SECTION 204 - CONTROLLED LOW STRENGTH MATERIAL (CLSM)

204-1 DESCRIPTION. The work consists of mixing and placing Controlled Low Strength Material (CLSM) or Controlled Low Strength Material (CLSM, No Fly Ash) at the locations shown on the plans or where ordered by the Engineer.

204-2 MATERIALS

204-2.01 Tests and Control Methods. Provide CLSM containing cement and water. At the Contractor’s option, it may also contain fly ash (unless the No Fly Ash item is specified), aggregate, or chemical admixtures in any proportions such that the final product meets the strength and flow consistency requirements included in this specification.

Provide materials meeting the requirements of the following subsections:

Portland Cement, Type 1 or Type 2: § 701-01
Water: § 712-01

If used, provide materials meeting the following requirements:

Aggregates: Gradation: 100% passing the 2.0 mm sieve and a maximum of 20% passing the 75 μm sieve.
Fly Ash: Provide fly ash that complies with the requirements of § 711-10. Waive the loss on ignition requirement.
Chemical Admixtures: Provide admixtures that comply with § 711-08. The mix may include high air generators manufactured for CLSM.

Certify that the CLSM will have a 28 day compressive strength between 275 kPa and 1030 kPa, and provide this certification to the Engineer.

Design the CLSM mix so that it sets within the time stated in the contract documents. If no set time is required by the Department, design the set time to conform with the Maintenance and Protection of Traffic scheme and requirements of the project.

Prior to placement, the CLSM will have a minimum diameter spread of 200 mm as determined from the following procedure performed by the Engineer:

- Fill a hollow plastic or metal cylinder 150 mm in length and 75 mm inside diameter with the CLSM and strike off the surface.
- Raise the flow cylinder 150 mm in a continuous motion without rotation.
- Immediately measure the spread of the CLSM along two diameters which are perpendicular to each other.

Cast three (3) specimens (cylinders) for each batch in accordance with Materials Method 9.2. and deliver them to the Geotechnical Engineering Bureau within seven days of the pour date for evaluation.

204-3 CONSTRUCTION DETAILS

204-3.01 General. Provide all equipment for this work subject to approval of the Engineer.

Mix the materials at a stationary mixing plant which is either a continuous or a batch type plant, designed to accurately proportion either by volume or by weight, so that when the materials are
incorporated in the mix, a thorough and uniform mix will result.

The mix may be transported in open haul units provided the material is placed within 30 minutes of the end of mixing. Use a rotating drum unit capable of 2 - 6 rpm to transport material which cannot be placed within 30 minutes after the end of mixing.

In work involving quantities of CLSM less than 2 cubic meters, the Engineer may permit the Contractor to use a small construction mixer. Provide a mixer capable of mixing CLSM that has the specified compressive strength and flow consistency. Mix all components so as to produce a uniform product.

Narrower trench widths can be employed when using CLSM due to the self-compacting properties of the material. Construction personnel and equipment are not required to be in the trench for compaction operations. Refer to the current Standard Sheet for Controlled Low Strength Material (CLSM) Installation Details for Circular and Elliptical Metal Pipes, Structural Plate Pipes and Pipe Arches, and Reinforced Concrete and Other Rigid Pipes. For installations that require that construction personnel temporarily occupy the trench follow all OSHA requirements.

204-3.02 Fill and Backfill at Structures, Culverts, Pipes, Conduits and Direct Burial Cables.
Place the CLSM using a method approved by the Engineer, in accordance with the appropriate Standard Sheet for additional guidance on the use of CLSM as backfill material.

When placing CLSM for pipe backfill, discharge the material onto the top of the pipe at the center.

Do not place CLSM in contact with aluminum pipe, including connections, fixtures, etc., unless the aluminum has been coated with an approved primer.

Do not place CLSM containing fly ash in contact with cast iron or ductile iron pipes, fittings or appurtenances.

CLSM should be kept encapsulated with soil, as it is highly erodible and disintegrates when left exposed to the environment.

In situations where CLSM is used as backfill around lightweight pipe, take precautions to counteract the pipe’s buoyancy.

204-4 METHOD OF MEASUREMENT

204-4.01 General. Payment for CLSM will be made for the number of cubic meters of satisfactorily placed CLSM computed between the payment lines shown on the contract documents or from payment lines established in writing by the Engineer.

A deduction shall be made for pipes (based on nominal diameters) and other payment items when the combined cross-sectional area exceeds 0.1 m2 unless otherwise shown. No deduction will be made for the cross-sectional area of an existing facility.

No additional quantity shall be measured for payment to make up losses due to foundation settlement, compaction, erosion or any other cause.

Cross sectioning, for the purpose of determining quantities for payment, shall be employed only where payment lines are not shown on the contract documents or Standard Sheets, and cannot be reasonably established by the Engineer.

204-5 BASIS OF PAYMENT

204-5.01 General. The unit price bid shall include the costs of furnishing all equipment, labor and materials necessary to complete the work, except where specific costs are designated or included in another pay item of work.

Payment will be made under:

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<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
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NEW YORK STATE DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS of January 2, 2002
SECTION 205 (VACANT)

SECTION 206 - TRENCH, CULVERT AND STRUCTURE EXCAVATION

206-1 DESCRIPTION

206-1.01 General. This work shall consist of the excavation of all materials and backfill or disposal of excavated material required for trenches, culverts, structures, conduit and direct burial cable not otherwise provided for in other sections of these specifications. All such excavation shall be unclassified excavation as defined in §203-1.01. The work shall also consist of all required protection necessary to ensure the safety of the workers and the public.

206-1.02 Trench and Culvert Excavation and Trench and Culvert Excavation - Original Grade (O.G.) The work specified under these items shall include the excavation for and backfill of all culverts, pipe lines, and other minor structures including but not limited to leaching basins, catch basins, field inlets, manholes and drop inlets.

