US CUSTOMARY UNITS

D262172

PROPOSAL

Proposal Description:

Bridge Rehabilitation, Robert Moses Causeway (RMC) over Fire Island Inlet (FII), Town of Islip.

Letting of 2/21/2013 @ 10:30 A.M.

Submitted in accordance with Standard Specifications officially adopted May 1, 2008 and the Highway Law.

Book 3 of 3

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
50 WOLF ROAD
ALBANY, NEW YORK 12232

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§711-08 – ADMIXTURES- NON-CHLORIDE ACCELERATORS

Make the following changes to the Standard Specifications, dated May 1, 2008:

Page 872 under **711-08 ADMIXTURES, *delete*** the paragraph **SCOPE**, and ***replace*** with the following:

"**SCOPE.** These specifications cover the material requirements for air-entraining, water-reducing and retarding, water-reducing (normal range and high range), and non-chloride accelerating admixtures used in the manufacture of Portland Cement concrete."

Page 874, *after* paragraph **E. Length Change, *add*** the following:

"**Non-Chloride Accelerating Admixtures.** Non-chloride accelerating admixtures shall conform to the requirements outlined in ASTM C494 for Type C or Type E admixtures."

Page 874, ***delete*** the paragraph **SAMPLING AND TESTING**, and ***replace*** with the following:

"**SAMPLING AND TESTING.** A one quart sample of admixture shall be submitted to the Materials Bureau by the manufacturer applying for approval, except that for Water-reducing (High Range) admixtures, two quarts will be required. The manufacturer shall submit information on the formulation of the product including the raw materials from which it is compounded, data from tests performed in accordance with these specifications and a description of the manufacturing process. Data from tests performed in accordance with ASTM C260 for air-entraining agents and ASTM C494 for water-reducing and retarding, water-reducing (normal range and high range), and non-chloride accelerating admixtures may be substituted.

The Department will test the submitted admixture sample according to written Department instructions. The test procedures are available from the Materials Bureau upon request.

The Department reserves the right to monitor the performance of any previously approved admixture. Samples of admixture may be taken from actual concrete operations and retested by the Materials Bureau."

Page 875, ***delete*** the paragraph **BASIS OF ACCEPTANCE**, and ***replace*** with the following:

"BASIS OF APPROVAL. The approval of the admixture shall be based upon the submitted information and tests performed by the Materials Bureau. Upon approval by the Materials Bureau, the name of the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Admixtures will be accepted on the basis of the brand name appearing on the Approved List and the product containers plainly labeled with the brand name.

Any admixtures sampled from actual concrete operations and retested in the Materials Bureau shall give substantially the same results, at the same dosage rate, as the original tests. Any significant change will be cause for rejection of that material and may require a resubmission of the admixture by the manufacturer for a complete retest to determine specification compliance. The admixture may be withdrawn from the Approved List during the retest period."

SOIL EROSION AND SEDIMENT CONTROL

Make the following changes to the Standard Specifications of May 1, 2008:

Page 901, *delete* Class IV Soil Stabilizers in its entirety and replace with the following:

Class IV Soil Stabilizers. Soil stabilizers are short-term duration, erosion control products. When used alone, they shall be used on slopes 1:2 or flatter. They shall not be used in channels or in areas of concentrated flow.

Type A. A soil binding system consisting of one of the following:

- Cementitious soil binder which is added to wood cellulose fiber mulch, a Bonded Fiber Matrix (BFM). Intended to form a thick, heavy-bodied crust or mat-like barrier that controls storm water and wind induced erosion. BFMs last up to six months and require a cure time up to 48 hours, without rain, to develop intimate soil contact.
- Soil stabilizing polymer which is added to wood cellulose fiber mulch, a Polymer Stabilized Fiber Matrix (PSFM). Intended to form a matrix that is designed to work directly with soil to maintain its stability by preserving existing soil structure, flocculating fine sediment being dislodged by storm water or wind, and to prevent splash erosion. PSFMs last up to six months and require a cure time up to 24 hours.

Type B. An anionic 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 stabilizers, Type B, shall bond soil particles and shall effectively increase the soil particle size to 3/64 inch or larger. Soil stabilizers, Type B, shall reduce the movement of soil due to chemical bonding, thereby increasing the particle size rendering silt fence/sediment trapping devices more effective, and increase the water absorption of the soil.

Type C. A soil binder which may be made up of wood fibers, straw fibers, cotton fibers, interlocking fibers, polymers and hydro-colloid tackifiers, a Flexible Growth Medium (FGM) or Cotton Fiber Reinforcement Matrix (C-FRM). Intended to form a thick, heavy-bodied crust or mat-like barrier that controls storm water and wind induced erosion. FGMs/C-FRMs last up to a year and require no cure time to develop intimate soil contact.

Type A, B, and C soil stabilizers may be used alone or in combination with Class III, Types A and B Turf Reinforcement Materials where those products are used on slope applications.

PAVEMENT MARKING MATERIALS

Make the following changes to the Standard Specifications of May 1, 2008.
Page 1006, **Delete** Section 727 *Pavement Marking Materials* and **Replace** it with the following:

SECTION 727 - PAVEMENT MARKING MATERIALS

727-01 EXTRUDED THERMOPLASTIC

SCOPE. This specification covers the material requirements for thermoplastic that is extruded, in a molten state, onto a pavement surface. Following a surface application of reflective beads the resultant marking is a reflectorized stripe.

MATERIAL REQUIREMENTS. Unless otherwise noted, all samples are to be prepared and tested at an ambient temperature of 73°F ± 3°F.

General.

- Formulated for application at temperatures greater than 400°F.
- Show no significant breakdown or deterioration at 475°F.
- Pigment, beads and filler uniformly dispersed in the binder resin.
- Be free from all skins, dirt and foreign objects.
- Comply with the following requirements:

TABLE 727-01-1 THERMOPLASTIC PROPERTIES

Component	% by Weight	
	White	Yellow
Binder	17.0 min	17.0 min.
Titanium Dioxide	10.0 min	---
Reflective Beads	30-40	30-40
Calcium Carbonate & Inert Fillers	43.0 max	*
Yellow Pigments	---	*

* Amount and type of yellow pigment, calcium carbonate and inert fillers at the option of the manufacturer, providing the other composition requirements are met and the yellow pigment is lead chromate free.

