To: SUPERSEDED BY EB 99-066 EFFECTIVE 11/4/99		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 99-024

Title: **STANDARD SPECIFICATION SECTION 612-SODDING AND PLACING EROSION CONTROL MATERIALS and 713-07 EROSION CONTROL MATERIALS**

Distribution:

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Approved:

P. Clark, Director, Design Division — Date: 6/30/99

This Engineering Instruction (EI) supersedes EI 98-035 and EB 98-062.

PURPOSE. This Engineering Instruction provides revised Section 612-SODDING and PLACING EROSION CONTROL MATERIALS AND 713-07 EROSION CONTROL MATERIALS of the Standard Specifications.

EFFECTIVE DATE. Revised Sections 612-SODDING and PLACING EROSION CONTROL MATERIALS and 713-07 EROSION CONTROL MATERIALS shall be effective for all Department contracts that are let on or after November 4, 1999.

BACKGROUND. The version of Section 612-SODDING and PLACING EROSION CONTROL MATERIALS that is included with this Instruction **is identical to** the specification that was included with superseded EI 98-023.

The version 713-07 EROSION CONTROL MATERIALS that is provided by this Instruction makes changes that deal basically with term of duration. These changes came about after discussion with both manufacturers and designers regarding material longevity.

TRANSMITTED SPECIFICATIONS.

1. SODDING AND PLACING EROSION CONTROL MATERIALS. This replaces 1995 Standard Specifications §612.

2. EROSION CONTROL MATERIALS. This replaces 1995 Standard Specifications §713-07.

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.

There will be no anticipated additional costs associated with the implementation of this EI.

CONTACT PERSON. Gary Glath in the Landscape Architecture Bureau at (518) 457-4460.

LANDSCAPE DEVELOPMENT MATERIALS

Make the following changes to the Standard Specifications of January 2, 1995.

Page 6-65
Replace §612 SODDING AND PLACING JUTE MESH OR OTHER APPROVED EROSION CONTROL MATERIALS in its entirety with the following:

SECTION 612 - SODDING AND PLACING EROSION CONTROL MATERIALS

612-1 DESCRIPTION. *This work shall consist of sodding and/or placing erosion control material.*

612-1.01 Sodding. *The work shall consist of preparing the sod bed, furnishing, delivering, placing, and caring for sod in the locations shown and specified in the contract documents.*

612-1.02 Furnishing and Placing Erosion Control Materials. *The work shall consist of preparing the ground surface, furnishing, placing and caring for erosion control material in the locations shown and specified in the contract documents.*

612-2 MATERIALS

612-2.01 Sodding. *Materials for sodding shall meet the following requirements.*

Water	*712-01*
Topsoil	*713-01*
Fertilizer	*As specified in the contract documents. Where not specified, fertilizer shall be 713-03 Type No. 1 or as approved by the Engineer.*
Sod	*713-14*

Other materials used for sodding shall be as approved by the Engineer.

612-2.02 Furnishing and Placing Erosion Control Materials. *Erosion control materials shall meet the requirements of 713-07 and shall be of the Type and Class specified in the contract documents.*

612-3 CONSTRUCTION DETAILS.

612-3.01 Sodding

A. Limitations. *The Contractor shall notify the Engineer at least two working days before beginning to place sod. The Contractor shall not begin the work until written permission from the Engineer has been received.*

No frozen sod shall be placed nor shall sodding be done when the ground surface is frozen. When frost or excessive moisture exist that will prevent satisfactory results from being obtained for any stage of work, the Engineer will stop the work and it shall be resumed only when allowed by the Engineer.

B. Procuring Sod. *The Contractor shall exercise maximum care to retain the soil existing on the roots of the sod during transporting, handling and transplanting operations. Dumping or dropping of sod from vehicles will not be permitted. Sod shall be planted within twenty-four hours from the time of harvesting, unless it is tightly rolled, or stored roots-to-roots. All sod in stacks shall be kept moist and protected from exposure to the sun and from freezing. The maximum period of time from harvesting to planting shall not exceed forty-eight hours. Sod that is stored on the project site prior to planting shall meet the moisture requirements of §713-14 at the time of planting.*

C. Ground Preparation. *There shall be a minimum of 50 mm of topsoil under all sod unless otherwise specified. The subgrade of areas to be sodded shall be excavated and firmed to a sufficient depth below the finished grade of the sod to accommodate the tamped or rolled thickness of topsoil and sod.*

Fertilizer shall be applied at a rate of 6 grams of nitrogen per square meter unless otherwise specified in the contract documents.