206-1.03 Structure Excavation. The work specified under this item shall include the excavation for all bridge foundations, walls and other major structures and backfill of suitable excavated material if another item is not specified.

206-1.04 Conduit Excavation and Backfill including Surface Restoration. The work specified under this item shall include the excavation, necessary backfill and surface restoration required for conduits and direct burial cables.

206-1.05 Test Pits. The work specified under this item shall include the excavation and backfill of test pits at locations shown in the contract documents, or as directed by the Engineer. Excavation and backfill methods, limits and equipment used shall be approved by the Engineer. This work will not relieve the contractor of the responsibility to locate underground facilities as required under 16 NYCRR 753.

206-2 MATERIALS. (Not Specified).

206-3 CONSTRUCTION DETAILS

206-3.01 General. The appropriate construction details specified for “Excavation and Embankment” in §203-3.01 through and including §203-3.12, §203-3.15, and the requirements of “Legal Relations and Responsibility to Public” in Section 107 shall apply to the work specified in this section.

The excavation shall be dewatered and kept free from water, snow and ice when necessary.

Special care shall be taken not to disturb the bottom of the excavation, and not to remove the material at final grade until just before the structure is placed.

The Contractor shall be responsible at all times for carrying out all excavation operations in a safe and prudent manner so that the workers, the public, and adjacent public and private property will be protected from unreasonable hazard. Details and requirements of this protection shall conform to Title 29 Code of Federal Regulations, Part 1926, Safety and Health Regulations for Construction (OSHA) and §107-05 Safety and Health Requirements Paragraph F and §107-08 Preservation of Property. All applicable local, State and/or Federal requirements shall be observed and necessary permits acquired by the Contractor.

If no support or protective system is shown in the plans or proposal, the Contractor may open the
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excavation with the sides sloped to a stable slope not steeper than that allowed by the Title 29 Code of
Federal Regulations, Part 1926, Safety and Health Regulations for Construction (OSHA). Taking this
option, however, does not relieve the Contractor of responsibilities as stated in this subsection. When
the Contractor chooses this option, the materials used and method of construction outside the payment
lines shall be in accordance with the requirements of this Section.

When excavation is required for the installation of conduit or direct burial cable, the Contractor shall
notify the Engineer upon completion of the excavation. No conduit or cable shall be placed in the
excavation until the Engineer has approved the depth and cross-section.

206-3.02 Replacement of Pavement Structure Courses. When the Contractor, in placing
conduits, direct burial cable or utilities, excavates into the pavement, subgrade, subbase, or shoulder
courses, such courses must be replaced in kind, character and condition, to maintain a uniform road
section.

206-3.03 Disposal of Excavated Material. The provisions of §203-3.06 and/or §203-3.07 shall
apply to all material excavated under this section which is not used as backfill.

206-3.04 Test Pits. The Contractor shall excavate and backfill test pits in order to determine existing
underground utility type, size and/or condition where new utility connections to existing facilities are
proposed. The Contractor shall excavate and backfill test pits in a manner approved by the Engineer that
prevents damage to wrappings, coatings or other protective coverings, such as by hand digging, vacuum
excavation or similar non-destructive locating equipment. The limits of the excavation shall be those
sufficient to determine existing utility type, size and/or condition.

206-4 METHOD OF MEASUREMENT

206-4.01 General. The quantity of excavation shall be the number of cubic meters of material
computed from payment lines shown on the plans or the appropriate standard sheets, except where
revised payment lines are established by the Engineer prior to performing the work. Work performed
beyond any designated payment line will not be included in the computation of quantities for the item
involved.

206-4.02 Trench and Culvert Excavation. Unless otherwise shown or indicated on the contract
plans, payment lines for excavation of pipe and culvert lines, and minor structures will be determined
as follows:

A. Bottom Payment Line. The elevation of the bottom payment line shall be the invert
elevation of the pipe, conduit, or culvert. For pipes, conduits, or culverts of nominal horizontal
dimensions of 300 to 3700 mm, the width of the excavations at the bottom payment line shall be the
nominal inside horizontal dimension of the pipe, conduit, or culvert plus 1.2 m, or three (3) times
the nominal inside horizontal dimension, whichever is less; for pipes with a nominal horizontal
dimension greater than 3700 mm the width will be as shown on the appropriate standard sheets or
in the contract documents. For concrete pipe, twice the minimum wall thickness shall be added to
the preceding.

B. Top Payment Line. Except when otherwise provided in the contract, the payment line in a
cut section shall be the surface at the centerline of the pipe, culvert or conduit after completion of
the general excavation and prior to excavation to place material paid for under another item of the
contract; except that, when an undercut is made for unstable conditions, the payment line will be at
the top of the undercut backfill. The payment line in a fill section shall be the ground surface prior
to commencing work on the contract.

C. Side Payment Lines. The side payment lines of the excavation shall be vertical to the bottom
of payment line, regardless of whether sheeting is or is not required or used.
For utility lines, exclusive of conduit and cable lines, of less than 300 mm diameter, the excavation width shall be the actual bottom width necessary, as determined by the Engineer, to properly perform the installation work required, or 1 m, whichever is less.

D. Payment Lines for Minor Structures. Payment lines for minor structures shall be vertical from the bottom of the footing and shall extend out 0.6 m from the perimeter of the structure footing. The top payment line shall be the same as for (B) above.

206-4.03 Conduit Excavation and Backfill including Surface Restoration. The quantity of conduit and/or cable excavation and backfill including surface restoration for payment shall be the number of linear meters measured along the center of the conduit and/or cable placed, in accordance with the methods stated below.

Wherever a pair or group of conduits and/or cables are physically connected together, they shall be considered as a single conduit and/or cable.