Physical Properties.

A. Color. (ASTM D1535) When viewed under North Standard Daylight:
White: Approximate visual color match to Munsell Book Notation N 9.5/0.
Yellow: Approximate visual color match to Munsell Book Notation 10YR8/14.

B. Yellowness Index. (ASTM D1925 at 2°Observer angle and C Illuminate)
White thermoplastic: 0.12 maximum

C. Softening Point. (ASTM E28) Softening point: 194°F minimum.

PAVEMENT MARKING MATERIALS

D. Specific Gravity. Between 1.8 and 2.2 as determined by a water displacement method at 77°F.

E. Field Drying Time. At 70°F, and thickness between 1/8 inch and 3/16 inch: Completely solid and showing no damaging effect from traffic after 10 minutes.

Thermoplastic Primer.

- Specifically designed to enhance the bond of thermoplastic pavement markings to HMA and/or PCC pavements.
- Be either a one-component or two-component, cold- or hot-applied material of the type recommended by the manufacturer.
- Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC) as established by the U.S. EPA, and the NYSDEC.

PACKAGING AND SHIPPING. Shipped to the job site in strong, substantial containers, clearly marked with the following and including:

- Manufacturer's Name
- Name of Product
- Material Specification Number
- Lot/Batch Number
- Manufacture Date
- Expiration Date
- Quantity
- Two-component primer containers clearly identified as "Part A" and "Part B"
- Primers accompanied with written instructions for use

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by samples of each color (white and yellow) of the product and applicable glass beads in accordance with §727-05 *Glass Beads For Pavement Markings*, independent lab test results in accordance to this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and a certification that the product conforms to this specification.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Extruded Thermoplastic will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-02 REMOVABLE RAISED PAVEMENT MARKERS

SCOPE. This specification covers the material requirements for removable raised pavement markers for use as interim and temporary pavement markings.

MATERIAL REQUIREMENTS

General. Removable raised pavement markers shall be:
Designed as single units consisting of an acrylic plastic or another type of durable casing, containing one or two reflective faces.

PAVEMENT MARKING MATERIALS

Approximately square in shape.
Capable of providing daytime delineation.
Adhere to HMA or PCC surfaces using adhesives and/or methods recommended by the manufacturer.
Removable from HMA and PCC pavements, intact or in substantially large pieces, without the use of heat, solvents, grinding or blasting.
Free from dirt or any other contaminants.

Physical Properties.

A. Color. (ASTM D1535) When viewed under North Standard Daylight:
White: Approximate visual color match to Munsell Book Notation N 9.5/0
Yellow: Approximate visual color match to Munsell Book Notation 10YR8/14

B. Size.
1. Casing. Minimum: 4 x 4 x 3/4 inch.
2. Reflective Lens. Minimum area of the reflective lens: 0.38 square inches.

C. Reflectance. Initial average reflectance values, when measured with incident light parallel to the base of the marker, at an observation angle of 0.2°.

TABLE 727-02-1 REFLECTIVE MARKER LENSES REFLECTANCE				
Color	White		Yellow	
Entrance Angle	0°	20°	0°	20°
Specific Intensity (cd/fc)	1.0	0.4	0.6	0.24

NOTES:
1. Observation Angle: The angle at the reflector between the observer's line of sight and the direction of light incident on the reflector.
2. Entrance Angle: The angle in the horizontal plane between the direction of incident light and the normal to the leading edge of reflective marker.
3. Specific Intensity: The luminous intensity (candelas) of returned light at the chosen observation and entrance angles for each footcandle of illumination at the reflector on a plane perpendicular to the incident light.
4. Photometric Test Procedure: The reflective marker to be tested shall be located with the center of the reflective lens at a distance of 5 feet from a uniformly bright light source, having an effective diameter of 0.2 in. The return of light shall be measured using an annular ring photocell (3/8 inch I.D. x 1/2 inch O.D.). The photocell shall be shielded to eliminate stray light. The distance from the light source center to the photocell center shall be 0.21 inches. If a test distance of other than 5 feet is used, the source and receiver shall be modified in the same proportion as the test distance.

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by samples of each color (white and yellow) of the product, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that the product conforms to this specification. Additional field tests will be carried out in accordance with Materials Bureau Directives.

PAVEMENT MARKING MATERIALS

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Removable Raised Pavement Markers for Interim Pavement Markings will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Removable Raised Pavement Markers used for Temporary Pavement Markings will be accepted on the basis of the product appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-03 EPOXY PAINT

SCOPE. This specification covers the material requirements for epoxy pavement marking paint that is applied onto pavement, followed by a surface application of retroreflective beads for use as interim and permanent pavement markings.

MATERIAL REQUIREMENTS

General. Epoxy paint shall be:
Formulated for use as a pavement marking material and for hot-spray application at elevated temperatures.
Two-component (Part A and Part B), 100% solids type system formulated and designed to provide a simple volumetric mixing ratio (e.g., two volumes of Part A to one volume of Part B).
VOC compliant and lead chromate free.
Use organic yellow pigments, Color Index Pigment Yellow 65 (C.I. 11740) and/or 74 (C.I. 11741).
Have a consistent target value of epoxy in Part A, based on ASTM D1652. Tested on a pigment free basis and calculated as the weight per epoxy equivalent (WPE).
Have a consistent total amine value of Part B based on ASTM D2074, or an alternate test method for determining the amine value specified by the manufacturer subject to the approval of the Director, Materials Bureau.
Display no bleeding on the surface upon which the paint is applied.
Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC) as established by the U.S. EPA and the NYSDEC.

Physical Properties.