Fertilizer applied under this work shall be uniformly mixed with the topsoil to a depth of at least 50 mm before the sod is laid, unless otherwise specified or approved.

D. Finished Grade for Sod. *When laid in strips adjacent to paths, pavements, drain inlets and other structures, the finished sod surface shall be flush with surface of the adjacent soil and the adjacent structures. Sod laid in drainage ways, and areas to be continuously or solidly sodded shall meet the finished grades as shown in the contract documents. Grades shall be formed with special care at the junction of drainage ways.*

E. Placing Sod. *The soil on which the sod will be laid shall be moist. The soil shall be watered prior to sodding, if so directed. The sod shall be laid smoothly, edge to edge and all openings shall be plugged with sod. In drainage ways and where continuous or solid sodding is indicated and/or specified in the contract*

documents, the sod shall be laid with the longest dimension parallel to the contours. Sodding shall start at the base of slopes and progress upwards in continuous parallel rows. Vertical joints between sides shall be staggered. Immediately after laying, sod shall be pressed firmly into contact with the sod bed by tamping, rolling, or by any other method that will eliminate air pockets, provide true and even surfaces, insure knitting and protect all exposed sod edges, but without damaging or displacing the sod or deforming the finished sod surface. At the time of placing, the sodded areas shall be watered evenly and at a rate of 20 liters per square meter.

F. Anchoring. *Sod shall be firmly anchored in all drainage ways, on slopes 1 on 2 or steeper, and wherever else specified or directed. Sod shall be anchored immediately after tamping. All anchors shall be driven flush to the ground.*

G. Finishing. *Excess sod or excess soil resulting from the sodding operation shall be disposed of by the Contractor. Excess soil shall not be left to form a ridge adjacent to the sodded area or sodded strips.*

H. Care During Construction. *The Contractor shall care for the sodded areas until all work on the entire contract has been completed and accepted. When necessary, such care shall consist of providing protection against traffic by approved warning signs or barricades. In locations where mowing is specified, the grass shall be mowed until the acceptance of the Contract to a height of 75 mm when the growth reaches a height of 125 mm or as directed.*

All sod shall be watered at weekly intervals for a minimum of four weeks following installation and in accordance with §615-3.01, unless otherwise specified or directed. Additional watering shall be performed if specified in contract documents. When watered, sufficient water shall be applied to wet the sod at least 50 mm into the sod bed. Watering shall be done in a manner that will not cause erosion or other damage to the finished surfaces. Any surfaces that have settled, become gullied or otherwise damaged shall be repaired at the Contractor's expense to re-establish the grade and conditions of the soil prior to sodding and shall then be re-fertilized and re-sodded as specified under this work.

I. Liability. *When the Engineer decides that any area that has been sodded fails for any reason to produce a satisfactory turf after a suitable period of time has elapsed, the Contractor shall re-sod such areas in the same manner as specified in the contract until a satisfactory turf has been established. Any work to be corrected shall be at the Contractor's expense. The contract will not be accepted until a satisfactory turf has been produced unless the work necessary to assure satisfactory turf will be done under the provisions of an uncompleted work agreement.*

612-3.02 Furnishing and Placing Erosion Control Materials

A. Limitations. *The time of placement shall be as specified in the contract documents and/or according to manufacturer's recommendations. No erosion control material shall be placed on frozen ground.*

B. Ground Preparation and Installation. *Areas to receive an erosion control material shall be shaped, graded and compacted to the lines and grades shown in the contract documents or as directed by the Engineer. Except on freshly placed topsoil, areas to receive erosion control materials shall be scarified to a minimum depth of 25 mm immediately prior to installation of the erosion control materials. All loose stones, clods, sticks, or other undesirable material over 25 mm in greatest dimension shall be removed and disposed of by the Contractor.*

When jute mesh is used it shall be placed without stretching on the freshly prepared surface so that it lays loosely on the soil and in contact with the soil at all points; and then it shall be rolled or tamped firmly into the soil surface. The upper end of each roll of jute mesh shall be turned down and buried to a depth of 150 mm with the soil firmly tamped against it. Check slots shall be constructed at 15 m intervals unless otherwise specified in the contract documents. The construction procedure shall consist of placing a fold of jute mesh 150 mm vertically into the ground and tamping soil firmly against it. Jute mesh shall be placed so that all edges shall have a minimum overlap of 150 mm. The ends of rolls shall be placed with the upgrade section on top. Jute mesh shall be held tightly to the soil by anchors driven firmly into the ground. Jute mesh anchors shall be spaced not more than 1 meter apart on the sides and along the centerline of all drainage ways. Jute mesh roll ends and check slots shall have anchors spaced at 300 mm intervals.

