and sampling, including personnel, consumable supplies, power, utilities, and report preparation will be paid under the individual work items for which testing is required. Payment will only be made after the LSRP has received any report associated with laboratory testing.

**END OF SECTION**

## 1.7 Record Drawings

### 1.7.1 Description

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 BOE or LSRP at all times during the life of the Contract.

Prior to substantial completion, Contractor shall furnish a reproducible copy of the record drawings. At the completion of the Contract and before final payment is made, Contractor shall furnish the LSRP four (4) sets of reproducible copies and four (4) CD disks of the corresponding AutoCAD Version 2018 (or compatible) files of the final approved record drawings reflecting all revisions herein described below.

Record drawings shall be based on the construction design drawings and shall include, at a minimum:

- Notations of material changes, if other than that specified
- Incorporation of Field Order Details
- Incorporation of Approved Change Orders
- Specific horizontal and vertical surveyed locations of all items constructed and any existing items that were found in discrepancy of the design plans and
- Notations of pay item quantity changes and or adjustments.

Record drawings shall contain a copy of all drawings included in the construction documents. Drawings warranting “no changes made or noted during construction” shall be so noted and included in the set of record drawings. Record drawings shall be signed and sealed by the Professional Licensed Surveyor retained by the Contractor, and by the Contractor’s responsible representative.

The Contractor shall deliver four (4) copies of the draft Record Drawings for the BOE and LSRPs comment. The Contractor shall incorporate review comments into the final Record Drawings, including a re-survey if necessary.

#### Bond Paper Prints

Final delivery for the project site shall include four (4) sets of white bond paper prints (24” x 36”) of the survey maps scaled at 1” = 30’ (or an appropriate scale to fit 24” x 36” sheets). Each set shall be signed and sealed by a licensed surveyor.

#### Electronic Files

Final delivery for the site shall include four (4) electronic files of the Record Drawings and Contractor hand markups on a CD-ROM. This electronic file shall either be in .pdf format and 2000i AutoCAD native format (also known as DWG format), or in AutoCAD's drawing exchange format (also known as DXF format). Electronic delivery of the record drawing shall include a digital coverage of each layer in New Jersey State Plane Coordinates suitable to be uploaded directly into NJDEP's Geographic Information System. Contours shall be zero-width 3D polylines, layer separated into intermediate and

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index intervals and contour labels shall follow the same scheme. All contours shall be assigned elevations. Spot elevations shall be AutoCAD points with appropriate Z-values. All entities on the topographic maps shall be included in separate layers with appropriate names, such as “gas line” or “tree line”, etc.

### Backup Information

In addition to the electronic file deliverable, the following backup information shall be provided:

- One (1) copy of all field notes, sketches, and calculations;
- Tie details for all established benchmarks and ground control;
- One (1) copy of all relevant documents associated with the site survey;

### 1.7.3 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
1.7	Record Drawings	Lump Sum

Payment for 1.7 Record Drawings will be made on a lump sum basis upon completion of the Final Record Drawings Deliverables to the satisfaction of the BOE and the LSRP as per the requirements of this specification section.

**END OF SECTION**

## **2.1 Site Clearing and Grubbing**

### **2.1.1 General Description**

This work shall consist of clearing and grubbing the site area of vegetation, debris and above-ground site improvements as indicated on the plans by the limits of disturbance in preparation for construction operations.

### **2.1.2 Existing Conditions**

Variations to conditions or discrepancy in actual conditions as they apply to site preparation operations are to be brought to the attention of the Engineer prior to the commencement of any site work.

The Contractor shall familiarize himself with the existing conditions prior to the start of work. The Contractor shall anticipate difficulties with equipment maneuvering, material delivery, material installation, and all other items that may be encountered due to the site conditions.

Later claims for additional compensation due to additional labor, equipment or material required on account of difficulties encountered or underground water conditions will not be considered.

### **2.1.3 Protection**

Locate and protect bench marks, property corners and all other survey monuments from damage or displacement. If a marker needs to be removed it shall be referenced by a Licensed Land Surveyor and replaced, as necessary, by the same, at no cost to the BOE.

Locate and identify existing utilities that are to remain and protect them from damage. Protect existing utilities during clearing operations. Re-establish if disturbed or destroyed, at no cost to the Owner.

Prior to conducting any work activities, Contractor shall flag all existing sprinkler heads within athletic fields with PVC stick-ups and protect during all phases of the work.

Notify the New Jersey One Call System between 5 and 10 days prior to any excavation. Phone: 1-800-272-1000.

Conduct operations with minimum interference to public or private accesses and facilities. Maintain access and egress at all times and clean or sweep any roadways daily or as required by the governing authority. At such times as deemed necessary by the BOE, dust control shall be provided in accordance with the Dust Control Plan (Section 3.2.3).

Provide traffic control as required and as indicated on the Traffic Control Plan, in accordance with the Contract Documents, the U.S. Department of Transportation "Manual of Uniform Traffic Control Devices" and the New Jersey State Department of Transportation requirements.

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### 2.1.4 Materials

Protection Materials: May be new or used, suitable and adequate for the intended purpose.

### 2.1.5 Erosion and Sedimentation Control

Contractor shall refer to the Erosion and Sedimentation Control Plan for Staging of Construction Activities.

If Contractor would like to revise the Staging of Construction Activities as shown on the E&S Control Plan, approval of revised staging must be obtained from the Bergen County Soil Conservation District, and the New Jersey Department of Environmental Protection. Costs for this work shall be borne by the Contractor.

Submittals shall be in accordance with Section 1.3.

### 2.1.6 Preparation

Verify that existing plant life and clearing limits are clearly tagged, identified and marked in such a manner as to insure their safety throughout construction operations.

The Contractor shall cut through the brush to provide access for surveyors.

### 2.1.7 Clearing

Clear areas required for access to site and execution of work. No clearing shall be performed beyond the limits of disturbance indicated on the plans.

Appropriate health and safety measures shall be employed during the site clearing work, in accordance with Section 3.1 of these Specifications, contaminated materials may be encountered.

Contractor shall provide bill of lading/manifests to the Engineer at the end of each work day for all materials disposed offsite.

### 2.1.12 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.1	Site Clearing and Grubbing	Lump Sum

The Contractor shall be paid the lump sum bid price for Bid Item 2.1, Site Clearing and Grubbing, upon completion of clearing the areas as shown on the Drawings. If the Contractor does not clear the entire site in one operation, the Contractor may request that Lump Sum payment for Site Clearing be prorated, based on the aerial percentage of the total site cleared.

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Payment will include the installation of PVC stick-ups at all existing sprinkler heads within athletic fields.

**END OF SECTION**

## 2.2 Erosion and Sedimentation Control

### 2.2.1 General

The Contractor shall employ soil erosion and sediment control measures during the life of the project to control erosion and minimize sedimentation of rivers, streams, lakes, reservoirs, wetlands, floodplains, bays, and coastal waters. This work shall consist of the construction and maintenance of various temporary soil erosion and sediment control measures, including relocating them as required for stage construction.

The Contractor shall incorporate all permanent pollution control features into the project at the earliest practicable time. The Contractor shall install temporary sediment control devices in addition to those required to be installed in accordance with the Erosion and Sediment Control Plan, including but not limited to filter fence, straw bales, and rock filters, if and where directed by the Engineer. Silt Fence or straw bales shall include furnishing and installation of sediment barriers and the maintenance of the same in accordance with the Contract Documents.

### 2.2.2 Materials

#### 2.2.2.1 General

Wood stakes, posts and boards shall be solid, reasonably knot-free lumber conforming to the nominal size specified on the plans.

Coarse aggregate #57 shall consist of broken stone or washed gravel. Broken stone shall be uniform in texture and quality in accordance to Sections 2.6 of these specifications.

Other materials shall conform to the following Sections:

Mulch .....	2.8
Seed Mixtures .....	2.8
Geotextiles .....	2.5

#### 2.2.2.2 Silt Fence

Silt fence shall consist of geotextile fabric, Mirafi 100X, Propex Geotex 2130, or equal as approved by the Engineer. Silt Fence height shall be at least 3 feet to provide for a 2.0 foot high fence after 1.0 foot of fabric is buried in the existing soil. Fence posts shall be installed at a slight angle toward the anticipated runoff source. Sections of fabric shall be overlapped a minimum of 1'-6", then joined in such a manner that, when in operation, the sections work effectively as a continuous fence.

#### 2.2.2.3 Straw Bale Barriers

Straw shall be stalks of oats, wheat, rye, or barley relatively free from seeds, noxious weeds, and other foreign matter, free from decaying matter and from organic matter soluble in water and shall

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be bound with wire or baling twine. The twine shall be an ultraviolet light stabilized polypropylene which has a knot strength of 170 pounds and straight break strength of 300 pounds.

Straw Bale barriers shall be installed as shown on the soil erosion and sediment control plans, and, utilized by the Contractor on an as-needed basis as an emergency erosion control measure. Straw Bales shall be embedded 4 inches into the ground and anchored in place with 2 wood stakes per bale.

### 2.2.2.4 Stabilized Construction Entrance

A temporary construction entrance constructed of aggregate on top of roadway geotextile type B shall be used to reduce or eliminate tracking of soils material onto paved streets and other paved areas.

Contractor shall install the stabilized construction entrance at locations where construction traffic enters and leaves construction site from or onto paved street or paved area, as shown on the plans.

Contractor shall place roadway geotextile, type B, over entire graded area and cover with a minimum 12" thick layer of 1 to 2-1/2 inch stone or recycled concrete.

Contractor shall perform maintenance on Stabilized Construction Entrance as follows:

- a. Periodically and as directed by Engineer, apply layer of stone or recycled concrete to maintain entrance.
- b. Immediately remove soils material or debris tracked onto areas of adjacent street or paved areas.

Contractor shall remove and restore stabilized construction entrance area following restoration schedule upon completion of project and when entrance is no longer required.

### 2.2.4 Soil Erosion and Sediment Control Maintenance

Soil erosion and sediment control measures shall be maintained throughout the life of the project, to ensure that the measures function properly. Soil erosion and sediment controls shall be immediately inspected after each rain and any corrective work shall immediately be performed to return the soil erosion and sediment control measures to proper function, as directed. Coarse aggregate, silt fence, or strawbales damaged due to washouts or siltation shall be replaced as necessary or as directed by the Engineer.

Where construction vehicle access routes intersect public roads, Contractor shall make provisions to mitigate the transport of mud, soil, or dust onto the public road. If soil, mud, or dust is transported onto a road surface, Contractor shall clean the road thoroughly immediately. Contractor shall remove soil from the roads by shoveling and/or sweeping, then transporting to an on-site soil stockpile area. Street sweeping shall be conducted as necessary or as directed by the Engineer



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during the importation and exportation of soils. Street washing with water shall be allowed only after soil is removed to the extent practical by sweeping.

The Contractor shall install erosion and sedimentation control devices in accordance with this Section and the Erosion and Sediment Control Plan.

### 2.2.5 Stormwater Pollution Prevention

The Contractor shall be responsible to prepare the Stormwater Pollution Prevention Plan (SPPP). Preparation and adherence to the SPPP shall be paid under bid items 3.2.1 and 3.2.2, respectively. The Contractor will be responsible for any fines incurred for violations of the SPPP.

#### 2.2.5.1 Inspection and Reporting Requirements

##### *Routine Inspections*

Routine inspections (on a weekly basis, at a minimum) of the site shall be conducted and documented to identify areas contributing to the stormwater discharge authorized by this equivalency and evaluate whether the stormwater pollution prevention plan (SPPP), is being properly implemented and maintained, or whether additional measures are needed to implement the SPPP. Routine inspections shall be submitted to the Engineer on a monthly basis.

##### *Reports of Noncompliance*

All instances of noncompliance not reported under N.J.A.C. 7:14A-6.10 shall be reported to the Department annually.