A. % Pigment - Part A. (ASTM D2371) Yellow: 23% minimum
White: 18% minimum
% TiO2 (100% Purity) (NYS Test Method 727-20C) White: 16.5% minimum

B. % Resin – Part A. (ASTM D2371) Yellow: 70% - 77%
White: 75% - 82%

C. Color. (ASTM D1535) When viewed under North Standard Daylight, at a 15 ± 1 mil wet film thickness with no glass beads applied:
White: Approximate visual color match to Munsell Book Notation N 9.5/0

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Yellow: Approximate visual color match to Munsell Book Notation 10YR8/14 and within the following chromaticity coordinate limits when tested under ASTM E1347.

TABLE 727-03-1 CHROMATICITY COORDINATES				
Coordinate	1	2	3	4
x	0.485	0.526	0.504	0.468
y	0.426	0.472	0.481	0.450

D. Directional Reflectance. (ASTM E1347) White: 84% minimum
Yellow: 54% minimum

E. Yellowness Index. (ASTM D1925 at 2° Observer angle and C Illuminate)
White Epoxy Paint: 0.12 maximum

F. Drying Time – Laboratory. (ASTM D711) Dry to no-pick-up time in 3 minutes maximum at an application rate of 15 ± 1 mils wet-film thickness and glass-sphere application rate of 20 lb/gal.

G. Hardness. (ASTM D2240) Samples cured for 72 to 96 hours prior to testing.
Shore D Hardness: 75 - 100.

H. Infrared Spectrophotometer Analysis. (ASTM D2621) The spectrum of each component will be analyzed and maintained as a base record. Any subsequent samples taken from a Department contract must be a reasonable match to the original formulation spectrum accepted by the Materials Bureau for the Approved List.

Placement Properties. The material shall be capable of being placed using standard epoxy pavement marking equipment and have a maximum field no track time of 30 minutes when installed at 77°F.

PACKAGING AND SHIPPING. Shipped to the job site in strong, substantial containers, clearly marked with the following information:

- Manufacturer's Name
- Name of Product
- Material Specification Number
- Lot/Batch Number
- Date of Manufacture
- Expiration Date
- The Statement (as appropriate):
  "Part A Contains Pigment and Epoxy Resin," or "Part B Contains Catalyst"
- Quantity

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by two 1/2 pint samples of each color (white and yellow) of Part A and one 1/2 pint of Part B for each color, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that

the product conforms to this specification. Additional field tests will be carried out in accordance with Materials Bureau Directives.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Epoxy Paint for Permanent and/or Interim Pavement Markings will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Epoxy Paint used for Temporary Pavement Markings will be accepted on the basis of the product appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-04 PERMANENT PAVEMENT TAPE

SCOPE. This specification covers the material requirements for preformed pavement marking tape that is applied to the pavement for use as permanent pavement markings.

GENERAL. Permanent pavement tape shall be:
Designed to provide immediate and continuous retroreflection.
Meet all the requirements of ASTM D4505.
Composed of a mixture of plastics or polymeric materials, resins, pigments, and reflective beads that are uniformly distributed throughout the thickness of the material.
Have a layer of reflective beads bonded to, or embedded in the top surface.
Pre-coated, on its bottom side, with a pressure-sensitive adhesive for adherence to HMA or PCC surfaces.
Of the specified dimension and shape with clean-cut, well-defined edges, of good appearance, and free of cracks or other defects.
Weather resistant and through normal traffic wear shall show no appreciable fading, lifting or shrinkage.
Capable of molding itself to the contours, breaks and faults of HMA or PCC surfaces.
Show no significant tearing, rollback, lifting or other signs of poor adhesion.
Free from dirt and any other contaminants.

MATERIAL REQUIREMENTS. Unless otherwise noted, all samples are to be prepared and tested at an ambient temperature of 73° ± 3°F.

A. Color. (ASTM D1535) When viewed under North Standard Daylight:
White: Approximate visual color match to Munsell Book Notation N 9.5/0
Yellow: Approximate visual color match to Munsell Book Notation 10YR8/14

B. Thickness. Preformed pavement marking tape shall be:
Uniform Cross Section: 60 mils minimum thickness.
Patterned (Variable Cross Section): 20 mils minimum thickness at the thinnest portions and 60 mils minimum thickness at the thickest portions.
The patterned top surface shall have approximately 50% of the surface area raised, and its design shall provide immediate and continuing retroreflection.

C. Tensile Strength. (ASTM D638) 40 psi minimum
Test specimens shall be Type II prepared by die cutting with Die C as specified in ASTM D412 Test

Method A. The testing machine shall operate at a speed of 0.2 inches per minute. For calculating the tensile strength of patterned type material, the thickness measurements shall be taken in the thinnest portions of the cross sectional area.

D. Elongation. (ASTM D638) When tested in accordance with the conditions as specified for Tensile Strength: 15% minimum elongation

Primer. Primer shall be recommended by the manufacturer of the permanent tape and be compatible with the marking and surface the marking is being applied to.

Specifically designed to enhance the bond of the permanent tape to HMA and/or PCC pavements. Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC) as established by the U.S. EPA and the NYSDEC.

PACKAGING AND SHIPPING. Shipped to the job site in strong, substantial containers, clearly marked with the following and including:

- Manufacturer's Name
- Name of Product
- Material Specification Number
- Lot/Batch Number
- Manufacture Date
- Quantity
- Primers accompanied with written instructions for use
- Expiration Date

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by samples of each color (white and yellow) of the product, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that the product conforms to this specification. Additional laboratory analysis and field tests will be carried out in accordance with Materials Bureau Directives.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Permanent Pavement Tape and primer will be accepted on the basis of the products appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Permanent Pavement Tape and primer used for Temporary Pavement Markings will be accepted on the basis of the products appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-05 GLASS BEADS FOR PAVEMENT MARKINGS

SCOPE. This specification covers the material requirements for retroreflective beads applied on top of thermoplastic, epoxy or traffic paint for use as pavement markings.