Class I, II, III erosion control materials shall be placed and firmly anchored as stated in the manufacturer's instructions.

Class IV erosion control materials shall be applied as recommended by the manufacturer. Where applied, Soil Stabilizers, Type A shall be minimum of 6 mm thick. Type A & B are intended to be applied with conventional hydraulic seeding equipment. Soil Stabilizer, Type B, may also be placed through dry spreading. When dry spreading method is used, the contractor shall apply the material uniformly. When Soil Stabilizer, Type A is used, seeds must be sown separately and prior to the application of the soil stabilizer.

All areas where erosion control materials have been satisfactorily placed shall be seeded in accordance with Section 610 - TURF ESTABLISHMENT, the erosion control material manufacturers recommendations and/or as further specified in the contract documents, except that mulching shall be as specified or approved.

C. Liability. *When any area fails for any reason to produce a satisfactory turf*

after a suitable period of time has elapsed, the Contractor shall re-establish the grade, replace the erosion control materials, and re-establish turf, in the same manner as specified in the contract documents until a satisfactory turf has been established. Any work to be corrected shall be at the Contractor's expense. The Contract will not be accepted until a satisfactory turf has been produced, unless the work necessary to assure satisfactory turf will be done under the provisions of an uncompleted work agreement.

D. Care and Repair. *The Contractor shall care for the areas where erosion control materials have been placed until acceptance of the Contract or acceptance of the turf, whichever is later. Where necessary, such care shall consist of providing approved warning signs or barricades for protection against traffic. Any surfaces that have settled, become gullied or otherwise damaged, do to the Contractor's operations, shall be repaired at the Contractor's expense to re-establish the grade and soil conditions that existed prior to placing erosion control materials. Turf shall be re-established as specified in the contract documents. In locations where mowing is specified, the turf shall be mowed unless otherwise approved, to a height of 100 mm when growth reaches 200 mm until acceptance of the Contract.*

612-4 METHOD OF MEASUREMENT

612-4.01 Sodding. *Sodding will be measured as the number of square meters of surface area that have been acceptably completed.*

612-4.02 Furnishing and Placing Erosion Control Materials. *Furnishing and placing erosion control materials will be measured as the number of square meters of surface area that have been acceptably completed.*

612-5 BASIS OF PAYMENT

612-5.01 Sodding. *The unit price bid per square meter shall include the cost of all labor, equipment, materials, including topsoil placed under the sod, water used during planting, and necessary excavation, equipment and incidentals necessary to acceptably complete and care for the work as specified. When the quantity of sod is equal to or less than 400 square meters, the watering necessary to establish the sod after planting shall be included in the price bid for sodding. When the quantity of sod exceeds 400 square meters, the watering, except initial watering at time of planting, shall be paid for under the watering vegetation item in the Contract.*

612-5.02 Furnishing and Placing Erosion Control Materials. *The unit price bid per square meter shall include the cost of all labor, materials, equipment and incidentals necessary to complete and care for the work as specified, except that furnishing and*

placing seed, fertilizer and, where specified, mulch are paid for under the turf establishment item and furnishing and placing topsoil will be paid for under the topsoil item in the Contract.

Payment will be made under:

Item No.	***Item***	***Pay Unit***
612.01 m	*Sodding*	*Square Meter*
612.0201 m	*Class I Type A Erosion Control Material*	*Square Meter*
612.0202 m	*Class I Type B Erosion Control Material*	*Square Meter*
612.0203 m	*Class I Type C Erosion Control Material*	*Square Meter*
612.0204 m	*Class II Type A Erosion Control Material*	*Square Meter*
612.0205 m	*Class II Type B Erosion Control Material*	*Square Meter*
612.0206 m	*Class II Type C Erosion Control Material*	*Square Meter*
612.0207 m	*Class III Type A Erosion Control Material*	*Square Meter*
612.0208 m	*Class III Type B Erosion Control Material*	*Square Meter*
612.0209 m	*Class III Type C Erosion Control Material*	*Square Meter*
612.020910 m	*Class III Type D Erosion Control Material*	*Square Meter*
612.0210 m	*Class IV Type A Erosion Control Material*	*Square Meter*
612.0211 m	*Class IV Type B Erosion Control Material*	*Square Meter*

LANDSCAPE DEVELOPMENT MATERIALS

Make the following changes to the Standard Specifications of January 2, 1995.

Page 7-141.
Replace §713-07 JUTE MESH OR OTHER APPROVED EROSION CONTROL MATERIALS in its entirety with the following:

713-07 EROSION CONTROL MATERIALS.