A. Wherever conduit and/or cable in the same trench are physically separated laterally by 150 mm or more between centerlines, as shown on the plans or as directed by the Engineer, the linear meter measurement shall be made along the center of each conduit and/or cable.

B. Wherever a pair or group of conduits and/or cable in the same trench are physically separated laterally by less than 150 mm between centerlines of adjacent conduit and/or cable, as shown on the plans or as directed by the Engineer, the linear meter measurement for those conduits and/or cable shall be made along the center of that pair or group of conduit and/or cables.

206-4.04 Trench and Culvert Excavation - O.G. The provisions of §206-4.02 Trench and Culvert Excavation shall apply, except the top payment line shall be the existing ground surface at the centerline of the pipe, culvert or conduit prior to commencing work on the contract.

206-4.05 Test Pits. The quantity to be measured for payment will be the number of test holes excavated and backfilled in accordance with the contract documents.

206-5 BASIS OF PAYMENT

206-5.01 Trench, Culvert and Structure Excavation. The unit price bid for this work shall include the cost of labor, materials and equipment required to satisfactorily complete the work, including the costs of excavation, backfill (except select backfill paid for separately), disposal of excavated material, presplitting rock excavations where required, and keeping the site dewatered and free from earth, water, ice and snow when necessary.

The cost for necessary guarding and protection required to protect the public from open trenches and, that required for the protection to ensure the safety of the workers shall be included in the bid price for Trench, Culvert and Structure Excavation. Progress payments will be made after the excavation has been completed, and prior to the completion of other work included under this item, including but not limited to pumping, fencing and backfilling. Payment will be made, at the unit price bid, for 75% of the quantity excavated within the prescribed payment lines. The balance of the quantity excavated will be paid for upon proper completion of backfill placement.

If the Contractor chooses the slope layback option to satisfy OSHA, no extra payment will be made for the cost of any labor, equipment or material necessary to restore the area outside the payment lines shown on the plans.

206-5.02 Sheetin, Cofferdams or Temporary Water Diversion Structures. Payment for Sheetin, Cofferdams or Temporary Water Diversion Structures required by the plans, specifications, or ordered by the Engineer in writing will be made in accordance with the appropriate item.

Where cofferdams are specified for structure excavation, the work required to keep the site free from earth, water, ice and snow shall be included in the item for cofferdams when necessary.
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206-5.03 Replacement of Pavement Structure Courses. With exception of the Conduit Excavation and Backfill including Surface Restoration item, the work of replacing pavement, subcourses and shoulder courses shall be paid for and performed under the provisions of their respective items and subsections.

206-5.04 Conduit Excavation and Backfill including Surface Restoration. The unit price bid per linear meter for this work shall include the cost of furnishing all labor, materials and equipment necessary to excavate and backfill the trench and to replace any pavement, shoulder, and sidewalk courses, subcourses, curbs, drives, lawns and other top surfaces as required to complete the work.

206-5.05 Test Pits. The unit price bid for this work shall include the cost of furnishing all labor, materials and equipment necessary to excavate and backfill the test pit and replace any pavement, shoulder and sidewalk courses, subcourses, curbs, drives, lawns and other top surfaces required to complete the work.

Payment will be made under:

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<th>Item No.</th>
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<tr>
<td>206.02 M</td>
<td>Trench and Culvert Excavation</td>
<td>Cubic Meter</td>
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<td>Conduit Excavation and Backfill including Surface Restoration</td>
<td>Meter</td>
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<td>206.04 M</td>
<td>Trench and Culvert Excavation - O.G.</td>
<td>Cubic Meter</td>
</tr>
<tr>
<td>206.05 M</td>
<td>Test Pit Excavation</td>
<td>Each</td>
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</table>

SECTION 207 - GEOTEXTILES AND PREFABRICATED COMPOSITE DRAINS FOR STRUCTURES

207-1 DESCRIPTION

207-1.01 Geotextiles. The work shall consist of furnishing and installing approved Geotextile of the Class and Type indicated, at the locations, and in the manner shown on the plans or as directed by the Engineer, in writing, prior to performing the work.

207-1.02 Prefabricated Composite Drains for Structures. The work shall consist of furnishing and installing an approved Prefabricated Composite Structural Drain (PCSD) or Prefabricated Composite Integral Abutment Drain (PCIAD) as specified at the location(s) shown on the contract documents or as directed by the Engineer, in writing, prior to performing the work.

Prior to installation, the Contractor shall furnish the Engineer with copies of the manufacturer’s literature with details and installation requirements for the PCSD or PCIAD. If not included in the manufacturer’s literature, a letter identifying the geotextile wrap shall also be provided to the Engineer.

207-2 MATERIALS

207-2.01 General. The Geotextile and Prefabricated Composite Drain for Structures shall be the type appropriate for the intended use as shown on the plans and be listed in the Appropriate Approved List issued by Department’s Materials Bureau. Evaluation of a Geotextile or Prefabricated Composite Drain for Structures not on the Approved List will be made in accordance with procedural directives of the Geotechnical Engineering Bureau. Evaluation will require a minimum of four months.

The Contractor shall provide PCSD or PCIAD that is a flexible product consisting of a geotextile bonded to an internal supporting core.

The Contractor shall provide PCSD or PCIAD that is resistant to deterioration from salts, road oils, fuels and other deleterious substances encountered in this type of application.

Only approved structural drains with an impermeable core will be permitted for use in installations.
where fresh concrete is to be placed against the drain.

207-2.02 Basis of Acceptance

A. Geotextiles. The Geotextiles which are on the Approved List issued by the Department's Materials Bureau will be accepted on the basis of the brand name labeled on the Geotextile or the Geotextile container and verification of the Geotextile by a Departmental Geotechnical Engineer.