PAVEMENT MARKING MATERIALS

MATERIAL REQUIREMENTS. Glass beads for pavement markings shall meet the requirements of AASHTO M247 and shall be:
Composed of glass that is highly resistant to traffic wear and to the effects of weathering.
Colorless, clean, transparent, free from milkiness or excessive air bubbles, and essentially free from surface scarring or scratching.
Silica content (ASTM C169): 60% minimum.
Refractive index: 1.50 when tested by the liquid immersion method at 77°F.
Show no tendency to absorb moisture in storage and shall remain free of clusters and hard lumps.
Flow freely from the dispensing equipment at any time when surface and atmospheric conditions are satisfactory for painting.

A. Sphericity. (ASTM D1155 Procedure A) Spherical in shape - 70% minimum, true spheres. Wet/Night Visibility Beads will be tested for roundness according to the procedural directives of the Materials Bureau.

B. Gradation. (ASTM D1214).

TABLE 727-05-1
GLASS SPHERE GRADATION (Standard Bead)

Percent Passing by Weight				
Marking Type	**Sieve Size**			
	#20	#30	#50	#80
Epoxy	100	80-95	9-42	0-10
Traffic Paint	100	80-95	9-42	0-10
Thermoplastic	100	79-95	15-60	0-15

TABLE 727-05-2
GLASS SPHERE GRADATION (Wet/Night Visibility Bead)

Percent Passing by Weight						
Marking Type	**Sieve Size**					
	#10	#12	#14	#16	#18	#20
Epoxy Wet/Night Reflective	100	95-100	75-95	10-47	0-7	0-2

C. Coating.

TABLE 727-05-3
GLASS SPHERE COATINGS

Marking Type	**Coating Type**
Epoxy Wet/Night Reflective	Silane Type adherence coating designed to interact with and adhere to epoxy pavement markings.
Epoxy (Standard Bead)	Moisture-resistant coating or a dual purpose type coating (moisture-resistant and adherence).
Traffic Paint	
Thermoplastic (Drop on)	

D. Moisture Resistance. AASHTO M 247 Section 5.3.2

PACKAGING AND SHIPPING. Shipped to the job site in waterproof plastic lined burlap or plastic lined paper bags with the following information clearly marked on the packages:

- Manufacturer's Name
- Name of Product
- Size/Type/Coating
- Material Specification Number
- Lot/Batch Number
- Manufacture Date
- Quantity/Weight of Material

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by one 50 lb bag sample of the product, independent lab test results in accordance with this specification and certification that the product conforms to this specification.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Glass Beads for Pavement Markings will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Glass Beads for Pavement Markings used for Temporary Pavement Markings will be accepted on the basis of the product appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-06 REMOVABLE PAVEMENT TAPE

SCOPE. This specification covers the material requirements for removable pavement marking tape and masking tape for use as interim and temporary pavement markings.

MATERIAL REQUIREMENTS.

General. Removable pavement tape shall be:

Composed of a mixture of plastics or polymeric materials, resins, pigments.

Have on its bottom side, a pre-applied, pressure-sensitive adhesive for adherence to HMA or PCC surfaces.

Of the specified dimension and shape with clean-cut, well defined-edges, of good appearance, and free of cracks or other defects.

Weather resistant and through normal traffic wear shall show no appreciable fading, lifting or shrinkage.

Capable of molding itself to the contours, breaks and faults of HMA or PCC surfaces.

Show no significant tearing, rollback, lifting or other signs of poor adhesion.

Removable from HMA and PCC pavements, intact or in substantially large pieces, without the use of heat, solvents, grinding or blasting, and leaving minimal permanent marks, scars or damage to the pavement surface after removal.

Be free from dirt and any other contaminants.

PAVEMENT MARKING MATERIALS

Retroreflective Tape.
Designed to provide immediate and continuous retroreflection.
Composed of a mixture of plastics or polymeric materials, resins, pigments, and reflective beads that are uniformly distributed throughout the thickness of the material.
Have a layer of reflective beads bonded to, or embedded in the top surface.

Meet the following requirements:

A. Color: (ASTM D1535) When viewed under North Standard Daylight:
White: Approximate visual color match to Munsell Book Notation N 9.5/0
Yellow: Approximate visual color match to Munsell Book Notation 10YR 8/14 and be within the following chromaticity coordinate limits when tested under ASTM E1347.

TABLE 727-06-1 CHROMATICITY COORDINATES				
Coordinate	1	2	3	4
x	0.485	0.526	0.504	0.468
y	0.426	0.472	0.481	0.450

B. Reflectance:

TABLE 727-06-2 PREFORMED TAPE REFLECTANCE REQUIREMENTS				
Color	White		Yellow	
Observation Angle	0.2°	0.5°	0.2°	0.5°
Specific Luminance (mcd/ft^2/fc)	1770	1270	1310	810

Masking Tape. Masking tape shall be:
Specifically designed for use to temporarily cover existing pavement markings.
Consist of durable, nonreflective, pliant polymer tape on a reinforced, conformable backing, pre- coated with a pressure-sensitive adhesive
Capable of adhering to existing pavement markings, asphalt pavement and Portland cement concrete pavement without the use of heat, solvents, additional adhesives or other means.
Be substantially similar in color to the pavement surface with a flat matte finish and textured, skid resistant surface.

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by samples of each color (white, yellow, black/grey) of the product, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that the product conforms to this specification. Additional laboratory analysis and field tests will be carried out in accordance with Materials Bureau Directives.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Removable Pavement Tape used for Interim Pavement Markings will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

PAVEMENT MARKING MATERIALS

Removable Pavement Tape used for Temporary Pavement Markings will be accepted on the basis of the product appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing material on the Approved List and that it conforms to this specification.

727-07 REMOVABLE WET-NIGHT REFLECTIVE TAPE

SCOPE. This specification covers the material requirements for removable wet-night reflective tape for use as interim and temporary pavement markings.

MATERIAL REQUIREMENTS.