SCOPE. *This specification covers the material requirements for Erosion Control Materials.*

MATERIAL REQUIREMENTS.

Class I: ***Short term duration,*** *light duty, organic or synthetic erosion control material (unless only 100% organic products are specified).*

Type A: *Products for use where the slopes do not exceed 1:4. No minimum shear stress flow is required. The product shall be capable of withstanding moderate foot traffic without tearing or puncturing.*

Type B: *Products for use on slopes 1:3 and flatter.*

Type C: *Products for use on slopes 1:3 or flatter, or, in channels where the calculated shear stress flow is 70 Pa or less. Products shall be capable of withstanding shear stress flows of at least 70 Pa.*

Class II: ***An intermediate duration,*** *erosion control material.*

Type A: *Jute Mesh. For use on slopes 1:2 or flatter. Jute Mesh shall be of a uniform open plain weave of undyed and unbleached single jute yarn. Jute mesh shall be woven as follows:*

Approximately 55 warp ends per meter width.
Approximately 37 weft ends per linear meter.
Mass of jute mesh shall average 0.5 kilogram per square meter (plus or minus 5%).

Type B: *Organic or non-organic products for use on slopes 1:2 or flatter,*

or in channels when the calculated shear stress flow is 95 Pa or less. Products shall be capable of withstanding shear stress flows of at least 95 Pa.

Type C: *Products made entirely of organic materials. For use on slopes 1:2 or flatter, or in channels when the calculated shear stress flow is 95 Pa or less. Only 100% organic materials are allowed. Products shall be capable of withstanding shear stress flows of at least 95 Pa.*

Class III: ***Permanent*** *synthetic, ultra violet stabilized erosion control materials.*

Type A: *Products for use on slopes 1:2 or flatter, or in channels. Products shall be capable of withstanding shear stress flows of at least 95 Pa.*

Type B: *Products for slopes 1:2 or flatter, or in channels. Products shall be capable of withstanding shear stress flows of at least 170 Pa.*

Type C: *Products for slopes 1:1 or flatter, or in channels. Products shall be capable of withstanding shear stress flows of at least 240 Pa.*

Type D: *Products for slopes 1:1 or flatter, or in channels. Products shall be capable of withstanding shear stress flows of at least 380 Pa.*

Class IV: *Soil Stabilizers-Soil stabilizers are considered a short term duration erosion control device. When used alone, they shall be used on slopes 1:3 or flatter. They shall* ***not*** *be used in channels.*

Type A: *A cementitious soil binder which is added to wood cellulose fiber mulch, or a bonded fiber matrix. They are intended to form a thick heavy bodied crust or mat like barrier that controls water and wind induced erosion. Type A, may be used by itself, and is approved for use with Class III, Type A, B and C erosion mats where those mats are used on slope applications.*

Type B: *A polyacrylamide (PAM) and calcium solution intended to reduce the erodibility of bare soils during construction activities or to enhance the performance of mulching on permanent slopes. Soil stabilizer, Type B, shall bond soil particles and shall effectively increase the soil particle size to 1.0 mm or larger. It shall reduce the movement of soil through chemical bonding, increase the*

particle size thus making silt fence more effective, and increase the water absorption of the soil.

BASIS OF ACCEPTANCE: *Acceptance of Class I, II, III and IV Erosion Control Material is based upon the supplier's name and address on the product container label appearing on the Department's Approved List, and a certification of compliance with these specifications.*

As an erosion control material is received on a project site, the Engineer shall remove two square meters, for quality assurance, and submit it to the Geotechnical Engineering Bureau for testing. This pertains to Classes I, II, and III only, Class IV does not require a submission. The results of the quality assurance testing will not affect the use of a material on the project for which it is supplied. It is for the purpose of monitoring any changes in manufacturing processes which may affect the original properties that were determined at the time of initial approval.

The erosion control material will be tested for mass per unit and thickness. If the results are below the minimum acceptable for approval, the product's status on the Approval List will be reevaluated. The manufacturer will be notified of the review. Possible actions range from retesting of the manufacturer's line of products to immediate removal of those products from the Approved List.

Application for addition to the Approved List can be made to the Landscape Architecture Bureau. This evaluation will be performed in accordance with procedural directives of the Landscape Architecture Bureau. A geotextile component may be included in Class III Erosion Control Material. The geotextile component will be evaluated in accordance with procedural directives of the Geotechnical Engineering Bureau. Suppliers seeking addition to the Department's Approved List should allow 6 months for the evaluation.