B. Prefabricated Composite Drains for Structures. The Prefabricated Composite Drain for Structures which are on the Approved List issued by the Department's Materials Bureau will be accepted on the basis of the brand name labeled on the drain's packaging and verification by the Engineer of the geotextile wrap being on the approved list for a drainage application.

207-2.03 Quality Assurance

A. Geotextiles. When the State elects to sample, one ten square meter sample will be obtained for quality assurance testing. The results of this testing will only affect a product's standing on the Approved List. Payment for this sample will be made at the unit bid price.

B. Prefabricated Composite Drains for Structures. When the State elects to sample, a 1 meter long by roll width sample will be obtained for quality assurance testing. The results of this testing will only affect a product's standing on the Approved List. No payment will be made for this sample.

207-3 CONSTRUCTION DETAILS

207-3.01 Geotextiles

A. General. The Geotextiles shall be protected from exposure to sunlight during transport and storage. After placement, the Geotextile shall not be left uncovered for more than two (2) weeks. Traffic or construction equipment will not be permitted directly on the Geotextile. Geotextiles may be joined by either sewing or overlapping. Sewn seams shall be lapped a minimum of 100 mm and double sewn. The thread used to sew the seam shall be nylon or polypropylene. Overlapped seams shall have a minimum overlap of 500 mm except when placed under water where the overlap shall be a minimum of 1 m. All seams shall be subject to the approval of the Engineer. Geotextile which becomes torn or damaged due to the Contractor's operations shall be replaced or patched at no cost to the State. The patch shall extend 1 m beyond the perimeter of the tear or damage.

B. Bedding and Slope Protection. The Geotextile shall be placed and anchored on a prepared surface approved by the Engineer. The Geotextile shall be laid loosely but in intimate contact with the soil so that placement of the overlying materials will not stretch or tear the Geotextile. Where Geotextile is placed above water, the backfill placement shall begin at the toe and proceed up the slope.

Where Geotextile is placed under water, the long dimension shall be placed parallel to the direction of flow. Successive Geotextile sheets shall be overlapped so that the upstream sheet is placed over the downstream sheet. As the Geotextile is placed under water, the backfill material shall be placed on it to the required thickness. The Geotextile placement shall not progress more than 15 m ahead of the backfill placement.

Rip-rap, stone filling (Heavy) or stone filling (Medium) shall not be dropped onto the Geotextile from a height greater than 0.3 m. Slope protection and smaller sizes of stone filling shall not be dropped onto the Geotextile from a height exceeding 1 m.

C. Separation and Stabilization. The Geotextile shall be placed as directed by the Engineer. The Geotextile shall be laid loosely but in intimate contact with the soil so that placement of the overlying material will not stretch or tear the Geotextile.
§207-3

**D. Drainage.** The Geotextile shall be placed to conform loosely to the shape of the trench. After placing the filter material, the Geotextile shall be folded over the top of the filter material to produce a minimum overlap of 300 mm. The Geotextile shall then be covered with the subsequent course.

**207-3.02 Prefabricated Composite Drains for Structures.** The Contractor shall install the drain in conformance with the manufacturer's installation procedures. The drain shall be installed so that the backfill, when placed, will be in contact with the geotextile and forms a continuous drainage layer without interruption within the drain's plane. At all locations, a positive outlet for the water in the drain shall be provided. This may involve making a hole in the core at the weep hole locations for approved drains with an impermeable core. Do not puncture the geotextile. Any damaged geotextile shall be repaired.

Adhesive shall be applied to the wall surface, and not directly to the drain.

During all periods of shipment and storage, the drain shall be wrapped and protected from direct exposure to sunlight, mud, dirt and debris.

Care shall be exercised while backfilling to prevent damage to the drain. Repairs or replacements of drain damaged by construction operations shall be performed, as directed by the Engineer, at no cost to the State.

**207-4 METHOD OF MEASUREMENT**

**207-4.01 Geotextiles**

**A. General.** The quantity of Geotextile will be the number of square meters computed from the payment lines shown on the plans or from payment lines established in writing by the Engineer. Measurement will not be made for Geotextile used for repairs, seams, or overlaps. If taken, the amount of quality assurance samples will be added to this quantity.

**B. Drainage.** The number of square meters shall be computed by multiplying the length of the trench where Geotextile is used by the theoretical perimeter (determined from the typical section).

**207-4.02 Prefabricated Composite Drains for Structures.** The quantity of PCSD or PCIAD is the number of square meters satisfactorily installed computed from the payment lines indicated in the contract documents or from payment lines established, in writing, by the Engineer.

**207-5 BASIS OF PAYMENT**

**207-5.01 Geotextiles.** The unit price bid per square meter for these items shall include the cost of furnishing all labor, equipment, and materials necessary to complete the work, including the cost of preparing the surface upon which the Geotextile is placed. No payment will be made for replacement or repairs.

**207-5.02 Prefabricated Composite Drains for Structures.** The unit price per square meter for this item includes the cost of furnishing all labor, equipment, and material necessary to complete the work. No payment will be made for repairs or replacement.

**Payment will be made under:**

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<tr>
<th>Item No.</th>
<th>Item</th>
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<td>207.11 M</td>
<td>Geotextile Separation</td>
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<td>Geotextile Drainage</td>
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<tr>
<td>207.14 M</td>
<td>Geotextile Stabilization</td>
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SECTION 208 (VACANT)

SECTION 209 - TEMPORARY SOIL EROSION AND SEDIMENT CONTROL

209-1 DESCRIPTION

209-1.01 General. This work shall consist of furnishing, installing, maintaining, and removing temporary erosion and sediment control measures as shown on the contract documents or as ordered by the Engineer during the life of the contract to control soil erosion sediment and water pollution through use of temporary mulching, seeding, check dams, bales, sediment traps, turbidity curtain or silt fences.