##### *Notification of Completion*

The Soil Conservation District responsible for certifying the RFA (Request for Authorization) will provide the Department a copy of the report of compliance issued under N.J.A.C. 2:90-1 for completed construction activities. The report of compliance shall serve as the notification of completion.

#### 2.2.5.2 Construction Site Waste Control Component of the Stormwater Pollution Prevention Plan (SPPP)

The SPPP shall be included in the Construction Plan.

The construction site waste control component of the SPPP consists of the requirements below.

##### *Material Management to Prevent or Reduce Waste*

Any pesticides, fertilizers, fuels, lubricants, petroleum products, anti-freeze, paints and paint thinners, cleaning solvents and acids, detergents, chemical additives, and concrete curing compounds shall be stored in containers in a dry covered area. Manufacturers' recommended

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application rates, uses, and methods shall be strictly followed to the extent necessary to prevent or minimize the presence of waste from such materials in the stormwater discharge authorized by this permit. (The preceding sentence does not apply to any manufacturers' recommendations about fertilizer or other material that conflict with the erosion and sediment control component of the facility's SPPP.)

### *Waste Handling*

The following requirements apply only to construction site waste that has the potential to be transported by the stormwater discharge authorized by permit. The handling at the construction site of waste building material and rubble and other construction site wastes, including litter and hazardous and sanitary wastes, shall conform with the State Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and its implementing rules at N.J.A.C. 7:26, 7:26A, and 7:26G; the New Jersey Pesticide Control Code at N.J.A.C. 7:30; the State litter statute (N.J.S.A. 13:1E-99.3); and OSHA requirements for sanitation at 29 C.F.R. 1926 (except where such conformance is not relevant to the stormwater discharge authorized by this permit). The construction site shall have one or more designated waste collection areas onsite or adjacent to the site, and an adequate number of containers to store waste. Waste shall be collected from such containers before they overflow, and spills at such containers shall be cleaned up immediately.

Construction site wastes include but are not limited to:

- i. "Construction and demolition waste," as defined in N.J.A.C. 7:26-1.4 as follows: "waste building material and rubble resulting from construction, remodeling, repair, and demolition operations on houses, commercial buildings, pavements and other structures. The following materials may be found in construction and demolition waste: treated and untreated wood scrap; tree parts, tree stumps and brush; concrete, asphalt, bricks, blocks and other masonry; plaster and wallboard; roofing materials; corrugated cardboard and miscellaneous paper; ferrous and non-ferrous metal; non-asbestos building insulation; plastic scrap; dirt; carpets and padding; glass (window and door); and other miscellaneous materials; but shall not include other solid waste types."
- ii. Any waste building material and rubble resulting from such operations that is hazardous for purposes of N.J.A.C. 7:26G (the Hazardous Waste rules).
- iii. Discarded (including spilled) pesticides, fertilizers, fuels, lubricants, petroleum products, anti-freeze, paints and paint thinners, paint chips and sandblasting grits, cleaning solvents, acids for cleaning masonry surfaces, detergents, chemical additives used for soil stabilization (e.g., calcium chloride), and concrete curing compounds.
- iv. Other "litter," as defined at N.J.S.A. 13:1E-215.d as follows: "any used or unconsumed substance or waste material which has been discarded whether made of aluminum, glass, plastic, rubber, paper, or other natural or synthetic material, or any combination thereof, including, but not limited to, any bottle, jar or can, or any top, cap or detachable tab of any bottle, jar or can, any unlighted cigarette, cigar, match or any flaming or glowing material or any garbage, trash, refuse, debris, rubbish, grass clippings or other lawn or

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garden waste, newspapers, magazines, glass, metal, plastic or paper containers or other packaging or construction material, but does not include the waste of the primary processes of mining or other extraction processes, logging, sawmilling, farming or manufacturing."

- v. Sanitary sewage and septage.
- vi. Contaminated soils encountered or discovered during earthmoving activities or during the cleanup of a leak or discharge of a hazardous substance.

Discharges of raw sanitary sewage or septage onsite are strictly prohibited. Adequate facilities with proper disposal shall be provided and maintained onsite or adjacent to the site for all workers and other sanitary needs.

### *Spills; Discharges of Hazardous Substances; Federally Reportable Releases*

Spill kits shall be available onsite or adjacent to the site for any materials that are listed above and used or applied onsite. All spills of such material shall be contained and cleaned up immediately. Cleaned up materials shall be properly disposed of.

Discharges of hazardous substances (as defined in N.J.A.C. 7:1E-1.6) in construction site wastes are subject to the provisions of the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq., and to Department rules for Discharges of Petroleum and Other Hazardous Substances at N.J.A.C. 7:1E. No discharge of hazardous substances resulting from an onsite spill shall be deemed to be "pursuant to and in compliance with [this] permit" within the meaning of the Spill Compensation and Control Act at N.J.S.A. 58:10-23.11c.

Releases in excess of reportable quantities (RQ) established under 40 C.F.R. 110, 117, and 302 that occur within a 24-hr period must be reported to the National Response Center (800 424-8802).

### 2.2.6 Submittals

Submittals shall be in accordance with Section 1.3.

### 2.2.7 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.2	Erosion and Sedimentation Control	Lump Sum

The Contractor will be paid the bid unit price for materials, installation, maintenance and removal (where applicable) for each month or fraction thereof that erosion and sedimentation control is required in accordance with the Construction Erosion and Sediment Control Plan approved by the

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Bergen County Soil Conservation District. All temporary and permanent sediment control devices, labor, and equipment shall be considered part of Pay Item 2.2.

Separate payment will not be made for maintenance, repair or replacement of erosion and sedimentation control devices nor for relocation.

**END OF SECTION**

## 2.3 Excavation

### 2.3.1 General

Excavation shall consist of excavation of the historic fill cover material within the limits of the excavation areas to the neat lines shown on the Drawings. Excavation shall also include offsite disposal of the excavated material. The Contractor shall be responsible for surveying pre-excavation and post-excavation cross sections in order to confirm the depth of excavation.

Excavation does not include excavation for temporary erosion and sediment control structures. Contractor shall compact and re-grade excavated areas to achieve subgrade elevations in preparation for placement of imported fill.

Excavation of the historic fill material shall be disposed offsite at a New Jersey Department of Environmental Protection approved soil recycling facility.

### 2.3.2 Construction

The Contractor will not be compensated for excavation beyond the neat lines shown on the drawings.

Cross sections at the excavation surveyed by the Contractor will be used to confirm depth of excavation, in accordance with these Specifications. The information on the cross sections and plans shall show existing, final grades and any field adjustments. Contractor shall secure the services of a Professional Surveyor Licensed in New Jersey.

The Contractor shall employ appropriate health and safety procedures during the excavation, in accordance with the Health and Safety Plan to be prepared according to Section 3.1 of these specifications. Excavated material shall be contained and prevented from spilling onto cleaned or capped areas prior to disposal offsite.

### 2.3.4 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.3	Excavation	Ton

Bid Item 2.3, Excavation, will be measured by the tons of soil excavated and disposed of as certified by disposal facility weight tickets approved by the Construction Manager, and paid according to the bid unit price per ton. Payment will include the associated surveying and re-grading of excavated material. Any double handling or reuse of the material is incidental to the work. Separate payment will not be made for excavations for temporary channels, for excavations below the neat lines or limits of excavation shown on the Contract Drawings, for excavation for installation of temporary erosion and sediment control structures.

**END OF SECTION**

## 2.4 Imported Fill

### 2.4.1 General Description

Imported fill designated as Modified Fill, I-13 shall be used as the 6-inch layer between the historic fill and the 6-inch topsoil layer.

Large stockpiles of any material stored on the school site will not be allowed. The determination as to what constitutes an acceptable amount of fill, and its location, stockpiled on the school site will be solely at the discretion of the LSRP. Regardless of LSRP approval of any stockpile location, quantity, footprint, shape or the like, the Contractor shall restore the stockpile location to its original pre-construction elevation either by leaving stockpiled material in place or by importing suitable material at no additional cost to the BOE, and as approved by the LSRP, on a case by case basis. Stockpile replacement material approval will be solely at the discretion of the LSRP.

### 2.4.2 Material

Imported Fill shall consist of natural or prepared mixtures consisting of hard, durable particles of sand and gravel. The composite mixture of any type of soil aggregate shall be free of organic matter, wood, garbage, metal, debris, or lumps of clay. Material from crushing operations will not be allowed. Screened material will be acceptable.

Imported Fill soil aggregates from a single source shall be used in any one construction item, unless otherwise submitted to and approved by the LSRP. Soil aggregates from different sources may be considered, if they are of the same geological classification and have similar specific gravities and color.

All imported fill brought from off-site must meet the following requirements (from NJAC 7:26D):

1. Fill shall be uncontaminated pursuant to the more stringent of DEP's Residential Direct Contact Soil Remediation Standards or DEP's Default Leachate Criteria for Class II Ground Water found in DEP's Guidance for the use of the Synthetic Precipitation Leaching Procedure to Develop Site-Specific Impact to Ground Water Remediation Standards and shall be free of extraneous debris or solid waste (except as noted below). Additional testing, sampling, and laboratory delays will result for all changes of source of imported fill.
2. Documentation shall be provided by certification stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.
3. All proposed sources of fill must be pre-approved by the LSRP. Bills of lading shall be provided to the LSRP to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to #1 above and a description of the steps taken to confirm such.

4. The LSRP will acquire samples for analytical testing for compliance with the NJDEP Standards and Guidance for clean fill as described in Item (1) above. No fill may be brought to the site until the LSRP confirms that it meets the NJDEP Standards and Guidance. The Contractor should allow adequate time in his project schedule for the sampling, analysis, and review of analytical data.

Modified Fill, I-13

The gradation requirements for Modified Fill, I-13 shall apply to material prior to placement. If bank-run or other materials conforming to these requirements are not available, materials that conform thereto may be produced by combining and mixing. Such combining and mixing shall not be performed on-site. Stone crushings, stone dust or stone screenings may be used below the geomembrane but not above the geomembrane (as they will not properly support the native species/wildflower vegetation). Modified Fill, I-13 shall meet requirements of NJDOT Soil Aggregate I-13 modified such that 100% of material passes the 3/8” sieve. Modified Fill, I-13 shall meet the following gradation requirement:

<b>Modified, Fill I-13 Gradation Designation</b>	
Sieve Size	weight passing square mesh sieves
3/8”	100 %
#4	30-100 %
#200	0-12 %

Borrow source testing shall include the following: The Contractor shall perform gradation (ASTM D422) and Modified proctor (ASTM D1557) tests on the Modified Fill, I-13; per Section 1.10. Testing shall be at a frequency of one test per 10,000 Cubic Yards of material imported to the site and one test per borrow source. Results shall be submitted within three days of testing.

2.4.3 Submittals

Submittals shall be according to Section 1.3 and shall include the source location, copy of the borrow area permits, and results of analysis indicating material meets the criteria of these Technical Specifications.

2.4.4 Placement and Compaction

The historic fill surface shall be compacted in accordance with Section 2.4 prior to placement of the Modified Fill, I-13 layer.

Wet areas shall be stabilized by removing water prior to fill placement and compaction. This can be accomplished by either removing the water, or by placement of Coarse Aggregate (#57) fill material, as described in Section 2.6.4, and as determined by the LSRP. Backfill material in wet areas shall be end dumped. The manner of filling and advancing the backfill wedge shall be such as to force all wet material laterally to the sides of the excavation and not to trap it under the fill. Accumulation of wet material at the sides of the embankment shall be removed as the

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embankment wedge advances, mixed with dry embankment material as necessary for drying, and spread in a thin lift over dry areas to be filled.

Prior to the installation of the Modified Fill, I-13 layer, a demarcation barrier consisting of Type A orange demarcation geotextile (see Section 2.5) shall be laid down over all areas to be capped and in the excavated areas.

### 2.4.4.1 Modified Fill, I-13

Modified Fill, I-13 shall be placed as a single lift with a compacted thickness of 6". Compaction for the Modified Fill, I-13 material shall achieve 90% Standard Proctor maximum dry density.