General. Removable Wet-Night reflective tape shall be:
Designed to provide immediate and continuous retroreflection in day and night as well as dry and wet conditions.
Composed of a mixture of durable plastics or polymeric materials, resins, pigments, and reflective beads that are uniformly distributed throughout the thickness of the material.
Pre-coated, on its bottom side, with a pressure-sensitive adhesive.
Capable of adhering to existing pavement markings, asphalt pavement and Portland cement concrete pavement without the use of heat, solvents, additional adhesives or other means.
Of the specified dimension and shape with clean-cut, well-defined edges, of good appearance, and free of cracks or other defects.
Weather resistant and through normal traffic wear shall show no appreciable fading, lifting or shrinkage.
Capable of molding itself to the contours, breaks and faults of HMA or PCC surfaces.
Show no significant tearing, rollback, lifting or other signs of poor adhesion.
Removable from HMA and PCC pavements, intact or in substantially large pieces, without the use of heat, solvents, grinding or blasting, and leaving minimal permanent marks, scars or damage to the pavement surface after removal.
Have a layer of reflective beads bonded to, or embedded in the top surface.
Free from dirt and any other contaminants.

Meet the following requirements:

Physical Properties.

A. Color: (ASTM D1535) When viewed under North Standard Daylight:
White: Approximate visual color match to Munsell Book Notation N 9.5/0 and be within the following daytime chromaticity coordinates (dry) when tested under ASTM E1347.

TABLE 727-07-1 WHITE CHROMATICITY COORDINATES

Coordinate	1	2	3	4
x	0.355	0.305	0.285	0.335
y	0.355	0.305	0.325	0.375

Yellow: Approximate visual color match to Munsell Book Notation 10YR 8/14 and be within the following daytime chromaticity coordinates (dry) when tested under ASTM E1347.

PAVEMENT MARKING MATERIALS

TABLE 727-07-2 YELLOW CHROMATICITY COORDINATES				
Coordinate	1	2	3	4
x	0.560	0.460	0.420	0.490
y	0.440	0.400	0.440	0.510

B. Retroreflectivity. Wet: ASTM E2176 and ASTM E2177
Dry: ASTM E1710

TABLE 727-07-3 MINIMUM INITIAL RETROREFLECTIVITY				
Entrance Angle: 88.76° **Observation Angle:**1.05°				
Color	White		Yellow	
Condition	Dry	Wet	Dry	Wet
Retroreflectivity [mcd/ft²/fc]	500	250	300	200

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by samples of each color (white and yellow) of the product, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that the product conforms to this specification. Additional laboratory analysis and field tests will be carried out in accordance with Materials Bureau Directives.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Removable Wet-Night Reflective Tape used for Interim Pavement Markings will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Removable Wet-Night Reflective Tape used for Temporary Pavement Markings will be accepted on the basis of the product appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-08 PERMANENT WET-NIGHT REFLECTIVE TAPE

SCOPE. This specification covers the material requirements for permanent wet-night pavement marking tape for use as permanent pavement markings.

MATERIAL REQUIREMENTS. Unless otherwise noted, all samples are to be prepared and tested at an ambient temperature of 73° ± 3°F.

General. Permanent wet-night reflective tape shall be:
Designed to provide immediate and continuous retroreflection in day and night as well as dry and wet conditions.
Composed of a mixture of plastics or polymeric materials, resins, pigments, and reflective beads that are uniformly distributed throughout the thickness of the material.

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Have a layer of reflective beads bonded to, or embedded in the top surface.
Pre-coated, on its bottom side, with a pressure-sensitive adhesive for adherence to HMA or PCC surfaces.
Of the specified dimension and shape with clean-cut, well-defined edges, of good appearance, and free of cracks or other defects.
Weather resistant and through normal traffic wear shall show no appreciable fading, lifting or shrinkage.
Capable of molding itself to the contours, breaks and faults of HMA or PCC surfaces.
Show no significant tearing, rollback, lifting or other signs of poor adhesion.
Free from dirt and any other contaminants.

Physical Properties.

A. Color: (ASTM D1535) When viewed under North Standard Daylight:
White: Approximate visual color match to Munsell Book Notation N 9.5/0 and be within the following daytime chromaticity coordinates (dry) when tested under ASTM E1347.

TABLE 727-08-1 WHITE CHROMATICITY COORDINATES				
Coordinate	1	2	3	4
x	0.355	0.305	0.285	0.335
y	0.355	0.305	0.325	0.375

Yellow: Approximate visual color match to Munsell Book Notation 10YR 8/14
and be within the following daytime chromaticity coordinates (dry) when tested under ASTM E1347.

TABLE 727-08-2 YELLOW CHROMATICITY COORDINATES				
Coordinate	1	2	3	4
x	0.560	0.460	0.420	0.490
y	0.440	0.400	0.440	0.510

B. Retroreflectivity. Wet: ASTM E2176 and ASTM E2177
Dry: ASTM E1710

TABLE 727-08-3 MINIMUM INITIAL RETROREFLECTIVITY		
Entrance Angle: 88.76° **Observation Angle:**1.05°		
Color	White	Yellow
Retroreflectivity (mcd/ft²/cd)	750	450

C. Thickness.
Uniform Cross Section: 60 mils minimum thickness
Patterned (Variable Cross Section): 20 mils minimum thickness at the thinnest portions and 60 mils minimum thickness at the thickest portions.
The patterned top surface shall have approximately 50% of the surface area raised, and its design shall provide immediate and continuing retroreflection.

D. Friction Resistance. (ASTM E303) Friction resistance: 45 BPN minimum.

PAVEMENT MARKING MATERIALS

E. Tensile Strength. (ASTM D638) Tensile strength: 40 psi minimum
Test specimens shall be Type MII prepared by die cutting with Die C as specified in ASTM D412, Test Method A. The testing machine shall operate at a speed of 0.2 inches per minute. For calculating the tensile strength of patterned type material, the thickness measurements shall be taken in the thinnest portions of the cross sectional area.

F. Elongation. (ASTM D638) 15% minimum elongation when tested in accordance with the conditions as specified for Tensile Strength.

Primer. Primer shall be:
Be recommended by the manufacturer of the preformed pavement marking and be compatible with the marking and surface the marking is being applied to.
Specifically designed to enhance the bond of the preformed pavement markings to HMA and/or PCC pavements.
Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC) as established by the U.S. EPA and the NYSDEC.