The temporary erosion and sediment control provisions contained herein shall be accomplished in accordance with the schedule required under §107-12. They shall also be coordinated with the permanent erosion and sediment control features specified elsewhere in the contract documents to the extent practical to assure economical, effective and continuous soil erosion, sediment and water pollution control throughout the construction and post construction period.

209-2 MATERIALS. Unless otherwise stated elsewhere in the contract documents, the materials used to construct temporary soil erosion and sediment control measures shall be as stated herein.

209-2.01 Mulch. Mulch shall be hay, straw, wood fiber, or other suitable material acceptable to the Engineer.

209-2.02 Seed. Seed not otherwise specified in the contract documents shall be quick growing (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area and as a temporary cover, which will not compete with the grasses sown later for permanent cover.

209-2.03 Stone. Stone filling (fine and light) shall meet the requirements of §620-2.02. Bedding material shall meet the requirements of §620-2.05.

209-2.04 Haybale/Strawbale. Bales shall be tightly bound and shall meet the requirements of §713-18 and §713-19. Loose or broken bales will not be accepted. Hardwood stakes shall be 38mm x 38mm and a minimum of one meter long.

209-2.05 Geotextile. Geotextiles shall meet the requirements of §207-2. and be the type appropriate for the intended use as shown on the plans and as shown on the Approved List issued by the Department's Materials Bureau. Geotextiles shall be protected from exposure to sunlight during transport and storage.

209-2.06 Turbidity Curtain. Turbidity curtain assemblies shall consist of a geotextile and a flotation, securing and anchoring system. Prefabricated turbidity curtain systems may be used provided that all requirements of this specification are met.

The flotation, anchoring and securing system shall be fabricated to hold the curtain in place and keep it on the bottom and shall be as shown on the plans and meet the approval of the Engineer. Design analysis and shop drawings shall be provided if requested in writing by the Engineer.

The geotextile shall be of the woven type and shall be listed under the turbidity curtain(TC) category on the Department's Approved List.

209-2.07 Silt Fence. Prefabricated silt fence assemblies shall consist of a geotextile [woven type], posts, mesh reinforcement backing, and fasteners. Prefabricated silt fence systems may be used provided that all requirements of this specification are met and they appear on the Department's Approved List under the category of prefabricated silt fence.
§209-2

The geotextile shall be of the woven type and shall be listed under the turbidity curtain (TC) category on the Department's Approved List.

209-2.07 Silt Fence. Field constructed silt fence assemblies shall consist of a geotextile [woven type], posts, mesh reinforcement backing, and fasteners. Prefabricated silt fence systems may be used provided that all requirements of this specification are met and they appear on the Department's Approved List under the category of prefabricated silt fence.

A. Posts. Posts shall meet the following requirements:

1. Either wood, metal, or synthetic posts may be used. Softwood post shall be 38 mm x 89 mm, hardwood post shall be 38 mm x 38 mm, steel post shall be "T" or "L" shaped in cross section, with a minimum weight of 2 kg per meter.

2. Posts shall be a minimum of 1.2 m long.

B. Mesh Reinforcement. Mesh reinforcement shall be poly-propylene with a maximum 5 mm x 50 mm opening or 14 gauge (min) welded wire mesh with a maximum 100 mm x 100 mm opening. Either mesh shall be a minimum 760 mm wide.

C. Fasteners. Fasteners shall be heavy duty staples, hog rings, tie wires, or any other fastener compatible with the post material and approved by the engineer.

209-2.08 Gravel Bag and Sand Bag. Bags shall be fabricated from reinforced woven geotextile and shall include ties. No burlap bags shall be allowed. Sand or gravel shall be used as the fill material. Gravel shall meet the material specifications of size designation #1 of table 703-4. Sand shall meet the requirements of §703-06. All material used for gravel/sand bags shall be double bagged, inversely inserted and each bag individually tied to prevent leakage.

209-3 CONSTRUCTION DETAILS.

209-3.01 General. In the event of conflict between these specification requirements and pollution control laws, rules, regulations or permit conditions by other federal or state or local government agencies, the more restrictive laws, rules or regulations shall apply.

Temporary erosion and sediment control measures shall be inspected by the contractor and maintained during the life of the project, including winter shutdown, etc., and such maintenance and inspection shall continue until after the permanent stabilization measures are in place and the temporary control measures are ordered to be removed by the Engineer, and the disturbed area returned to its original condition. The remaining disturbed areas shall be permanently stabilized consistent with the adjacent permanently stabilized area.

209-3.02 Authority of Work. The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, material exposed by excavation, borrow and fill operations and to direct the Contractor to provide immediate permanent or temporary erosion and sediment control measures to minimize damage to adjacent property and to minimize contamination of adjacent streams or other watercourses, lakes, ponds or other areas of water impoundment, and wetlands.

209-3.03 Schedule of Work. At the preconstruction conference or prior to the start of the applicable construction, the Contractor shall submit schedules for the accomplishment of temporary and permanent erosion and sediment control work to the Engineer. After receipt of all pertinent information from the Engineer, the Regional Landscape Architect will have fourteen working days to review and approve the submission and reply in writing to the Engineer. The Contractor shall begin work only after receiving written approval from the Engineer. All work done under this section shall be included as part of the construction schedule submitted by the contractor at the preconstruction meeting as required under the provisions of §107-12 Soil Erosion, Water and Air Pollution Abatement. The Contractor's schedules and

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209-3.04 Areas of Work. The Engineer shall direct the Contractor to limit the area of clearing and grubbing, excavation, borrow and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding and other temporary and/or permanent control measures current in accordance with the accepted schedule.