### 2.4.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.4	Modified Fill, I-13, 6" Thick	Square Yard

The Contractor will be paid the bid price per square yard for Pay Item 2.4 for the purchase, excavation, testing, stockpiling, handling, placement and compaction Modified Fill, I-13, 6" Thick for installation as shown on the Drawings. Payment for Pay Item 2.4 is based on the horizontal plane.

**END OF SECTION**



## 2.5 Geotextiles

Geotextiles shall include the purchase, delivery, and installation of Type A orange geotextile demarcation and Type B geotextile (heavy weight geotextile), as shown on the drawings.

Materials shall meet the quality and testing requirements of Section 1.6.

Submittals shall be in accordance with Section 1.3.

### 2.5.2 Geotextile

Type A orange demarcation geotextile shall be Mirafi® Orange Delineation Nonwoven Geotextiles, Type 140NL, or Approved Equal. Type A Geotextile shall meet the requirements in Table 2.5-1.

Type B geotextiles shall be utilized under the stabilized construction as indicated on the Drawings. Type B Geotextile shall meet the requirements in Table 2.5-1.

### 2.5.3 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.5	Geotextiles, Type A	Square Yard

The Contractor will be paid the bid unit price per square yard for Bid Item 2.5, Geotextiles, Type A. Such payments shall include purchase, delivery, installation, testing, and protection. Payment for Geotextile, Type A used as shown on the drawings shall be paid for as a part of the item associated with the geotextile.

No separate payment will be made for Type B geotextile.

**TABLE 2.5 - 1  
QUALITY ASSURANCE PLAN  
GEOTEXTILES  
TESTING FREQUENCY**

COMPONENT	REQUIRED TEST/ TEST METHOD	SAMPLE SIZE	SAMPLE FREQUENCY	ACCEPTANCE/REJECTION CRITERIA (Minimum)	
				Type A	Type B
Grab Strength (lbs/percent elongation)	ASTM D4632	3' x Roll Width per roll sampled	1/lot	100/75	320/50
Puncture Strength (lbs)	CBR Puncture ASTM D6241	3' x Roll Width per roll sampled	1/lot	310	190
Trapazoidal Tear (lbs)	ASTM D4533	3' x Roll Width per roll sampled	1/lot	50	125
Apparent Opening Size (Less than US sieve)	ASTM D4751	3' x Roll Width per roll sampled	1/lot		#100
Permittivity (sec <sup>-1</sup> )	ASTM D4491	3' x Roll Width per roll sampled	1/lot	2.4	0.8
Mass Per Unit Area (oz/yd <sup>2</sup> )	ASTM D5261	3' x Roll Width per roll sampled	1 per 100,000 ft <sup>2</sup>		12

MD – Machine Direction (longitudinal to the roll)

TD – Transverse Direction (across roll width)

**END OF SECTION**

## 2.6 Coarse Aggregate

### 2.6.1 Description

Coarse aggregate shall be used for the stabilized construction entrance as shown on the Contract Drawings. Aggregates from a single source shall be used in any one construction item, unless otherwise authorized. Aggregates from different sources may be permitted, if they are of the same geological classification and have similar specific gravities and color. The coarse aggregate shall include purchase, stockpiling, hauling, and placement of pre-qualified material from off-site.

### 2.6.2 Material

Unless specified otherwise Coarse aggregate shall comply with NJDOT Specification (latest edition) for Coarse Aggregate #57, and these specifications. Coarse aggregate shall be broken stone or washed gravel. Broken stone shall be uniform in texture and quality and shall be free of organic matter, wood, garbage, metal, debris, or lumps of clay. Coarse aggregate may be produced from recycled concrete aggregate in areas other than the Leachate Collection System (LCS). Coarse Aggregate used in the LCS shall be non-calcareous. Slag will not be permitted.

#### Requirements for Clean Fill

All material brought from off-site must meet the following requirements (from NJAC 7:26E-6.4):

1. Fill shall be uncontaminated pursuant to the more stringent of DEP's Residential Direct Contact Soil Remediation Standards or DEP's Default Leachate Criteria for Class II Ground Water found in DEP's Guidance for the use of the Synthetic Precipitation Leaching Procedure to Develop Site-Specific Impact to Ground Water Remediation Standards and shall be free of extraneous debris or solid waste. Additional testing, sampling, and laboratory delays will result for all changes of source of imported fill.
2. Documentation shall be provided by certification by the supplier stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.
3. All proposed sources of fill must be pre-approved by the Engineer. Bills of lading shall be provided to the LSRP to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to #1 above and a description of the steps taken to confirm such.
4. The LSRP will acquire samples for analytical testing for compliance with the NJDEP Standards and Guidance for clean fill as described in Item (1) above. No fill may be brought to the site until the LSRP confirms that it meets the NJDEP Standards and Guidance. The Contractor should allow adequate time in his project schedule for the sampling, analysis, and review of analytical data.

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### 2.6.3 Submittals

Submittals shall be according to Section 1.3 and shall include the source location, and results of analysis indicating material meets the criteria of these Technical Specifications.

### 2.6.4 Placement and Compaction

Material shall be placed in lifts not exceeding 8 inches, and compacted by a series of at least 6 passes of the same compaction equipment used for compaction of the waste material.

Coarse Aggregate placed underwater or on wet/unstable ground shall be constructed by end-dumping methods. Care will be taken not to damage geotextiles. When backfilling is interrupted for a period of 24 hours or more, dumping shall not resume until the excavation has been inspected and approved by the Engineer. End dumping shall be used only to an elevation that permits compaction equipment. The remainder of the Coarse Aggregate fill shall be placed and compacted as specified herein.

### 2.6.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.6	Coarse Aggregate	Ton

The Contractor will be paid the bid price per Ton pertaining to the use and placement of Coarse Aggregate material if and where directed by the Engineer. Costs for obtaining off-site material, labor and equipment shall be included in the Contractor's unit price(s) for the specific use proposed.

Separate payment will not be made for Coarse Aggregate paid under other pay items. Instead, payment for the use and placement of the Coarse Aggregate will be included in the unit pricing for those items.

**END OF SECTION**

## 2.7 River Rock

### 2.7.1 General

This work is for the installation of river rock around the larger undisturbed trees, as shown on the Contract Drawings.

### 2.7.2 Material

River rock stone shall conform to the NJDOT Standard Specifications (latest edition) requirement for River Rock Stones, and these specifications.

River Rock shall be three to four inch (3" to 4") washed river rock, uniform in size. All fines shall be screened from the aggregate within a one-quarter inch (1/4") tolerance. River rock shall be composed of round rocks that may be varied in color. The material shall be free of organic and inorganic debris and trash. Acceptance of gradation will be based upon certification data provided by the supplier.

Acceptable quality; sound; free from structural defects and foreign substances, such as soil, shale, and organic materials. Recycled aggregate may be acceptable as determined by the LSRP. Slag will not be permitted.

Submittals shall be in accordance with Section 1.3.

Use rock meeting the following requirements:

- No shale seams.
- Hard and angular shaped rock with neither width nor thickness less than one-third its length.
- Minimum specific gravity of 2.5, bulk-saturated, but surface-dry basis.
- Each load of rock well-graded, from the smallest to the largest size.

#### Requirements for Clean Fill

All imported fill brought from off-site must meet the following requirements (from NJAC 7:26D):

1. Fill shall meet the clean fill requirements as specified in the NJDEP "Alternative and Clean Fill Guidance for SRP Sites, Updated December 29, 2011, Version 2.0". Additional testing, sampling, and laboratory delays will result for all changes of source of imported fill.
2. All proposed sources of fill must be pre-approved by the LSRP. Bills of lading / affidavit shall be provided to the LSRP to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is

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not contaminated pursuant to #1 above and a description of the steps taken to confirm such.

### 2.7.3 Construction

River rock shall be installed on a prepared surface as shown on the Contract Drawings. The surface for receiving river rock shall be approved by the LSRP prior to installation of river rock.

Rearrange individual rocks, if necessary, to ensure uniform distribution.

### 2.7.4 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.7	River Rock,	Ton

River rock shall be measured by the Ton of river rock delivered and installed in accordance with the Contract Plans. Measurement shall be based upon certified weigh tickets. River rock shall be installed at the thicknesses indicated herein and on the Contract Drawings and/or as directed. Installation shall include bedding preparation, and placement of river rock stone. Payment shall be based upon the Unit Price of river rock completed, installed and accepted by the LSRP. The Unit Price for river rock shall include materials (river rock stone), labor, and testing to complete the work described herein.

**END OF SECTION**

## 2.8 Revegetation

### 2.8.1 General

Contractor shall be responsible to re-vegetate all areas disturbed (including cap) during construction and as noted on the drawings. Contractor shall install permanent seed as described in this specification. Contract shall include an optional bid item 2.8.1A for installation of sod in lieu of permanent seeding.

### 2.8.2 Materials

A. Topsoil: Topsoil shall be imported from off-site, be certified by the Supplier to the Contractor as clean and meet the standards provided in this specification. Topsoil shall not contain stones, lumps, roots, or similar objects larger than 50 millimeters in any dimension and shall have a pH value in the range of 5.5 to 7.2 pH. Topsoil shall have a minimum organic content of not less than 2.75 percent nor more than 10 percent by weight. Materials from the following sources shall not be considered suitable for use as topsoil:

1. Soils having less than a 5.5 pH value or greater than a 7.2 pH value.
2. Chemically contaminated soils (all on-site topsoil).
3. Areas from which the original surface has been stripped and/or covered over such as borrow pits, open mines, demolition sites, dumps, and sanitary landfills.
4. Wet excavation.
5. Soils containing invasive plant seeds.

All imported fill brought from off-site must meet the following requirements (from NJAC 7:26D):

1. The topsoil material shall be uncontaminated prior to emplacement.
2. All proposed sources of fill must be pre-approved by the Engineer. Bills of lading / affidavit shall be provided to the Engineer to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to #1 above and a description of the steps taken to confirm such.
3. The Engineer will acquire samples for analytical testing for compliance as described in Item (1) above. No fill may be brought to the site until the Engineer confirms that it meets the NJDEP Standards and Guidance. The Contractor should allow adequate time in his project schedule for the sampling, analysis, and review of analytical data.

When the organic content of the topsoil is less than 2.75 percent, it shall be increased by adding marketable residual product or another product approved by the Engineer, at a rate necessary to attain this minimum organic content. The organic content of soils will be determined in accordance with AASHTO T194 except that the sample is to be taken from oven-dried soil passing a #10 sieve.

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Shipments of marketable residual product, if used, shall be accompanied by delivery slips with the certified weight and the name of the producer or supplier.

The gradation of the topsoil will be determined using ASTM D422. The gradation of the topsoil shall be within the following:

1. Not more than 20 percent of the material submitted from an off-site sample shall be retained on a #10 sieve.
2. If more than one-half of the sand is smaller than #35 sieve:

	<b>Percent</b>
Sand (2.000 to 0.050 mm) .....	40 - 80
Silt (0.050 to 0.005 mm).....	0 - 30
Clay (0.005 mm and smaller).....	0 - 30

3. If more than one-half of the sand is larger than 0.5 millimeters:

	<b>Percent</b>		<b>Percent</b>
Sand (2.000 to 0.050 mm) .....	40 - 80	or	40 - 75
Silt (0.050 to 0.005 mm).....	0 - 30	or	0 - 30
Clay (0.005 mm and smaller).....	15 - 30	or	0 - 30

The Bulk Density (the measurement of soil weight per unit volume) shall be within the following ranges for the listed soil types:

1. Sands <1.6
2. Loams <1.3
3. Silts/clays <1.1

B. Lime: Ground limestone (Dolomite) containing not less than 85% total carbonates as determined by ASTM C602. Lime will be ground to a fineness that will pass through the following sieves:

<u>Sieve No:</u>	<u>Percent Passing:</u>
#20	90%
#100	50%

C. Fertilizer: 5-20-20 or 5-20-10 with 50% water insoluble nitrogen.



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D. Seed: Permanent seed mixture shall consist of the following:

Species	Name	% Purity	% Germination	Seeding Rate (lbs/acre)
<i>Poa pratensis</i>	Kentucky bluegrass	90	80	86
<i>Lolium perrene</i>	Perennial ryegrass	95	85	86
<i>Festuca arundinacea</i>	Tall fescue	95	80	86
<i>Fescue spp.</i> <sup>1</sup>	Fine fescues	95	80	86
Total				344 lbs/acre

<sup>1</sup>Fine fescues include creeping red fescue, Chewings fescue, hard fescue, and sheep fescue.