PACKAGING AND SHIPPING. Shipped to the job site in strong, substantial containers, clearly marked with the following and including:

- Manufacturer's Name
- Name of Product
- Material Specification Number
- Lot/Batch Number
- Manufacture Date
- Quantity
- Primers accompanied with written instructions for use
- Expiration Date

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by samples of each color (white and yellow) of the product, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that the product conforms to this specification. Additional laboratory analysis and field tests will be carried out in accordance with Materials Bureau Directives.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Permanent Wet Night Reflective Tape and primer will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Permanent Wet-Night Reflective Tape and primer used for Temporary Pavement Markings will be accepted on the basis of the product appearing on the Approved List. Upon request, the Contractor shall provide a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

727-09 TRAFFIC PAINT

PAVEMENT MARKING MATERIALS

SCOPE. This specification covers the material requirements for waterborne and solventborne paints that are applied onto pavement, followed by a surface application of retroreflective beads for use as temporary, interim and permanent pavement markings.

MATERIAL REQUIREMENTS.

General. Traffic paint shall be:
Formulated for use as a pavement marking material.
Be VOC compliant and lead chromate free.
Yellow paints must use organic yellow pigments Color Index Pigment Yellow 65 (C.I. 11740) and/or 74 (C.I. 11741).
Display no bleeding on the surface upon which the paint is applied.
Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC) as established by the U.S. EPA, and the NYSDEC.

Physical Properties.
Traffic paint for permanent and Interim Pavement Markings shall conform to the requirements of paragraphs A though L below. Traffic paint for Temporary Pavement Markings shall conform to the following paragraphs: B. *Color*; C. *Directional Reflectance*; D. *Yellowness Index*; E. *Drying Time*; F. *Viscosity*; and G. *Dry Opacity*.

A. Composition.
% Pigment. (ASTM D3723) 58.0% – 62.0%
% Total Solids. (ASTM D3723) 76.0 % minimum
% Vehicle Non-Volatile. (ASTM D3723) 43.0 % minimum

The manufacturers certified organic yellow pigment content shall be used to determine the final laboratory test results for: total pigment (%), and for nonvolatile vehicle (%). The Department reserves the right to validate the manufacturers "certified" organic yellow pigment content through outside, independent laboratory testing.

B. Color. (ASTM D1535) When viewed under North Standard Daylight at a 15 ± 1 mils wet film thickness with no glass beads applied:
White: Approximate visual color match to Munsell Book Notation N 9.5/0.
Yellow: Approximate visual color match to Munsell Book Notation 10YR 8/14 and within the following chromaticity coordinate limits when tested under ASTM E1347.

TABLE 727-09-1 CHROMATICITY COORDINATES				
Coordinate	1	2	3	4
x	0.485	0.517	0.492	0.468
y	0.426	0.462	0.471	0.450

C. Directional Reflectance (ASTM E1347) White: 84% minimum
Yellow: 54% minimum

D. Yellowness Index. (ASTM D1925 at 2°Observer angle and C Illuminate)

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White Traffic Paint: 0.12 maximum.

E. Viscosity. (ASTM D562 Procedures B) 75 – 95 Kreb Units at 77°F

F. Dry Opacity. (ASTM D2805) 0.95 minimum contrast ratio
Application at 3 1/2 inches wide, wet-film thickness of 5 mils to white and black contrast panels matching Lenta Form 5C or equivalent. Dry time of 1 hour minimum.

G. Abrasion Resistance. (ASTM D4060) Four plate samples for each lot will be prepared for testing on the Taber Abaser. The paint will be sprayed on steel plates, or applied by other suitable means so as to ensure a nominal 15 mil wet film thickness on each plate. Plates will be cured at standard laboratory temperature and humidity for 2 to 24 hours. The paint abrasion plates will be cleaned, dressed, and baked at 221°F for 18 hours. After baking, the plates will be allowed to cool in a desiccator for one hour and then weighed. The plates will be abraded for 1000 cycles on the Taber Abraser. The Taber Abraser will be operated with 1.10 lb weights and CS 10 wheels on the machine.

After abrading, the samples will be cleaned with a soft brush, placed in a desiccator for one hour and weighed again. The average weight loss for the four plates shall not exceed 0.00176 oz.

H. Flexibility. (Federal Specification TT-P-1952B Section 4.5.4) No cracking or flaking visible. Determine flexibility in accordance with Method B of ASTM D522.

I. Freeze-Thaw Stability. (Federal Specification TT-P-1952b, Section 4.5.7)
No coagulation or change in consistency (ASTM D562) greater than 15 Kreb Units.

J. Heat Stability. (Federal Specification TT-P-1952b, Section 4.5.8) Waterborne only. No coagulation, discoloration or change in consistency (ASTM D562) greater than 15 Kreb Units when tested in an oven at 120° ± 2°F.

K. Infrared Spectrophotometer Analysis.
Waterborne: (ASTM D3168) Solventborne: (ASTM D2621)
The spectrum of the paint will be analyzed and maintained as a base record. Any subsequent samples taken from a Department contract must be a reasonable match to the original formulation spectrum accepted by the Materials Bureau for the Approved List.

Placement Properties.
The material shall be placed using standard traffic paint application equipment and have a maximum field no track time of 3 minutes when installed at 77°F.

PACKAGING AND SHIPPING. Shipped to the job site in strong, substantial containers. Individual containers plainly marked with the following information:

- Manufacturer's Name
- Name of Product
- Material Specification Number
- Lot/Batch Number
- Test Number
- Manufacture Date

PAVEMENT MARKING MATERIALS

- Expiration Date
- Quantity

BASIS OF APPROVAL. Application for approval shall be submitted to the Materials Bureau by the manufacturer, accompanied by eight 1 pint samples of each color (white and yellow) of the product, independent lab test results in accordance with this specification or in conjunction with the National Transportation Product Evaluation Program (NTPEP), and certification that the product conforms to this specification. Addition field tests will be carried out in accordance with Materials Bureau Directives.