Under no conditions shall the area of unprotected earth material exposed at one time by clearing and grubbing, excavation, borrow or fill within the right-of-way exceed 10,000 m² without prior approval by the Engineer. The same limitation shall apply to all borrow or spoil areas and erodible haul roads outside the right-of-way.

The Engineer may decrease the area of unprotected erodible earth material to be exposed at one time by clearing and grubbing, excavation, borrow and fill operations as determined by his analysis of project conditions.

Under no condition shall any area of unprotected erodible earth material exposed by clearing and grubbing, excavation, borrow or fill or other work within the right-of-way be left in an unprotected condition for a period of greater than 14 days.

When the Engineer determines the final stabilization, specified elsewhere in the contract documents, can not be completed, temporary stabilization shall be provided as specified in this section. The same limitations shall apply to all borrow or spoil areas and erodible haul roads outside the right-of-way.

Temporary soil erosion and sediment control may be included outside the right-of-way where such work is necessary as a result of highway construction. Legal right of access will be provided by the State in accordance with §107-14, Furnishing Right-of-Way.

209-3.05 Mulching. When mulching is used in conjunction with temporary seeding, the mulch shall be spread uniformly in a continuous blanket of sufficient thickness to hold the soil in place until permanent measures are in place. Mulch may be spread by hand, mechanical spreaders, or blowers.

Mulching may also be used without temporary seeding to temporarily stabilize unprotected erodible earth.

Should the Engineer determine at any time that the mulch has not stabilized the slope, the Contractor shall be responsible for remulching. Any work to be corrected shall be at the Contractor's expense, including regrading.

209-3.06 Seeding [Temporary]. Prior to the application of seed, the Contractor shall scarify all areas where compaction has occurred. The seed bed shall be loose and friable for positive seed retention.

Seed shall be spread to uniformly cover the ground. Seeds shall be evenly distributed by any method of sowing that does not injure the seeds in the process of spreading. Mulch shall be spread immediately following application of seed. Mulch and seed shall not be placed simultaneously, except in the case of hydroseeding.

The following seed rates shall apply when temporary seed and mulch is specified, unless otherwise specified in contract documents:

- Ryegrass (annual or perennial) 3.5 gm/m²
- Cereal rye 11.2 gm/m²
- Winter wheat 11.2 gm/m²

The Engineer shall determine the effectiveness of the above mentioned work on a weekly basis. Those areas where a stand of grass is not effectively controlling erosion, in the judgement of the Engineer, shall be re-prepared in accordance with the specifications. All work to be corrected shall be at the contractors expense.

209-3.07 Check Dam. Check dams shall be constructed as shown and located on the plans and as directed by the Engineer. A bedding type geotextile and/or stone scour protection shall be placed as indicated on the plans. Dams shall be inspected by the Contractor after each storm event, or if no storm
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occurs, at the end of each week. At the time of inspection the Contractor shall:

A. Repair or rebuild the dam as necessary.
B. Remove any sediment deposits that exceed one-half the height of the dam. All sediment deposits shall be considered unsuitable material and disposed of in accordance with §203-3.08 Disposal of Surplus Excavated Materials. Sediment deposits shall be disposed of away from wetland, water courses or other bodies of water.

After the erodible area is permanently stabilized, the check dam materials shall become the property of the Contractor and shall be removed from the site.

209-3.08 Haybale/Strawbale. Bales shall be placed at locations and in configurations shown on the plans and as directed by the Engineer. Each bale shall be embedded into the soil a minimum of 100 mm, and be securely anchored. Hardwood stakes shall be installed a minimum of 300 mm into the ground. The first stake in each bale shall be driven at an angle toward the previously laid bale to force the bales together.

A bedding type geotextile and/or stone scour protection shall be placed as indicated on the plans. Bales shall be inspected by the Contractor after each storm event, or at the end of each week. At the time of inspection the Contractor shall:

A. Replace any broken, or deformed or rotten bales.
B. Remove any sediment deposits that exceed 150 mm. All sediment deposits shall be considered unsuitable material and disposed of in accordance with §203-3.08 Disposal of Surplus Excavated Materials.
C. Reinstall misaligned bales.

After the erodible area is permanently stabilized, as determined by the Engineer, the Contractor shall remove the bales and stakes which shall become the property of the Contractor and shall be removed from the site.

209-3.09 Sediment Trap. Temporary sediment traps shall be constructed as shown and located in the Contract documents, and or as directed by the Engineer.

The Contractor shall inspect the sediment trap after each storm event, or at the end of each week. At the time of inspection the Contractor shall:

A. Repair the sediment trap as necessary due to water or other damage.
B. Remove any sediment deposits which exceed 150 mm or one-half of the design capacity, whichever is less. All sediment deposits shall be considered unsuitable material and disposed of in accordance with §203-3.08 Disposal of Surplus Excavated Materials.

After the surface area draining into the sediment trap has been stabilized to the satisfaction of the Engineer, the Contractor shall remove the installation (accumulated sediment, etc.) which shall become the property of the Contractor and shall be removed from the site.

209-3.10 Turbidity Curtain.

A. Installation. Unless otherwise detailed on the plans, the curtain shall be installed as follows:

1. Be "anchored" and secured to prevent any material from passing beneath, over, around or through the barrier.
2. Have a flotation system that will float if punctured or cut.
3. Have sufficient slack to permit the curtain to rise to the maximum expected high water level
including wave action without being overtopped and still be in continuous contact with the bottom.
4. Have adjacent portions of the curtain secured so that suspended soil particles will not pass between the sections. Where the Contract documents or the Engineer requires sewn seams, the fabric will be overlapped 100 mm and be stitched with two rows of thread that is rot and ultraviolet resistant.
5. Not be placed across a flowing stream.
6. Additional anchorage and/or anchorage cables are required in tidal applications.