Seed germination shall have been tested within 12 months of the planting date. No seed shall be accepted with a germination test date more than 12 months old unless retested.

E. Interim Crop Cover: Includes Red clover (*Trifolium pretense*) at 4lbs per acre and Annual rye – (*Lolium multiflorum*) at 30 lbs per acre.

Prior to installation of the permanent seed, the Contractor shall mow the temporary vegetative cover to a maximum height of 4 inches (4”). All cuttings shall be collected and disposed offsite at the Contractor’s expense.

F. Mulch: Cereal straw free of objectionable weeds or other deleterious materials.

G. Tackifier: Vegetable based, biodegradable polymer tackifier shall be Chemstar StarTak 600 or approved equal.

H. Water: Meeting the standards for drinking, and free of substances harmful to plant growth.

I. Sod: Kentucky Bluegrass sod, certified by the United States Department of Agriculture as being true to variety and having a healthy vigorous root system.

1. Sod shall consist of a minimum of three of the following cultivars: P105, Midnight Star, Brilliant, Award, Moonlight, Total Eclipse, Odyssey, Blackstone, or Apollo. The mix shall contain at least 40% P105.
2. Sod shall be a healthy, thick turf having undergone a program of regular fertilization and a two month pre-harvest fertilization program developed by the cultivator and approved by the Engineer.
3. Sod shall be a minimum of one (1) year old at the time of harvest.
4. Sod shall be uniform in color, density and thickness. Sod shall be free of quackgrass, annual bluegrass, bindweed, Canada Thistle, wild onion, Muhlenbergia, bentgrass, Bermuda grass, clover, common broadleaf weeds and plants varieties other than those specified.

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- K. Landscape Plants: Existing plants and landscaping that are removed or disturbed during excavation work shall be replaced in kind.
1. General: Furnish nursery-grown trees and shrubs with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
  2. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to the BOE, with a proportionate increase in size of roots or balls.
  3. Perennials: Provide healthy, field-grown plants from a commercial nursery, of same species and variety as existing.
  4. Fertilizer: Slow-Release Fertilizer, Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
    1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

Submittals shall be according to Section 1.3.

### 2.8.3 Application

The Contractor shall apply topsoil to all areas disturbed by construction and as noted on the drawings. Six inches of topsoil shall be applied on top of the Modified Fill, I-13 layer and to other disturbed or designated areas. Topsoil stripped from on-site construction areas and re-grading/excavation areas is considered contaminated and will not be reused. This on-site topsoil will be disposed of off-site.

Equipment used for placement of material shall be light ground pressure (less than 6 psi contact pressure) equipment. Any other heavy equipment used shall be as appropriate and necessary to meet the placement and compaction criteria and limitations; except the use of pneumatic-tire rollers and vibratory rollers will not be permitted.

Apply lime if the soil test shows the pH is below 5.5, and then at a rate sufficient to achieve no more than 7.0. Incorporate the lime and fertilizer into the soil to a depth of 4" by discing across the slope to minimize erosion and runoff. Apply additional soil amendments according to soil test recommendations such as offered by Rutgers Cooperative Extension. Soil tests should be conducted at a rate of 1 test per 2,500 square yards. A leveling device (wooden utility pole, steel beam or train rail) must be dragged behind the discs to level the soil for seedbed preparation.

Mulching must be completed within 7 days after seeding on all seeded areas. All seeded areas must be covered with straw mulch which will be anchored by overspraying with a tackifier. Mulch shall be applied at a rate of 1.5 tons per acre and spread such that approximately 85% of the soil surface is

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covered. The tackifier shall be applied at a rate of 194 gallons per acre and applied uniformly across the site.

Following applications of mulch, the seed bed shall be moistened by the Contractor. A muddy soil condition is not acceptable. Seeded areas shall be watered by the Contractor at no additional expense to the State as often as required to obtain and maintain a satisfactory stand of grass and containing plants in reasonable proportion to the various kinds of seed in the grass seed mixture. Deficient areas shall be reseeded and remulched at no cost to the State until a satisfactory stand of grass is established. Seeded areas shall be maintained until final acceptance of construction. Deficient, damaged or otherwise unsatisfactory areas shall be re-seeded, and re-mulched at no additional cost to the State.

Contractor shall be responsible for stabilizing areas while waiting for the allowable Seeding time period. Contractor may use Interim Crop Cover to stabilize areas waiting for Seeding. No separate payment will be made.

### 2.8.3.1 Permanent Vegetative Stabilization

All permanent seed should be applied from September 15 to October 15. All seeding shall be suspended when wind velocities exceed 5 miles per hour or as directed by the Engineer. Seeding on all areas shall be accomplished within 5 days after final grading and topsoil placement has been completed.

No earlier than one (1) week prior to seeding, the disturbed area will be cultivated to a depth of 3 to 4 inches to provide a firm but friable seedbed. A commercial fertilizer shall be applied at a rate of 200 pounds per acre (~4-5 lbs per 1,000 square feet) and shall have a composition of 5-20-20 or 5-20-10 with 50% water insoluble nitrogen. If grading has been completed and the soil is loose and friable, not eroded, crusted, or compacted, the tilling step may be omitted if so approved by the Engineer.

Seed shall be incorporated into the soil surface to a depth of ¼ to ½ inch, by raking or dragging, immediately after placement. The permanent seed mixture should be applied a rate of 45 lbs per acre. Within 24 hours of seeding, the areas shall be dragged with a chain or tine harrow and then rolled and firmed to ensure good soil to seed contact. Good seed to soil contact must be obtained. Broadcast, drop-seeding or hydroseeding techniques may be employed as needed. Flat areas should be seeded with a drop seeder, drill, or cultipacker seeder, and rolled with a corrugated roller. Slopes may be seeded with a hydroseeder. A one step hydroseeding operation will not be acceptable. Straw mulch or a suitable equivalent shall be applied at the rate of 2 tons per acre, and shall be anchored using peg and twine, mulch netting, or non-asphalt tackifier per manufacturer's recommendations. Mulching or erosion control matting placement must be completed within 7 days after seeding on all seeded areas. All slopes of less than 15% must be covered with straw mulch which will be anchored by overspraying with a tackifier. Erosion control matting shall be placed on slopes greater than 15%.

Following applications of mulch, the seed bed shall be moistened by the Contractor. A muddy soil condition is not acceptable. Seeded areas shall be watered by the Contractor at no additional expense to the State as often as required to obtain and maintain a satisfactory stand of grass, practically weed free, and containing plants in reasonable proportion to the various kinds of seed in the grass seed mixture. Deficient areas shall be mowed, refertilized, reseeded and remulched at no cost to the State

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until a satisfactory stand of grass is established. Seeded areas shall be maintained until final acceptance of construction. Deficient, damaged or otherwise unsatisfactory areas shall be re-fertilized, re-seeded, and re-mulched at no additional cost to the State.

### 2.8.3.2 Temporary Vegetative Stabilization

Temporary seeding of disturbed areas shall occur as soon as possible to minimize the possibility of erosion. Seed mix will consist of annual ryegrass, applied at a rate of 40 lbs per acre (~1 lbs per 1,000 square feet) incorporated into the soil surface to a depth of ¼ to ½ inch, by raking or dragging, immediately after placement. Straw mulch or a suitable equivalent shall be applied at a rate of 2 tons per acre and shall be anchored using peg and twine or mulch netting.

### 2.8.3.3 Installation of Sod

- A. Lay sod on athletic fields within 24 hours of harvesting on an approved finished grade surface. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
  - 1. Lay sod across slopes exceeding 1:3.
  - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.
- D. Any damage to the playing field finished grades from sod laying equipment shall be immediately repaired and hand raked smoothed prior to the installation of the sod. Topsoil and subgrade soil adjacent to the irrigation heads shall be hand raked smooth leaving the top 1" of the irrigation head exposed prior to the installation of the sod and in accordance with the recommendations of the irrigation system manufacturer and installer.
- E. All sprinkler heads will be flagged by the playing field contractor prior to the laying of the sod. The sod installer shall be required to cut sod away from all sprinkler heads at the time of laying the sod. Protect all sprinkler heads and irrigation features.
- F. Roll sod two directions with a 10'-12' wide minimum 2000 lb. turf-specific roller within one week after initial laying. Pavement rollers shall not be used. Flag all irrigation heads prior to rolling. Do not impact the irrigation system or other subsurface features during this rolling process.

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- G. Contractor shall provide a detailed maintenance schedule listing dates, application methods, materials and amounts to the Owner/Engineer to ensure the successful establishment of the newly installed turf.

### 2.8.3.4 Landscape Planting

#### Planting Bed Establishment

- A. Loosen subgrade of planting beds to a minimum depth of 4 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose as directed by the Construction Manager.
1. Apply fertilizer directly to subgrade before loosening.
  2. Spread topsoil, apply soil amendments and fertilizer on surfaces, and thoroughly blend planting soil mix.
    - a. Delay mixing fertilizer with planting soil if planting will not proceed within 5 days.
  3. Spread planting soil mix to a depth of 4 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
    - a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil mix.
- B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

#### Tree and Shrub Excavation

- A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
1. Excavate approximately two times as wide as ball diameter for balled and burlapped and container-grown stock.
- B. Subsoil removed from excavations may be used as backfill.
- C. Obstructions: Notify Construction Manager if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

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- D. Drainage: Notify Construction Manager if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

### Tree and Shrub Planting

- A. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
  - 1. Remove burlap and wire baskets from top third of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.
- B. Set container-grown stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
  - 1. Carefully remove root ball from container without damaging root ball or plant.
  - 2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

### Tree and Shrub Pruning

- A. Prune, thin, and shape trees and shrubs as directed by BOE.
- B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by BOE, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character.

### Guying and Staking

- A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of

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length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes as follows:

1. Use 2 stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; 3 stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.

### Ground Cover and Plant Planting

- A. Set out and space ground cover and plants to match pre-excavation conditions.
- B. Dig holes large enough to allow spreading of roots, and backfill with planting soil.
- C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

### Planting Bed Mulching

- A. Mulch backfilled surfaces of planting beds and other areas indicated.
  1. Organic Mulch: Apply 3-inch average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

### Cleanup and Protection

- A. During exterior planting, keep adjacent pavings and construction clean and Work area in an orderly condition.
- B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

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### 2.8.4 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.8.1	Revegetation	Square Yard
2.8.1A	Revegetation – Option Sod	Square Yard
2.8.2	Topsoil 6” Thick	Square Yard
2.8.3	Landscape Plants	Lump Sum

The Contractor shall be paid under Bid Item No. 2.8.1 at the unit price per square yard for amending soil, seeding, mulching, and watering as measured in the horizontal plane per Section 1.2.16. Separate nor additional payment will not be made for areas of seeding disturbed by the Contractor, outside of the construction operations area or areas of deficient stands of grass. Seeding shall include purchase, delivery, and application of lime, and seed to all areas where topsoil has been placed in accordance with the Soil Erosion and Sediment Control Plan. Straw Mulching shall consist of purchase, delivery, and placement of straw mulching on all areas to be seeded in accordance to these Specifications and the Soil Erosion and Sediment Control Plan. Watering shall include purchase, delivery, and application of water as needed to sustain vegetation. Contractor will not be paid separately for watering. Watering is included in the cost of Revegetation.