Upon approval by the Materials Bureau, the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Traffic Paint for permanent and Interim Pavement Markings will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

Traffic Paint used for Temporary Pavement Markings need not appear on the Approved List. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

D262172
TEMPORARY TRAFFIC CONTROL DEVICES

Make the following changes to the Standard Specifications of May 1, 2008:
Page 1021, **Delete** Section 729 *Temporary Traffic Control Devices* and **Replace** it with the following:

SECTION 729 – TEMPORARY TRAFFIC CONTROL DEVICES

729-01 DRUMS

SCOPE. This specification covers the material, fabrication, and performance requirements for traffic drums. Drums are defined by FHWA as a Category I device.

MATERIAL REQUIREMENTS. Drums shall conform to the requirements of the MUTCD, shall be NCHRP 350 or MASH approved and shall be orange plastic, one-piece or two-piece construction, with a closed top. Drums shall be a minimum of 18 inches in diameter (visible from all directions), a minimum of 36 inches in height. Drums shall have a maximum weight of 75 lbs., including ballast. Two-piece drums shall consist of a base no more than 4 inches in height and an upper section. The base and upper section of two-piece drums shall be designed as a unit. One-piece drums shall include a base ring or elongation designed to hold ballast. The base and/or any nonflexible portion of the drum shall not extend more than 2 inches above the pavement surface.

Drums shall have 4 horizontal circumferential stripes of reflective sheeting a minimum of 4 inches wide, of alternating orange and white, starting with orange on the top. The top edge of the upper band shall be a maximum of 2 inches from the top edge of the drum. The space between stripes shall not exceed 2 inches.

Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B), or higher. Reflective sheeting shall be firmly bonded to the drum with an adhesive; mechanical fasteners to bond reflective sheeting to the drum will not be allowed.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-02 CONES

SCOPE. This specification covers the material, fabrication, and performance requirements for traffic cones. Cones are defined by FHWA as a Category I device.

MATERIAL REQUIREMENTS. Cones shall conform to the requirements of the MUTCD, shall be NCHRP 350 or MASH approved and shall be orange rubber or plastic. Cones shall have a maximum weight of 20 lbs, including ballast.

Standard cones shall be approximately 28 inches in height with a minimum conical bottom width of 10 inches. Standard cones shall have two horizontal circumferential stripes of white reflective sheeting, the upper a minimum of 6 inches wide, with the upper edge 3 to 4 inches from the top of the cone, and the lower a minimum of 4 inches wide with the upper edge approximately 2 inches below the upper stripe.

Tall cones shall be approximately 36 inches in height with a minimum conical bottom width of 10 inches. Tall cones shall have two horizontal circumferential stripes of white reflective sheeting, the upper a minimum of 6 inches wide, with the upper edge 3 to 4 inches from the top of the cone, and the lower a minimum of 4 inches wide with the upper edge approximately 2 inches below the upper stripe.

Extra tall cones shall be a minimum of 42 inches in height with a minimum conical bottom width of 7 inches. Extra tall cones shall have a minimum of four horizontal circumferential stripes of reflective sheeting from 4 to 6 inches wide, of alternating orange and white starting with orange on the top. The upper edge of the sheeting shall be 4inches from the top of the cone. Nonreflective spaces between the stripes shall not exceed 3 inches wide.

Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B) or higher. Reflective sheeting shall be firmly bonded to the cone with adhesive.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-03 TEMPORARY TUBULAR MARKERS

SCOPE. This specification covers the material, fabrication, and performance requirements for tubular markers. Tubular markers are defined by FHWA as a Category I device.

MATERIAL REQUIREMENTS. Tubular markers shall conform to the requirements of the MUTCD, shall be NCHRP 350 or MASH approved and shall be orange, with a minimum height of 36 inches and a minimum outside diameter of 2 inches. Tubular markers shall be circular or elliptical in cross section. Tubular markers shall have a maximum weight of 12 lbs, not including a mounting base.

The markers shall have two horizontal circumferential stripes of white reflective sheeting a minimum of 3 inches wide. The top edge of the upper band shall be a maximum of 2 inches from the top of the marker. The space between shall not exceed 6 inches.

Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B) or higher. The sheeting shall be bonded to the post with a precoated, pressure-sensitive adhesive or a tack-free, heat-activated adhesive. Mechanical fasteners to bond reflective sheeting to the post will not be allowed.

For free-standing tubular markers, the base and/or any nonflexible portion of the marker shall not be more than 2 inches in height.

For tubular markers fastened to pavement, the bonding system used to shall be a fast-setting chemical compound, mastic-type material, or mechanical fastener capable of fixing the tubular marker to either concrete or asphalt pavement. The bonding system shall not present a hazard to traffic if the tubular marker or base unit becomes unfixed from the pavement.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-04 VERTICAL PANELS

SCOPE. This specification covers the material, fabrication, and performance requirements for vertical panels. Vertical panels are defined by FHWA as a Category II device.

MATERIAL REQUIREMENTS. Vertical panels shall conform to the requirements of the MUTCD, shall be NCHRP 350 or MASH approved and shall be constructed of plastic, aluminum, or other lightweight materials. Vertical panels shall be supported by a base capable of maintaining the panel in an upright position and in the proper position and orientation.

Vertical panels shall have 4 to 6 inch wide diagonal stripes of alternating orange and white reflective sheeting, sloping downward at an angle of 45° toward the side on which traffic is to pass. Vertical panels which are 36 inches and larger shall have 6 inch wide diagonal stripes.

Standard vertical panels shall be a minimum of 24 inches in height and a minimum of 8 inches in width. The top of the panel shall be mounted a maximum of 36 inches high. Support posts for standard vertical panels shall not be located on the traffic face of the panel.

Oversized vertical panels shall be a minimum of 36 inches in height and have a minimum reflective area of 2.0 square feet.

Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B) or higher.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-05 STOP/SLOW PADDLES

SCOPE. This specification covers the material requirements for stop/slow paddles.