B. Care during Construction.

1. The contractor shall immediately repair or replace defective or damaged portions of the turbidity curtain.
2. The turbidity curtain shall remain in place until such time that water contained within is free from turbidity. The curtain shall be removed within 72 hours after this determination has been made.
3. The area behind the turbidity curtain shall be cleaned prior to removal. All sediment deposits shall be considered unsuitable material and disposed in accordance with §203-3.08, Disposal of Surplus Excavated Materials.

C. Curtain Removal.

1. At the completion of the contract, the turbidity curtain shall be removed in such a manner so as to minimize release of sediment adhering to the turbidity curtain.
2. After removal the turbidity curtain shall become the property of the Contractor and shall be removed from the site.

209-3.11 Silt Fence.

A. Installation. Unless otherwise detailed in the contract documents, the fence shall be installed as follows:

1. Posts shall be driven into the ground, or adequately anchored if in rock.
2. Geotextile and mesh reinforcement shall be placed on the up flow side of the posts.
3. The geotextile shall be attached to each post in no less than 4 locations with approved fasteners.
4. The mesh reinforcement shall be attached to each post at the top, bottom, and two additional evenly spaced locations, or by a continuous corded attachment along the top of the assembly. Attachment is to be made with approved fasteners.
5. Any geotextile or mesh splices necessary for fence erection shall be continuous between two post sections.
6. Geotextile at the bottom of the fence shall be buried in a trench to a depth of 150 mm. The trench shall be back filled with the excavated soil and the soil compacted by tamping.

B. Care of Fence during Construction. The Contractor shall continuously maintain the integrity of the silt fence, including providing all necessary labor, equipment and materials, until earthwork construction is completed and permanent erosion control measures are in place. The Contractor shall inspect all temporary silt fence immediately after each storm and at least daily during prolonged rainfall to determine if the structure is functioning as designed. Any deficiencies shall be immediately corrected by the Contractor. Should the silt fence become damaged or otherwise ineffective while the barrier is still necessary, it shall be repaired or replaced promptly as directed by the Engineer.

Sediment deposits shall be removed wherever the deposit or debris buildup creates "Breaches"
or "Bulges" in the fence or more than 150 mm of material has accumulated. All sediment deposits shall be considered unsuitable material and disposed of in accordance with §203-3.08 Disposal of Surplus Excavated Materials.

The contractor shall immediately repair or replace defective or damaged portions of the fence assembly. Torn or punctured fabric shall be repaired by the placement of a patch, on the up slope side, consisting of an additional layer of fabric over the damaged area.

Maintenance should continue until permanent erosion and sediment control measures are in place, established or stabilized to the satisfaction of the Engineer.

**C. Fence Removal.** The silt fence shall remain in place until the area is permanently stabilized as shown in the project plans and the Engineer directs that it be removed. The fence materials shall become the property of the Contractor and be removed from the site. The Contractor shall remove and dispose of any sediment accumulations and restore the area as directed by the Engineer.

**209-4 METHOD OF MEASUREMENT.** Where the work to be performed is not attributed to the Contractor's negligence, carelessness or failure to install temporary or permanent controls in accordance with the soil erosion and sediment control plans or as directed by the Engineer, the method of measurement will be as stated herein.

**209-4.01 Mulching.** The quantity to be measured will be the number of square meters of mulching necessary to complete work.

**209-4.02 Seeding [Temporary].** The quantity to be measured will be the number of square meters of temporary seeding necessary to complete the work.

**209-4.03 Check Dam.** Stone check dams will be measured by the number of check dams installed in accordance with the requirements of the contract documents and to the satisfaction of the Engineer. Hay/strawbale check dams, silt fence check dams, and sand/gravel bag check dams shall be measured by the number of linear meters placed as shown in the contract documents.

**209-4.04 Haybale/Strawbale.** Bales will be measured by the number of lineal meters of bales placed as shown in the contract documents. Measurement will not be made for bales used for repairs or replacement of defective material.

**209-4.05 Sediment Trap.** Sediment traps will be measured by the number of traps placed as shown in the contract documents.

**209-4.06 Turbidity Curtain.** Turbidity curtains will be measured by the number of square meters computed from payment lines in the plans or from payment lines established in writing by the Engineer. Measurement will not be made for turbidity curtain used for repairs, defective material, seams, or overlaps.

**209-4.07 Silt Fence.** Silt fence will be measured by the number of linear meters of silt fence placed as shown in the contract documents. Measurement will not be made for silt fence used for repairs, defective material, seams, overlaps, or silt fence improperly installed.

**209-5 BASIS OF PAYMENT.**

**209-5.01 General.** The unit price bid for all work items shall include the cost of furnishing all labor, equipment, and materials necessary to satisfactorily complete and maintain the work shown on the plans or ordered to be performed within the work limits by the Engineer. Progress payments will be made. Fifty percent of the price bid will be paid after installation. The remaining percentage will be paid when the area is permanently stabilized and the temporary control measure is removed.
Temporary control measures that are made necessary by the Contractor’s negligence, carelessness or failure to install permanent controls as a part of the work as scheduled or as shown on the plans, shall be ordered by the Engineer to be accomplished and performed by the Contractor at his own expense. In case of repeated failures on the part of the Contractor to control erosion, pollution and/or siltation, the Engineer reserves the right to employ outside assistance or to use State forces to provide the necessary corrective measures. Such incurred direct costs plus project engineering costs will be charged to the Contractor and appropriate deductions made from the Contractor's monthly progress estimate.

On those areas selected by the Contractor, either within or outside the work limits, which include but are not necessarily limited to, borrow pits, haul roads, disposal areas, and storage, maintenance, and batching areas, the temporary control work shall be the responsibility of the Contractor and shall be performed at his expense and in a manner approved by the Engineer. No direct payment will be made under §209 for this work; the cost is to be included in the other items of the Contract. Temporary control work on the aforesaid areas which are specifically designated for contractua. operations by the State will be paid for under the provisions of this specification.