If Sod Option 2.8.1A is selected, the Contractor shall be paid under Bid Item No. 2.8.1A at the unit price per square yard for installation of sod and watering as measured in the horizontal plane per Section 1.2.16. Separate nor additional payment will not be made for areas of sodding disturbed by the Contractor, outside of the construction operations area or areas of deficient stands of grass. Sodding shall include purchase, delivery, and installation of sod to all areas where topsoil has been placed in accordance with the Soil Erosion and Sediment Control Plan. Watering shall include purchase, delivery, and application of water as needed to sustain vegetation. Contractor will not be paid separately for watering. Watering is included in the cost of Sodding.

The Contractor shall be paid the Bid Item No. 2.8.2 at the unit price per square yard of topsoil installed (6”), as measured in the horizontal plane, according to 1.2.16. Such price shall be considered full payment for excavation and/or delivery, stockpiling and installation of topsoil.

Payment for Bid Item No. 2.8.3 landscape planting will be made on a lump sum basis for plantings replaced within the excavation limits. Separate nor additional payment will not be made for areas of planting disturbed by the Contractor, outside of the construction operations. Planting shall include purchase, delivery, and planting. Watering shall include purchase, delivery, and application of water as needed to sustain vegetation. Contractor will not be paid separately for watering. Watering is included in the cost of Landscape Plants.

No additional payment will be made for Interim Crop Cover or other measures implemented by the Contractor to stabilize areas waiting for Seeding.

**END OF SECTION**



## 2.9 Timber Box and Mulch Cap

### 2.9.1 General

This work is for the installation of the timber boxes and mulch cap as shown on the Contract Drawings.

### 2.9.2 Material

- A. **Timber Box:** The material shall be 4-in x 4-in Pressure Treated Landscape Timber that is in accordance with American Wood-Preservers Association (AWPA) Book of Standards / American Lumber Standards Committee (ALSC). The timber shall be labeled as Ground Contact (UC4A) or higher use conditions for treated wood.
- B. **Mulch Cap:** Mulch shall consist of shredded bark mulch, wood chips as specified on the Drawings. Material shall be uniform in size, color, quality and overall appearance. Mulch shall be free of material injurious to plant growth. Sources of mulch should be free of weeds and invasive plant parts or seeds. Sawdust, dirt, garbage, or other debris mixed in the mulch is not acceptable. Contractor shall submit two pounds of proposed mulch for inspection by LSRP.
1. Wood chips shall consist of wood products having a size of two and one-half inch (2-1/2") minus with a thickness not greater than three-eighths inch (3/8"). Wood chips shall be uniform in overall appearance, color, quality, and size and are subject to approval by the LSRP. Wood chips are to be free of sawdust, dirt, twigs, excessive bark, or any other debris.
  2. Shredded bark mulch shall consist of shredded bark and wood. Maximum length of any individual component shall be two inches (2") and a minimum of seventy-five percent (75%) of the mulch shall pass through a one inch (1") screen. Mulch shall be free of germination-inhibiting ingredients. The bark mulch shall have the characteristics of retaining moisture, forming a mat not susceptible to spreading by wind or rain, and providing a good growth medium for plants. Shredded bark mulch may contain up to fifty percent (50%) shredded wood material. Wood chips are not acceptable. Bark mulch containing shredded wood shall be aged a minimum of one year prior to installation. Bark mulch shall be free of soil, rocks, and weeds.

### 2.9.3 Construction and Application

#### Timber Boxes

- Install a 6-inch deep rectangular trench for the walls of the raised timber bed. Backfill it evenly with 2 inches of paver base gravel.
- 4-in x 4-in Pressure Treated Landscape Timber
- Install the timbers in the trench and line up the corners in such a way that they join together.

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- Secure the corners together using screws designed for pressure treated wood.
- Stack the second layer of timbers on top of the first layer. Repeat this process until the stack reaches the required height of 20" above grade.
- Install even distribution of timber screws in order to join the two layers of timber together.
- Drill a 1/2-inch hole through all of the timbers. Insert a rod of rebar at least 2 feet longer than the depth of the stack into the hole.
- The rebar shall go through the timbers and at least 2 feet into the ground.
- Drill holes on the sides of the landscaping timber to enable drainage. The holes should be approximately 1/2-inch wide. Drill one hole on the side of the width of the frame and two holes on the side of the length of the frame.

### Timber Box and Mulch Cap, 18" Thick

Contractor shall install timber box and mulch cap as shown on the Drawings. Mulch shall be installed to a thickness of 18". Prior to installation of mulch cap, Contractor shall install a geotextile demarcation fabric at soil surface in accordance with Section 2.5.

### Replace Fabric and Mulch Cap in Existing Mulch Beds

In areas of existing mulch cap, Contractor shall remove existing mulch and install a geotextile demarcation fabric at soil surface in accordance with Section 2.5. Existing mulch shall be replaced to a thickness of 18". Contractor may reuse existing mulch provided it is not entrained with any site soils. Any mulch that is entrained with existing soil shall be disposed off-site at the Contractor's expenses.

### Timber Box, Existing Tree River Rock Beds

Contractor shall install timber box to contain river rock installed around existing trees as shown on the Drawings.

#### 2.9.4 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.9.1	Timber Box and Mulch Cap, 18" Thick	Square yard
2.9.2	Replace Fabric and Mulch Cap in Existing Mulch Beds	Square yard
2.9.3	Timber Box, Existing Tree River Rock Beds	Lump Sum

The Contractor shall be paid under Bid Item No. 2.9.1 at the unit price per square yard for the purchase, testing, stockpiling, handling, placement, and installation of timber box and mulch cap as measured in the horizontal plane per Section 1.2.16. Geotextile demarcation fabric shall be paid under Bid Item No. 2.5.

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The Contractor shall be paid under Bid Item No. 2.9.2 at the unit price per square yard for the purchase, testing, stockpiling, handling, placement, and installation of mulch cap as measured in the horizontal plane per Section 1.2.16. Geotextile demarcation fabric shall be paid under Bid Item No. 2.5. Payment includes all costs associated with the removal, handling, stockpiling, and replacement of existing mulch.

The Contractor shall be paid under Bid Item No. 2.9.3 on a lump sum basis for installation of timber boxes around the installed river rock around existing trees. Payment includes purchase, delivery, and installation of timber boxes. Lump Sum price shall include all work with this item, including but not limited to labor, equipment, and materials.

**END OF SECTION**

## **2.10 Fencing**

### 2.10.1 General Description

Fencing shall consist of the installation of a temporary and permanent chain link fence, including post holes, concrete, and posts, furnished and installed in accordance with the plans and these specifications. Temporary fencing shall be installed around the site, as detailed in Section 1.4. Permanent fencing shall be installed as shown on the plans.

### 2.10.2 Materials

Materials shall meet the requirements of ASTM A491 for aluminum coated steel chain link fencing (9 gauge wire with 2 inch mesh); ASTM F1083 for posts; ASTM A824 for tension wire (9 gauge); and ASTM F626 for accessories.

Fence shall consist of aluminum-coated 8' high chain link fence.

Submittals shall be according to Section 1.3.

### 2.10.3 Installation

The chain link fence shall conform to The American Association of State Highway and Transportation Officials (AASHTO) M181 and shall include, the following requirements:

1. The fence shall be installed along lines and/or locations as specified by LSRP.
2. Installation of fence will include any alterations or modifications to the ground surface which must be performed and all necessary tools normally used in fence installation. These alterations may require the use of hand tools as well as hand-held power equipment such as chain saws, power augers, powered brush cleaning devices, etc.

Alterations will also include the removal to ground level of stumps, rocks, etc. protruding above the ground surface and in the line of the fence. The Contractor is to perform the required work in such a manner as to minimize erosion that would occur as a result.

3. The height of the fence shall be eight feet (8'). The 8' fencing shall be all metal, constructed of wire fabric fastened to vertical line posts.
4. The entire fence shall be installed within site boundary lines, and the fabric shall be installed on the side of the posts facing away from the area enclosed by said lines.
5. All posts, frames and rails shall be round, hot dipped galvanized, Schedule 40, steel pipe per ASTM F 1083 with strength requirements in accordance with ASTM F 669. In addition, the fencing shall conform, at a minimum to the following sizes and lengths:

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	<u>Outside Diameter</u>	<u>Length</u>
Line Posts .....	2- 1/2 inches	11 feet
Corner Posts .....	3 inches	11 feet, 6 inches
Top Rail .....	1-5/8 inches	

Note:

- 1) Additional lengths for the above posts may be required when fencing is installed over channel crossings and other surface irregularities, and when fencing is installed with drive anchors. and for barbed wire installations.
- 2) Posts shall be 2 feet shorter where 6 foot fence is required.
6. Line posts shall be spaced not more than ten (10) feet on centers. Line post footings shall have a minimum diameter of ten (10) inches and shall extend at least six (6) inches below the bottom of the posts. Corner footings shall have a minimum diameter of fifteen (15) inches and shall extend at least six (6) inches below the bottom of the posts.
7. The bottom of the corner posts shall be a minimum of three and one-half (3-1/2) feet below finished grade; and the bottom of the line posts shall be at least three (3) feet below grade.
8. All posts shall be plumbed vertical before holes are filled with concrete, and held vertical while concrete is installed so that finished posts shall be plumb.
9. Concrete shall have aggregate no larger than one and one-half (1-1/2) inches and have minimum compressive strength of no less than two thousand (2,000) psi at twenty-eight (28) days.
10. Post holes shall be completely filled with concrete which shall extend not more than three (3) inches above grade, and will be neatly crowned to shed water.
11. When conditions require, and LSRP personnel directs, drive anchors will be used in lieu of concrete filled post holes. The installation will require the complete assembly of the anchor shoes, fastening hardware and blades. Each drive anchor assembly will be complete for each post.
12. Pull shall not be applied to posts set in concrete foundations until concrete has cured a minimum of seventy-two (72) hours.
13. All parts of the fence shall be galvanized steel, except that fittings may be of galvanized malleable iron, wrought iron or steel. Posts, rails, and braces shall be zinc coated at 1.8 oz. per square foot.
14. Tops of posts shall be provided with caps to exclude moisture. Tension wire shall connect post tops and bottoms. Tension wire shall be seven gauge coil spring steel wire and shall be galvanized.

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15. Wire fabric shall be of No. 9 gauge wire helical wound and interwoven with a mesh of two inches (2"). The fabric shall conform to Fed. Spec. RR-F-191, Type 11, 1.2 ounce per square foot coating. Top of fabric shall have knuckled selvage, bottom shall have barbed selvage.
16. Wire fabric shall be fastened to line posts with preformed clips of 9-gauge, zinc coated steel wire, spaced not more than twelve (12) inches on center. Fabric shall be fastened to top and bottom tension wires with wire ties or hog rings spaced at eighteen (18) inches.
17. Wire fabric shall be installed in frames by means of high carbon steel stretcher bars.
18. Wire fabric shall be securely fastened to all terminal posts using one-quarter (1/4) inch by three-quarter (3/4) inch tension bars and 11 gauge pressed steel bands spaced at twelve (12) inches.
19. End and corner panels shall have intermediate horizontal rails and diagonal bracing rods which shall be at least three-eighths (3/8) inch in diameter and shall be provided with turnbuckles. Straight runs between braced posts (posts that have attached hardware including the intermediate horizontal rails and diagonal bracing rods) shall not exceed five hundred (500) feet.
20. In the event unusual digging conditions such as rubble, cement covered areas, etc. are encountered, existing mechanical means must be used to dig holes for footings of the same dimensions as described in paragraphs 6 and 7 above. Core drilling of holes and embedding posts in pourable concrete or the use of bolted on plates will not be permitted without the express written approval of LSRP.

### 2.10.4 Temporary Fence

Refer to Section 1.4 for Temporary Fencing requirements

### 2.10.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.10	Chain Link Fence	Lump Sum

The Contractor will be paid the bid unit price as a lump sum for permanent fencing installed per Bid Item 2.10, Chain Link Fence, 8' high. These bid unit prices shall include the complete installation of fencing as specified.

