

To: SUPERSEDED BY EFFECTIVE 5/8/03 EI 02-037		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 00-023
Title: TEMPORARY SOIL EROSION AND SEDIMENT CONTROL SPECIFICATIONS- REVISED			
Distribution: ☐ Manufacturers (18) ☒ Main Office (30) ☒ Local Govt. (31) ☒ Regions/Agencies (32) ☐ Surveyors (33) ☒ Consultants (34) ☒ Contractors (39)		Approved:  P.J. Clark, Deputy Chief Engineer (Facilities Design) 07/17/00 Date	

This Engineering Instruction (EI) supersedes the entire Section 209-TEMPORARY SOIL EROSION AND SEDIMENT CONTROL of the Standard Specification Addendum Number 2 (adopted November 4, 1999).

EFFECTIVE DATE. The specifications transmitted herewith are effective with projects submitted for the letting of January 11, 2001.

BACKGROUND. The intention of temporary soil erosion and sediment control measures is to provide interim control of erosion and sedimentation during construction by minimizing unintended soil disturbance and the transportation and unwanted deposition of sediment.

PURPOSE. This instruction issues numerous relatively minor revisions to Standard Specification Section 209. These revisions clarify the intent of the specification, and are the direct result of the quality assurance reviews the Landscape Architecture Bureau conducted in 1997 and 1998.

TRANSMITTED SPECIFICATIONS.

§209-Temporary Soil Erosion and Sediment Control. This replaces the entire Section 209-TEMPORARY SOIL EROSION AND SEDIMENT CONTROL of the Standard Specifications Addendum No. 2.

The attached shelf notes will be incorporated into the next update of the Standard Specifications. Until that time, they will be inserts into contract proposals beginning with the effective date of this instruction for projects containing §209.xx pay items.

DESIGNER INFORMATION. The Department of Transportation has a Memorandum of Understanding (MOU) with Department of Environmental Conservation in which we agree to provide an Erosion and Sediment Control Plan on all projects with soil disturbance. The designer shall indicate where specific erosion and sediment control items of work are applicable by providing appropriate details, tables, notes, plans, and payment items in the project PS&E.

Pay items 209.0404 Check Dam (Sand/Gravel Bag) has been added. A new detail is being issued (via Engineering Instruction 00-024) concurrent with this instruction for inclusion in the contract documents when using this new pay item. Refer to the Regional Landscape/Environmental Group for guidance regarding the implementation of this new pay item. There will be little, if any, increase in project costs as a result of this new pay item and the minor revisions to the original specifications.

CONTACT. Questions regarding this Engineering Instruction should be directed to Gary Glath in the Landscape Architecture Bureau. He may be reached at (518) 457-4460.

Make the following changes to the Standard Specifications of January 2, 1995 Addendum No. 2 (adopted November 4, 1999).

Page II-28, line 13, thru Page II-34, line 41; delete entirely and replace with the following:

Page 2-40

"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. 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 methods shall be consistent with the soil erosion and sediment control plan included in the Contract documents.

Temporary erosion and sediment control measures shall be in place prior to performing clearing and grubbing, excavation, and borrow or fill operations within the right-of-way. The same limitation shall apply to all borrow or spoil areas and erodible haul roads outside the right-of-way.

In addition, the Contractor's schedule shall reflect the incorporation of all temporary and permanent erosion and sediment control features into the project at the earliest practical time consistent with good construction and management practices.

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/m ²
Cereal rye	11.2 gm/m ²
Winter wheat	11.2 gm/m ²

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 occurs, at the end of each week. At the time of inspection the Contractor shall:

1. Repair or rebuild the dam as necessary.
2. 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:

1. Replace any broken, or deformed or rotten bales.
2. 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.
3. 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:

1. Repair the sediment trap as necessary due to water or other damage.
2. 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 paid for will be the number of square meters of mulching necessary to complete work.

209-4.02 Seeding [Temporary]. The quantity to be paid for 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 contractual 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:

Item No.	Item	Pay Unit
209.02	Mulching	Square Meter
209.03	Seeding[Temporary]	Square Meter
209.0401nn	Check Dam[Stone]	Each
209.0402	Check Dam[Hay/Strawbale]	Linear Meter

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
209.08	Silt Fence	Linear Meter

NOTE: nn denotes serialized pay item, see §101-53. These items will be paid for by the each within established size groups."