209-5.02 Mulching. The unit price bid per square meter shall include the cost of all labor, equipment, and materials necessary to satisfactorily install and maintain the mulched areas.

209-5.03 Seeding[Temporary]. The unit price bid per square meter shall include the cost of all labor, equipment, and materials necessary to satisfactorily install and maintain the seeded and mulched areas.

209-5.04 Check Dam. The unit price bid for stone check dams shall include the cost of all labor, equipment, and materials necessary to satisfactorily install, maintain, and remove the check dams. The unit price bid per linear meter for hay/strawbale check dams, silt fence check dams, and sand/gravel bag check dams shall include the cost of labor, equipment, and materials necessary to satisfactorily install, maintain, and remove the check dams.

209-5.05 Haybale/Strawbale. The unit price bid per linear meter shall include the cost of all labor, equipment, and materials necessary to satisfactorily install, maintain, dispose of surplus material and remove the haybales, including the necessary stakes and excavation. Any bales ordered to be replaced due to normal deterioration shall be additionally paid for under this item.

209-5.06 Sediment Trap. The unit price bid for each shall include the cost of all labor, equipment, and materials necessary to satisfactorily install, maintain, dispose of surplus excavated material and remove the sediment trap.

209-5.07 Turbidity Curtain. The unit price bid per square meter shall include the cost of furnishing all labor, equipment, and materials necessary to satisfactorily install, reinstall (after winter shut down) maintain, dispose of surplus excavated material and remove the turbidity curtain. Any repair or replacement of damaged or defective turbidity curtain shall be done at no additional cost to the State.

209-5.08 Silt Fence. The unit price bid per linear meter shall include the cost of furnishing all labor, equipment, and materials necessary to satisfactorily install, maintain, dispose of surplus excavated material and remove the silt fence. Any repair or replacement of damaged or defective silt fence shall be done at no additional cost to the State.

Payment will be made under:

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<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>209.02</td>
<td>Mulching</td>
<td>Square Meter</td>
</tr>
<tr>
<td>209.03</td>
<td>Seeding[Temporary]</td>
<td>Square Meter</td>
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<tr>
<td>209.0401ln</td>
<td>Check Dam[Stone]</td>
<td>Each</td>
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<tr>
<td>209.0402</td>
<td>Check Dam[Hay/Strawbale]</td>
<td>Linear Meter</td>
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209.0403   Check Dam[Silt Fence]  Linear Meter
209.0404   Check Dam[Sand/Gravel Bag]  Linear Meter
209.05     Haybale/Strawbale  Linear Meter
209.06nn   Sediment Trap  Each
209.07     Turbidity Curtain  Square Meter 5
209.08     Silt Fence  Linear Meter

NOTE: nn denotes serialized pay item, see §101-02 Definitions of Terms under “Specifications”. These items will be paid for by the each within established size groups.

SECTION 210 - REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL (BUILDINGS, BRIDGES AND HIGHWAYS)

210-1 DESCRIPTION. Under this specification, the Contractor shall remove and dispose of asbestos containing material from all locations of building(s), bridge(s) and/or highway(s) designated in the Contract Documents and/or where directed by the Engineer in accordance with: 12 NYCRR 56 or, if indicated, an approved variance thereof promulgated by the New York State Department of Labor (NYSDOL); the National Emission Standards for Hazardous Air Pollutants (NESHAP), promulgated the United States Environmental Protection Agency (USEPA); and the Occupational Safety and Health Administration (OSHA).

Additional project specific requirements may be found on the plans or in the proposal in a note entitled "Asbestos Remediation Supplemental Requirements".

210-2 MATERIALS. All materials used in the performance of the work shall comply with all applicable regulatory standards. Respirators and filters shall comply with NIOSH and MSHA standards. HEPA filtration systems shall comply with ANSI Z9.2-79.

210-3 CONSTRUCTION DETAILS. Prior to beginning any work under this item, the Contractor shall supply the Engineer with proof that the firm performing the work has a valid asbestos handling license; that its insurance coverage whether provided by the Contractor or the Asbestos Subcontractor, is consistent with §107-06 Insurance and includes an asbestos specific occurrence type policy with no deductible or sunset clause; that its project supervisor is a NYSDOL certified asbestos project supervisor; that all employees engaged in the work are properly certified and have current physical examinations and respirator fit tests; and that the proper notification of work beginning on the asbestos project has been given to NYSDOL and USEPA. Also, after the work is completed, the Contractor shall provide the Engineer with a written certification ("Waste Shipment Record") that the material was disposed of in an approved waste disposal site. The certification shall include the name and address of the waste disposal site or sites used.

Unless indicated otherwise, the Contractor shall arrange and pay for all air quality monitoring required for regulatory compliance. The firm and persons engaged shall be: properly licensed and certified; independent of the Contractor or the Asbestos Contractor performing the asbestos work; properly insured; and approved in accordance with §108-05 Subletting or Assigning the Contract.

Asbestos containing material shall be disposed of in accordance with 40 CFR Part 61 and all other requirements and laws, rules, and regulations of Federal, State or local agencies. Disposal sites which accept asbestos containing materials for disposal shall be permitted by the New York State Department of Environmental Conservation (NYSDEC) to accept such material for disposal. If disposed of out-of-state, the rules, regulations, and laws of that state shall apply.

In the event of a conflict between these specification requirements and laws, rules and regulations of Federal, State or local agencies, the more restrictive of the specification or the laws, rules or regulations shall apply.

Two copies of Daily logs, Visitor Logs, OSHA Air Monitoring record, and New York State