No separate payment will be made for temporary fencing.

**END OF SECTION**

## 2.11 Site Concrete

### 2.11.1 General

This section applies to the miscellaneous concrete to be used throughout the project.

### 2.11.2 Submittals

Mix Design: Submit proposed mix design and obtain approval by LSRP prior to commencement of work.

Ready-Mix Delivery Tickets: ANSI/ASTM C94.

### 2.11.3 Environmental Requirements

Allowable Concrete Temperatures:

1. Cold Weather: Conform to maximum and minimum requirements of ANSI/ASTM C94 and ACI 306.
  - a. Do not use frozen materials or materials containing ice or snow.
  - b. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Note: Use only specified non-corrosive, non-chloride accelerator. Calcium chloride, Thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.
2. Hot Weather: Maximum concrete temperature of 90° F, conform to requirements of ANSI/ASTM C94 and ACI 305.
  - a. Prevent rapid drying during hot weather.

Do not place concrete during rain, sleet, or snow unless protection is provided.

### 2.11.4 Concrete Materials

Concrete (Ready-mixed): Shall conform to requirements of ACI 301, ACI 318, and ANSI/ASTM C94.

Cement: ANSI/ASTM C150, normal Type I or II, Portland, gray color. Cement for concrete exposed to view shall be of one manufacturer.

Coarse Aggregate: ANSI/ASTM C33, with a maximum size limited to requirements of ACI 318.

Fine Aggregate: ANSI/ASTM C33, washed, hard sand.

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Water: Fresh, clean, potable, and not detrimental to concrete.

### 2.11.5 Admixtures

Water Reducing Admixture: ANSI/ASTM C494, Type A, containing no more chloride ions than present in municipal drinking water, "Eucon WR-75", as manufactured by the Euclid Chemical Company, Cleveland, OH; "Pozzolith 200" by Master Builders; "Plastocrete 160" by Sika Chemical Corp, or equal as approved by the LSRP.

Water Reducing, Retarding Admixture: ANSI/ASTM C494, Type D, containing no more chloride ions than present in municipal drinking water, "Eucon Retarder-75" as manufactured by the Euclid Chemical Company; "Pozzolith 100XR" by Master Builders; "Plastiment" by Sika Chemical Corporation, or equal as approved by the LSRP.

High Range Water Reducing Admixture (Superplasticizer): ANSI/ASTM C494, Type F or G, containing no more chloride ions than present in municipal drinking water, "Eucon 37" as manufactured by the Euclid Chemical Company; "Sikament" by Sika chemical Co.; "Melment L10 A" by American Admixtures, or equal as approved by the LSRP.

Non-Corrosive, Non-Chloride Accelerator: ANSI/ASTM C494, Type C or E, containing no more chloride ions than present in municipal drinking water, "Accelguard 80" as manufactured by the Euclid Chemical Company, Cleveland, OH; Polarset as manufactured by W.R. Grace, Cambridge, MA; Pozzutec 20 as manufactured by Masterbuilders, Cleveland, OH; or equal as approved by LSRP. The admixture manufacturer must have long-term non-corrosive test data from a independent testing laboratory (of at least 1 year duration) using an acceptable accelerated corrosion test method such as that using electrical potential measures.

Air Entrainment Admixture: ANSI/ASTM C260.

Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.

Certification: Written conformance with the above mentioned requirements, and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the LSRP.

### 2.11.6 Curing Materials

Liquid Membrane Forming Compound Type: Do not use curing and sealing compounds which are not compatible with adhesives and cements for finish materials when scheduled to go over concrete substrates, and where concrete is scheduled to receive special coatings or toppings.

1. Type: Clear styrene acrylate type, 30% solids content minimum. Sodium Silicate compounds are prohibited.
2. Moisture Loss: Test data from independent testing laboratory indicating a maximum



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moisture loss of 0.030 grams per sq. cm. when applied at a coverage rate of 300 sq.ft. per gallon.

3. Manufacturer: "Super Rez Seal" as manufactured by The Euclid Chemical Co.; "Vulkem 2101" by Mameco International, Inc.; "Masterkure 30" by Master Builders, or equal as approved by the LSRP.
4. Certificate: Manufacturer's certification required.

Non-Liquid Membrane Type: When Liquid Membrane Type curing compounds are not compatible, or specified not to be used, use one of the following materials.

1. Regular concrete "CURING PAPER", ANSI/ASTM C171.
2. Polyethylene film, ANSI/ASTM D2103, 6 mil thick, "WHITE" opaque type.
  - a. Black or Clear-type polyethylene-type films will not be acceptable.

### 2.11.7 Concrete Mix

Mix concrete only in quantities for immediate use, and in accordance with ANSI/ASTM C94.

Mix Proportioning: Concrete design mixes are based on a minimum 28 day compressive strength as follows:

<u>Location</u>	<u>Req'd 28 day Compressive Strength P.S.I.</u>	<u>Max. Water Cem. Ratio</u>	<u>Air Content</u>
Exterior site concrete unless noted otherwise on the Drawings	4,000	0.40	4.0%- 6.0%

Notes: All coarse aggregate size shall be AASHTO #57.

Proportions for concrete mixes shall be selected by ACI 301, Section 3.9. All mixes will be permitted without prior approval of the LSRP.

Where the concrete production facility can establish the uniformity of its production for concrete of similar strength and materials based on recent test data, the average strength and materials based on recent test data, the average strength used as a basis for determining mix design proportions shall exceed the specified strength by the requirements of ACI-318-83, Section 4.3 or ACI-301-84, Section 3.9.

When a concrete production facility does not have test records for calculation of standard deviation, the required average strength shall be at least 1200 psi greater than the specified design strength.

All concrete containing a high-range water-reducing admixture (superplasticizer) shall have a maximum slump of 8" (after the addition of the admixture) unless otherwise approved by the LSRP. The concrete shall arrive at the job site at a slump of 2" plus or minus 1", be verified, then the high-range water-reducing admixture added to increase the slump to the approved level. After adding the

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high-range water reducing admixture operate the mixer at mixing speed as directed by the admixture supplier. All other concrete shall have a maximum of 3" for slabs and 4" for other members. This maximum slump may not be exceeded except by the job-site addition of the specified high-range water-reducing admixture (superplasticizer). In those portions of the structure where member dimensions and/or congestion due to reinforcing steel prevent the proper placement and consolidation of the concrete at the maximum slump specified, superplasticizer shall be used by the Contractor in lieu of increasing the slump of non-superplasticizer concrete by the addition of water.

All concrete shall contain the specified water-reducing retarding admixture and/or high-range water-reducing admixture (superplasticizer). All concrete slabs, placed at air temperatures below 50° F shall contain the specified non-corrosive non-chloride accelerator. All concrete for industrial slabs, concrete required to be watertight and concrete with a water-cement ratio below 0.50 shall contain the specified high-range water-reducing admixture (superplasticizer).

### 2.11.8 Placing Concrete

Place concrete in accordance with lines and levels indicated on drawings and in accordance with requirements of ACI 304.

Ensure all expansion joint material, anchors, sets, plates, and other items to be cast into concrete are in place and held securely.

Ensure reinforcements, inserts, embedded parts, formed expansion and contraction joints, and other items are not disturbed during concrete placement.

Convey concrete from mixer or transporting vehicle to place of final deposit as rapidly as practical by methods which will prevent separation or loss of the material.

Regulate rate of placement so concrete remains plastic and flows into position.

Do not deposit concrete that has partially hardened.

Deposit concrete in continuous operation until panel or section is completed.

Place concrete in continuous horizontal layers.

Slabs-On-Grade: Place slabs in "long strip pattern", in accordance with ACI 302.1R, Chapter 6. Pattern shall be formed by use of prefabricated tongue and grooved metal key joints. Divide placed concrete strips into approximate square sections by making transverse "control joints" as specified below.

### 2.11.9 Consolidating Concrete

During and immediately after depositing, all concrete shall be thoroughly consolidated by means of suitable tools, as recommend by ACI.

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### 2.11.10 Concrete Finishing

#### Formed Concrete:

1. Tops of Forms:
  - a. Strike off concrete smooth at tops of forms.
  - b. Float to texture comparable to formed surfaces.
2. Formed Surfaces:
  - a. Spade Finish: Surfaces not exposed to view shall be given a spade finish.
    - 1) Patch tie holes and other defects after form removal.
    - 2) During placement of concrete, force spade or similar device into concrete adjacent to form and then pulling away from form, to bring mortar to form surface.
    - 3) Remove fins from finish surface.
  - b. Rubbed Finish: Surfaces exposed to view shall be given a rubbed finish.
    - 1) On patched surface specified above, rub surface with carborundum stone to eliminate fins and irregularities, but not to cut the general surface of the concrete.
    - 2) Brush finishing or painting with grout or neat cement will not be permitted.
    - 3) Corners or edges shall be slightly rounded by use of the carborundum stone.

#### Flatwork:

1. Tolerances: Place, consolidate, strike off level, float and trowel smooth, and maintain surface flatness with maximum variation of  $\frac{1}{8}$ " in 10'. Pitch to drains  $\frac{1}{4}$ " per ft. unless noted otherwise on drawings.
2. General:
  - a. Place, consolidate, strike off and level concrete.
  - b. Do not work surface until ready for floating.
  - c. Power float surface on disappearance of water sheen.
  - d. Hand float areas inaccessible to power float.

### 2.11.11 Curing and Protection

Beginning immediately after placement, and final finishing, cure and protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

Liquid Membrane Curing Compounds: Curing shall be by application of specified curing and sealing compound, the specified dissipating resin-type compound, or by application of waterproof sheet materials conforming to ASTM C171. Liquid membrane-forming curing and sealing compounds shall be applied in accordance with the manufacturer's recommendations. Curing

compounds must be applied immediately after final finishing. For curing by the waterproof sheet material, the concrete must be continually moist-cured for a minimum of seven days. The curing process must begin immediately after final finishing.

The curing period shall be continuous for a minimum duration of seven days when the ambient temperature exceeds 50° F.

#### 2.11.12 Defective Concrete

With prior approval of LSRP, as to method and procedures, all repair of defective areas shall conform to ACI 301, Chapter 9, except bond shall be achieved by use of one of the specified bonding materials.

All structural repairs, with prior approval of LSRP, as to method and procedures, shall be made by use of the specified epoxy adhesive and/or epoxy mortar.

#### 2.11.13 Concrete Testing

The Contractor will take a minimum of one set of four cylinders per 50 Cubic Yards, with at least one cylinder collected for each day that concrete is placed. Test one cylinder in compression at 7 days and two at 28 days in accordance with ASTM C 39; keep one cylinder in reserve for additional testing.

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
  - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.
  - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.

- b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
  - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
  - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing by the Contractor to the LSRP and concrete manufacturer within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by LSRP but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by LSRP. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by LSRP.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

#### 2.11.14 Measurement and Payment

Separate payment will not be made for any site concrete work. Payment for concrete used for other portions of the project shall be included in the payment for the respective item.

**END OF SECTION**

### 3.1 Health and Safety Plan

#### 3.1.1 General Description

General: This Section describes the minimum safety, health and emergency response requirements for remedial activities at the Orchard Elementary School in the Village of Ridgewood. Requirements of the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, and applicable publications of this Section provide the basic safety program for this project. The responsibility of development, implementation, and enforcement of the Health and Safety Plan (HASP) lies with the Contractor and his health and safety personnel. The HASP developed by the Contractor shall include programs for accident prevention, personnel protection, emergency response/contingency planning, and air monitoring. The Contractor's HASP must include contingency plans for alerting the adjacent occupants of the surrounding buildings and evacuating them if necessary.

Documents to be Supplied by Contractor:

- Site-specific Health and Safety Plan. The site-specific HASP shall be furnished as a separate document and shall pertain only to the named site activity. A corporate safety and health manual may be furnished along with the HASP but this shall not satisfy the site-specific HASP requirement. The Contractor shall supply four (4) copies of the Health and Safety Plan to BOE for comment and approval and one (1) copy to the LSRP in accordance with Specification Section 1.3.

The BOE will not “Approve” a Contractor’s Health and Safety Plan, only provide comments and acceptance.

#### 3.1.2 Applicable Publications

Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH, 85-115.

OSHA Safety and Health Standards: 29 CFR 1910 and 1926.

USEPA Standard Operating Safety Guides: November 1984.

NJDEP: Health and Safety Plan - Minimum Requirements (see Volume 4)

#### 3.1.3 Health and Safety Plan (HASP) Closeout Report

At the completion of the project, the Contractor shall provide the BOE and the LSRP with a HASP Closeout Report, as per specification section 1.3. The HASP Closeout report presents the BOE and the LSRP with an overall safety summary. In this report, the Contractor shall provide documentation confirming adherence to the HASP requirements. At a minimum, the HASP Closeout Report shall include, but not be limited, to the following.

1. Health and Safety Officer’s (HSO) Daily Report.

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2. During potentially hazardous work, Contractor is to provide health and safety field notes and a write-up summary. This shall include:
  - a) Contaminants encountered, conditions present, and practices applied in the specific operation.
  - b) Confirming proper adherence to HASP and proper protection equipment.
  - c) Affirmation that proper decontamination methods, as required by the HASP, have been met, refer to section 3.1.3. (decontamination certificates if applicable).
  - d) Summary of the necessary engineering and/or work practice controls incorporated to reduce and maintain employee exposures during potentially hazardous tasks.
  - e) The PPE program incorporated by Contractor shall be included.
3. Copies of employee Healthy and Safety training records and safety program certifications shall be included. This also includes respirator fit testing certificates.
4. OSHA Occupational Sampling Results
5. Daily air monitoring report/results.
6. Medical Clearance Forms for each worker involved in on-site operations shall be included.
7. If any incidents, accidents, injuries, or other emergencies occurred on site, OSHA 300 logs (accident and exposure reports), and the implemented emergency response plan are to be included in the HASP closeout report. The implemented emergency response plan in HASP closeout report should be consistent with the approved HASP.

### 3.1.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
3.1	Health and Safety Plan & Implementation	Lump Sum

Payment for the development and final approval of the Health & Safety Plan (HASP) shall be made on a lump sum basis under Bid Item 3.1. Payment for the implementing of the Health & Safety Plan (HASP) shall be made under Bid Item 3.1. **No change** in price will be allowed for changes in level of protection required for field personnel during construction. Bid Item 3.1 also includes payment for the collection and analysis of all air quality samples and production of the Health and Safety Closeout Report.

**END OF SECTION**

## 3.2 Construction Plan

The Construction Plan shall address, at a minimum, the following items: site operations plan and schedule, environmental pollution control, dust and vapor control, stormwater pollution prevention plan, security, traffic control, contact water management, and construction quality control.

### 3.2.1 Site Operations Plan and Schedule

The Contractor shall provide a schedule for the tasks needed to complete the remedial construction. The Construction Schedule shall be submitted. Separate payment for this task will not be made.

#### 3.2.1.1 Work Included

This item includes the preparation of the Project Construction Schedule and the Site Operations Plan. The Contractor shall perform all work to complete the job within the approved construction schedule. Also, construction operations shall be sequenced and scheduled to give consideration to site conditions, disposal of contaminated material, seasonal effects and any other factors considered relevant by the Contractor.

#### 3.2.1.2 Site Operations Plan

The Contractor shall develop and submit a Site Operations Plan, describing all major site construction activities and showing the sequence of the activities in accordance with the Project Construction Schedule. This Plan shall describe all major construction activities including preparation and submittals of plans, permit applications, shop drawings, materials testing, product data sheets, and operating and maintenance instructions in accordance with Section 1.3 – Submittals.

The Site Operations Plan shall include provisions for daily pre-work safety/progress meetings with the BOE Construction Manager and/or the LSRP and the Project Construction Schedule.

Drawings, diagrams, and sketches should be included in the Site Operations Plan as well as references to the Plans (Health and Safety Plan, etc.) in Section 3 to convey how construction will be coordinated with site operations.

#### 3.2.1.3 Project Construction Schedule

1. The Project Construction Schedule developed as part of this contract shall be included in the Site Operations Plan. The schedule shall be prepared by the Critical Path Method. The Contractor shall provide with the project schedule submission a written narrative explaining the schedule and the Contractor's general approach for achieving Substantial Completion and Completion as specified in this Contract, including an explanation of calendars used in the schedule. The Contractor shall also provide with the project schedule submission a resource plan indicating the quantity and type of equipment that will be employed and the size and character of the proposed labor force for each operation.



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2. The Project Construction Schedule shall take into consideration the effect of any physical constraints or time constraints posed by the Contract Documents or regulatory permits including, but not limited to, the requirements of Temporary Erosion and Sediment Control Plan; Construction Water Management Plan.

Submission of the Project Schedule does not constitute notice to proceed. Approval of the Schedule by the LSRP does not modify the Contract or constitute Acceptance of the feasibility of the Contractor's logic, activity durations, or assumptions used in creating the schedule. If the schedule reflects a completion date different than that specified in the RFB, this does not change the specified completion date. If the LSRP approves a schedule that reflects a completion date earlier than that specified as the Contract Time, the BOE will not accept claims for additional Contract Time or compensation as the result of failure to complete the Work by the earlier date shown on the CPM schedule. Float is the amount of time that an activity may be delayed from its early start without delaying Completion. Float belongs to the Project and is not for the exclusive use of the Contractor or the Department.

### 3.2.1.4 Major Construction Activities

The Contractor shall describe all major construction activities. Sequencing, crews, size and type of major equipment, and special considerations or conditions shall be described.

### 3.2.1.5 Permits

The Contractor shall show a schedule for obtaining all necessary permits including those to be obtained by others, in accordance with Section 1.2.23 and Section 3. This schedule shall be reflected in the Project Construction Schedule.

## 3.2.2 Environmental Pollution Control

The Contractor shall prepare an Environmental Pollution Control Plan and comply with its provisions. The Contractor shall prepare an Environmental Pollution Control Plan describing how environmental pollution from the construction activities will be prevented. The Contractor shall perform all work in such manner as to minimize the pollution of air, water, soil, or land, and shall control noise, the disposal of trash and debris, as well as other pollutants. The Contractor shall comply with all applicable federal, state, and local laws, rules, and regulations pertaining to environmental pollution control.

Prior to commencement of the work at the site, the Contractor shall submit in writing a detailed plan in accordance with Section 1.3 for implementing the requirements for environmental pollution control specified herein, and meet with representatives of the LSRP to review and alter the proposal as needed for compliance with the environmental pollution control requirements.

### 3.2.2.1 Implementation

Prior to the start of any on-site construction activity, the Contractor and the LSRP shall make a joint

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condition survey after which the Contractor shall prepare a section of his Work Plan indicating on a layout plan the arrangement he proposes in using areas immediately adjacent to the site of the work and adjacent to the designated storage area and access route(s), as applicable.

The Contractor shall confine construction activities to areas defined for work on the Drawings or specifically assigned for his use. Where, in the opinion of the LSRP, trees and/or shrubs may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his other operations, the LSRP may direct the Contractor to provide temporary protection of such trees/shrubs by placing orange snow fence or silt fence.

The Contractor shall assure the proper disposal of fuels, oils, bitumens, calcium chlorides, acids, alkalis, or other potentially harmful construction-related materials, both on and off the site premises at no additional cost to the BOE. Special measures shall be taken to prevent such materials from entering public waters.

As part of the Environmental Pollution Control Plan and prior to on-site construction, the Contractor shall submit a description of his scheme for controlling and disposing of trash and debris generated as a result of the work under this Contract. The Contractor is responsible for disposal of garbage generated by the BOE and the LSRP. Provision of a dumpster, if needed, shall be addressed in the Plan.

The Contractor shall maintain all excavations, backfill areas, stockpiles, and all other work areas free from excess dust as in accordance with the Dust and Vapor Migration Control Plan. Approved temporary methods consisting of sprinkling, approved dust palliatives, or similar methods will be permitted to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard is imminent in accordance with the Dust Control Plan.

The Contractor shall, upon receipt of notice in writing of any non-compliance with the foregoing provisions, take immediate corrective action. If the Contractor fails or refuses to comply promptly, the BOE may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop order shall be claimed as damages by the Contractor unless it was later determined that the Contractor was in compliance.

### 3.2.3 Dust and Vapor Migration Control Plan

The Contractor shall conduct all site operations in such a way to minimize dust and vapor generation. The Contractor's attention is directed to the fact that the site contains contaminated soils.

The Contractor shall prepare and submit for approval by the LSRP a Dust and Vapor Migration Control Plan in accordance with Section 1.3 which will present the Contractor's procedures for control of dust and vapor generation and measures to prevent off-site dispersion.

#### 3.2.3.1 Implementation

The Contractor shall conduct his operations to minimize the generation of dust or vapors. In general, action is required to control dust whenever the three (3) hour average concentration in air exceeds 5 mg/m<sup>3</sup>, as measured at the property boundary. At a minimum the Contractor shall also conduct dust

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suppression actions at least twice a day during excavation and regrading activities. Additional actions may be needed if dust reduces site visibility or if directed, by the LSRP.

During excavation and regrading operations, the Contractor shall sample the air as specified in the H&S plan to determine the dust and explosive vapors concentration. Dust monitoring instruments shall be installed at a minimum two (2) downwind locations, unless otherwise directed by the LSRP. When the dust or vapor concentration exceeds the action level identified in the HASP, the Contractor shall reduce the concentration by changing his operations to control or minimize the production of dust and vapors. The dust may be controlled by water or non-toxic chemical spray, or similar means. The Contractor shall cease operations if he is unable to control the dust or explosive or malodorous content of the site air.

After the site excavation has commenced, and the site soils or waste is exposed, dust may be lifted and carried by the wind. The Contractor shall develop a plan to reduce such wind entrainment, by covering the exposed soils or waste, or coating them to reduce the hazard.

The Contractor shall maintain the vehicles and equipment necessary for control of dust at or near the site of the work, so that minimum delay occurs when dust control operations become necessary.

The Contractor shall also observe the dust, explosive gases, and malodorous gases concentrations at the perimeter of the site, to avoid creating hazards on neighboring properties. The Contractor shall report the results of the Air Sampling data to the LSRP within 24 hours of obtaining results. Any action level results shall be reported verbally immediately.

### 3.2.4 Stormwater Pollution Prevention Plan (SPPP)

The SPPP shall include the preparation and implementation of a Stormwater Pollution Prevention Plan and compliance with its provisions. The Contractor shall develop a SPPP prior to the start of any site activities. The Plan shall include contingency measures for potential spills of construction-related materials such as diesel fuel and discharges from dewatering of contaminated surface water pits or ponds on or surrounding the site.

#### 3.2.4.1 Implementation

The Contractor shall implement, maintain, supervise, and be responsible for the SPPP. The Contractor shall provide methods, means, and facilities required to prevent contamination of soil, water, atmosphere, equipment, or material by the discharge of materials from spills due to Contractor's operations.

The Contractor shall provide equipment and personnel to perform emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. This collected spill material shall be disposed properly at the Contractor's expense.

The Contractor shall provide equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, or material. Decontamination residues shall be disposed properly at the Contractor's expense.

The Contractor shall submit a SPPP in accordance with Section 2.2.5.2 and the following:

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1. Procedures for Containing Dry and Liquid Spills.
2. Discharge locations for dewatering activities (to be located on the top of the landfill).
3. Listing of Absorbent Material available on-site.
4. Procedures for Storage of Spilled Materials.
5. Decontamination Procedures. Decontamination procedures may be required after cleanup to eliminate traces of the substance spilled or reduce it to an acceptable level. Acceptable level shall be determined by the LSRP. Complete cleanup may require removal of contaminated soils. Personnel decontamination shall include showers and cleansing or disposing of clothing and equipment. All contaminated materials such as soil and wood that cannot be decontaminated or disposed on top of the wastefill must be containerized properly, labeled, and disposed properly as soon as possible, at no additional cost to the State.
6. Spill Incident Report. A written report detailing the spill or discharge shall include, at a minimum, the cause and resolution of the incident, outside agencies involved, and date the incident occurred. The report shall be submitted to the LSRP within 48 hours of the incident. The Contractor shall document the location of all spills on the Site Drawings and submit the Drawings to BOE at project completion.
7. Notification. The BOE shall be notified immediately of a spill or discharge that impacts the environment by contacting the NJDEP 24-hour Hotline (1-877-WARNDEP). The US Environmental Protection Agency, Region II shall be notified if the spill exceeds the designated reportable quantity.

### 3.2.5 Security Plan

Security Plan shall consist of preparation and implementation of a plan for site security during the construction. The Contractor shall prepare a Security Plan that describes the security measures to be employed during the construction to prevent site entry by unauthorized persons. The Security Plan shall include at least the following items and be submitted in accordance with Section 1.3:

1. Identification. Procedures for identifying those persons authorized to enter the site.
2. Personnel List. A list, kept current throughout the project that identifies personnel authorized to enter the site.
3. Entrance Procedure. Proper procedures for granting access to the site and providing for proper training if required.
4. Vehicles. A plan for maintaining a list of vehicles entering and leaving the site.
5. Visitors. Identify procedures to be followed in maintaining a visitor log, escorting visitors to the site, and providing for prior approval by the LSRP.

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6. Liability Releases. Explain procedures for obtaining signed liability releases from visitors to the site.
7. Access Control. Outline the procedures to be implemented to ensure that all site access is through the main gate, unless authorized otherwise by the LSRP.
8. Non-Working Hours Security. Provide explanation of non-working hours security measures.

The Contractor shall be responsible for maintaining security. The security of stockpiled materials is the responsibility of the Contractor. The Contractor shall provide sufficient security personnel to accomplish the work outlined in the Security Plan. The LSRP or BOE shall have the right to approve or reject security personnel assigned to the project site at any time during Contractor activities. Designated security personnel must have access to a telephone 24 hours a day. The BOE's review and approval with regard to the security plan will be limited to public safety and control of waste.

The Contractor shall ensure that all security personnel entering exclusion/ contamination or contamination/ reduction zone, as defined by the Health and Safety Plan, have received the OSHA 40 hour health and safety training for hazardous site operations.

The Contractor shall furnish and install the security fence, including gates, at mobilization for the project in accordance with the appropriate sections of these specifications and the drawings.

### 3.2.6 Traffic Control Plan

This work shall consist of the planning for and the carrying out of maintenance and protection of vehicular or pedestrian traffic and to provide for the safe and convenient passage of such traffic, within the scope of the Project. Maintenance and protection of traffic includes furnishing, assembling, placing, and relocating traffic control devices, including pavement markers, and removing them when they are no longer required. The Contractor shall prepare and implement a Traffic Control Plan.

Traffic control devices need not be new but must be in good condition as approved. Traffic control devices, other than those shown on the Plans, or as directed by the LSRP, shall conform to the Manual on Uniform Traffic Control Devices. The traffic control devices will be placed as per the approved Traffic Control Plan.

The number and location of traffic signage shall conform to the "Manual for Uniform Traffic Control Devices." When construction signs conflict with existing signs, the existing signs shall be covered. When construction signs are no longer required, they shall be removed. If they are temporarily not required, such as overnight, they shall be either temporarily removed or covered. Signs covered from view of the traveling public shall be completely covered with opaque material securely fastened so that it does not blow in the wind. Burlap shall not be used.

Prior to beginning construction, traffic control devices shall be placed where shown on the Plans or directed by the LSRP. Traffic control devices shall be kept clean and maintained in good

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condition until no longer required for the Project, at which time they shall be disposed of.

Traffic control devices shall also be placed as directed to provide traffic control for personnel doing inspections, sampling, testing, or taking measurements required for the Project.

Equipment or machinery having crawler tracks or other treads that may mar or damage pavements shall not move over or operate from newly constructed or existing pavements unless precautions are taken to prevent such damage.

Any damage to newly constructed or existing pavements within the limits of the Project or adjacent thereto, which in the opinion of the LSRP was caused by the Contractor's operations, shall be repaired as directed, at the Contractor's expense, or the repairs will be made by the BOE and the cost of such repairs will be deducted from any monies due or that may become due the Contractor.

Work which closes or alters the use of existing roadways shall not be undertaken until adequate temporary or permanent provisions for traffic have been approved.

Where it is necessary for pedestrians to cross or walk within the limits of the Project, temporary sidewalks shall be provided, maintained, and removed as directed.

Construction above vehicular or pedestrian traffic shall not be performed unless there is explicit provision made in the Special Provisions or specific written permission given. Subject to such provision or permission, necessary devices and means to protect such traffic from falling construction materials or other objects and from painting operations shall be provided at no cost to the State during the time that construction is performed above traffic. The precautions to be taken for the protection of traffic are subject to approval.

The traffic control plan provides for the treatment of conditions caused by or encountered during the Work on the Project. The Work shall be performed in accordance with the traffic control plan.

### 3.2.6.1 Traffic Control Coordinator

Prior to the start of construction operations, the Contractor shall assign a supervisory-level employee to be the traffic control coordinator. The LSRP shall be notified as to the name and method of contacting the traffic control coordinator on a 24-hour basis.

The duties of the traffic control coordinator shall include, but shall not be limited to, the responsibility for ensuring the following:

1. Set-up and removal of all traffic control devices in accordance with the Contract Documents.
2. Correction of deficiencies of traffic control devices within two hours of discovery or notification by the LSRP.
3. Repositioning traffic control devices displaced by traffic or construction equipment.
4. Covering or uncovering signs as appropriate.
5. Repairing or replacing damaged traffic control devices.

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6. Replacing batteries, light bulbs, control panels, and other electrical components.
7. Keeping all traffic control devices clean.
8. Adding fuel and oil to power units for traffic control devices.
9. That all Contractor equipment and vehicles are properly stored and packed so as not to create a traffic hazard.
10. Properly storing traffic control devices when not in use.

Trained flaggers shall be in good physical condition, including sight and hearing, mentally alert, and shall have a courteous but firm manner, neat appearance, and a sense of responsibility for the safety of the public. Trained flaggers shall wear an orange or fluorescent orange garment such as a shirt, jacket, or vest. This garment shall be reflectorized for nighttime operations with reflective material that shall be orange in color. When controlling traffic, trained flaggers shall be equipped with STOP/SLOW paddles, and shall follow the procedures stipulated for flaggers in the Manual on Uniform Traffic Control Devices. The Traffic Control Plan will also include traffic control personnel and devices, as needed.

### 3.2.7 Construction Water Management Plan

The Contractor shall manage and dispose of water generated during construction. The Erosion and Sediment Control Plan requires prevention of run off from the site, and prevention of run on from areas adjacent to the site. The Contractor shall continue to maintain that separation of the site from adjacent areas under storm conditions. Contaminated water and non-contaminated water shall be managed separately.

Construction water generated during activities at the Ridgewood Orchard Elementary School shall consist of:

Decontamination Water - Water from personal and equipment decontamination activities.

Non-contaminated Water - Water not in contact with contaminated material, or may be run-on from clean areas adjacent to the site or run-off from non-contaminated areas.

Measures shall be taken to minimize generation of contact water. Contact water shall be re-routed to the top of the waste mound which is encircled by the perimeter access road.

Prior to mobilization to the site, a Construction Water Management Plan shall be submitted to the BOE for approval in accordance with Section 1.3 showing complete details of systems to be implemented pursuant to the requirements of this section. No work will be permitted until this Plan has been approved. Modifications to the Plan which may become necessary as a result of the Contractor's method of work or which may be required by other agencies shall be submitted to the BOE for approval.

The Construction Water Management Plan shall include a plan of the site showing sub areas and the sequences of construction activities. Based on these sequences, the Plan shall indicate construction water routes, collection and diversion features, and disposal or discharge locations for each phase of construction. The Construction Water Management Plan submittal shall be in accordance with Section 1.3.

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The Plan shall show or describe measures to control decontamination water, control the origin of construction water and to maintain separation of contact (potentially contaminated) water from uncontaminated water during each phase of construction.

### 3.2.7.1 Decontamination Water Management

Decontamination water shall be managed separately. Decontamination water generated during activities at the Ridgewood Orchard Elementary School shall consist of water from personnel and equipment decontamination activities.

Decontamination Water shall be considered to be a regulated wastewater. Measures shall be taken to minimize generation of decontamination water.

Decontamination water shall be collected and disposed offsite.

1. Decontamination Water - Generated from decontamination of personnel and equipment shall be collected and stored separately from other contaminated water. A tank will be included at the equipment decontamination pad for this use. The Contractor must provide a storage tank for personnel decontamination water where appropriate.
2. Disposal - Decontamination water shall be disposed offsite. No separate payment will be made for off-site disposal of the decontamination water. However, this disposal cost is incidental to the work and its cost should be included in the price of work associated with the generation of contaminated water.

### 3.2.8 Decontamination Facilities

Decontamination Facilities shall include the provision, installation, and operation of decontamination facilities for equipment, and materials. The Contractor shall dispose of all decontamination liquids. Contaminated and/or uncontaminated liquids are anticipated to result from decontamination of equipment and personnel working on-site within the exclusion zone.

Rinsate Water - Water resulting from decontamination of equipment shall be collected and disposed offsite except for chemical decontamination of sampling equipment using acetone, in which case the acetone shall be separated from the other decontamination water, drummed, and disposed of in accordance with appropriate regulations at no additional cost to the BOE.

Equipment Decontamination Stations: The Contractor shall provide equipment decontamination stations within the Contamination Reduction Zones for removing soil from all vehicles and equipment leaving the working area. As a minimum, these stations shall include a high pressure water wash area for equipment and vehicles and a steam-cleaning system for use after the mud has been cleaned from the equipment. A designated clean area shall be established within the Reduction Zone for performing equipment maintenance. This area shall be used when personnel are required to come in contact with ground soil, i.e., crawling under a vehicle to change engine oil. A temporary pad constructed of an impermeable and chemical resistant material such as the decontamination concrete pad shown on the drawings shall be acceptable. The pad shall be capable of handling on- and off-site vehicles without loss of integrity and shall include a sump for collection of decon water. All equipment within the Exclusion or Contamination Reduction Zones shall be



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decontaminated prior to maintenance work.

General: Any item taken into an Exclusion Zone must be assumed to be contaminated and must be carefully inspected and/or decontaminated before the item leaves the area. Vehicles, equipment, and materials brought into the Exclusion Zone shall remain in the Exclusion Zone until no longer necessary to the project. All contaminated vehicles, equipment and materials shall be cleaned and decontaminated to the satisfaction of the BOE on-site coordinator prior to leaving the site. All construction material shall be handled and brought on-site in such a way as to minimize the potential for contaminants being carried off-site. Separate, clearly marked parking and delivery areas shall be established in the Support Zone.

### 3.2.9 Construction Quality Control Plan

The Contractor shall prepare a Construction Quality Control Plan that will include the following:

- Identify the project organization
- Responsibilities
- Construction Quality Assurance (CQA) officer
- CQA Support personnel
- Personnel qualifications
- Project meetings
- Inspections
- Testing
- Daily Record keeping
- Inspection documentation
- Final Documentation
- Storage of records

The Contractor shall ensure that Construction Quality Plan conforms to the requirements of the plans and specification.

### 3.2.10 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
3.2	Construction Plan & Adherence	Lump Sum

The Contractor will be paid 20% of the lump sum basis and will not be paid until the Construction Plans are complete and accepted by the BOE. Payment for Implementation of Construction Plan, shall be paid under the remaining Bid Item 3.2. The contractor shall be responsible for any fines incurred for spills due to their work.

**END OF SECTION**