MATERIAL REQUIREMENTS. Stop/slow paddles shall conform to the requirements of the MUTCD and shall be constructed of plastic, aluminum, or other lightweight materials. Stop/slow paddles shall be a minimum of 24 inches wide and shall be mounted on a support staff with a minimum height of 6 feet to the bottom of the panel Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type IX (Class E).

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-06 TYPE I CONSTRUCTION BARRICADES

SCOPE. This specification covers the material, fabrication, and performance requirements for Type I construction barricades. Type I construction barricades are defined by FHWA as a Category II device.

MATERIAL REQUIREMENTS. Type I construction barricades shall conform to the requirements of the MUTCD and shall be NCHRP 350 or MASH approved. Type I construction barricades shall be constructed of an A-frame with a single rail panel 8 to 12 inches wide and a minimum of 24 inches long. Rails on barricades used on expressways and other high-speed roadways shall have an area of at least 2.0 square feet. The top of the upper panel shall be mounted at a minimum height of 36 inches. Barricade frames shall be designed to maintain the proper orientation and location of the device during windy conditions. Non-rigid ballast may be placed on the frame, close to the ground, to hold the barricade in position, and shall not obscure the view of the rail panels to approaching traffic.

Barricade rail panels shall have 4 inch wide reflective, alternating orange and white diagonal stripes sloping at an angle of 45°. Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B), or higher.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-07 TYPE II CONSTRUCTION BARRICADES

SCOPE. This specification covers the material, fabrication, and performance requirements for Type II construction barricades. Type II construction barricades are defined by FHWA as a Category II device.

MATERIAL REQUIREMENTS. Type II construction barricades shall conform to the requirements of the MUTCD and shall be NCHRP 350 or MASH approved. Type II construction barricades shall be constructed of a frame with two rail panels 8 to 12 inches wide and a minimum of 24 inches long. Rails on barricades used on expressways and other high-speed roadways shall have an area of at least 2.0 square feet. The top of the upper panel shall be mounted at a minimum height of 36 inches. Barricade frames shall be designed to maintain the proper orientation and location of the device during windy conditions. Non-rigid ballast may be placed on the frame, close to the ground, to hold the barricade in position, and shall not obscure the view of the rail panels to approaching traffic.

Barricade rail panels shall have 4 to 6 inch wide reflective, alternating orange and white diagonal stripes sloping at an angle of 45°. Barricade rail panels 36 inches and longer shall have 6 inch wide stripes. Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B) or higher.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-08 TYPE III CONSTRUCTION BARRICADES

SCOPE. This specification covers the material, fabrication, and performance requirements for Type III construction barricades. Type III construction barricades are defined by FHWA as a Category II device.

MATERIAL REQUIREMENTS. Type III construction barricades shall conform to the requirements of the MUTCD and shall be NCHRP 350 or MASH approved. Type III construction barricades shall be constructed of a frame with

three rail panels 8 to 12 inches wide and a minimum of 48 inches long. The top of the upper panel shall be mounted at a minimum height of 60 inches. Barricade frames shall be designed to maintain the proper orientation and location of the device during windy conditions. Nonrigid ballast may be placed on the frame, close to the ground, to hold the barricade in position, and shall not obscure the view of the rail panels to approaching traffic.

Barricade rail panels shall have 6 inch wide reflective alternating orange and white diagonal stripes sloping at an angle of 45°. Reflective sheeting shall conform to '730-05 *Reflective Sheeting* ASTM Type I (Class A), ASTM Type III (Class B) or higher.

Warning lights, when used, shall be securely mounted directly to the barricade frame, above the top rail, using a bolt, nut, and washer of sufficient strength to ensure that the light does not detach if impacted by a vehicle, and no part of the light or wiring shall cover the face of the rail. Batteries shall be placed at ground level, except that integral batteries weighing a maximum of 7 lbs may be mounted on the barricade frame. Warning lights shall not be attached to the barricade rail.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-09 TEMPORARY SIGN SUPPORTS

SCOPE. This specification covers the material, fabrication, and performance requirements for temporary sign supports. Temporary sign supports are defined by FHWA as a Category II device.

MATERIAL REQUIREMENTS. Temporary sign supports shall conform to the requirements of the MUTCD and shall be constructed in accordance with the Standard Sheets or shall be commercially manufactured, temporary sign supports that are NCHRP 350 or MASH approved.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-10 TEMPORARY IMPACT ATTENUATORS - REDIRECTIVE

SCOPE. This specification covers the material and performance requirements for temporary impact attenuators. Temporary impact attenuators are defined by FHWA as a Category III device.

MATERIALS REQUIREMENTS. Temporary impact attenuators shall be NCHRP 350 or MASH approved as a redirective, non-gating device. Temporary impact attenuators that use liquid or other materials as a filler or to provide ballast will be evaluated for potential environmental impacts and/or seasonal limitations. Temporary impact attenuators meeting the requirements of NCHRP 350 or MASH Test Level 2 are acceptable only as Test Level 2 devices. A Temporary impact attenuator accepted as a Test Level 3 device is also acceptable as Test Level 2 device. Temporary impact attenuators will be approved for use in shielding an object of a maximum width as specified in the Approved List, and specific configurations may be approved for maximum speeds. Approach ends of Temporary impact attenuators shall have impact attenuator markings in accordance with the MUTCD.

Concrete Grouting Material	701-05
Anchoring Materials - Chemically Curing	701-07

If a temporary foundation slab is required, concrete shall be Class A concrete conforming to Section 501 *Portland Cement Concrete - General*; reinforcing steel shall conform to §709-01 *Bar Reinforcement, Grade 420*.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have Test Level 2 or Test Level 3 temporary impact attenuators approved shall prepare and submit copies of drawings, specifications, test reports, and Federal acceptance letters to the Director of the Materials Bureau. The review process requires a minimum of 30 calendar days. Upon approval, the name of the manufacturer and the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Test Level 2 or Test Level 3 temporary impact attenuators will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-11 TEMPORARY IMPACT ATTENUATORS - GATING

SCOPE. This specification covers the material and performance requirements for temporary impact attenuators. Temporary impact attenuators are defined by FHWA as a Category III device.

MATERIALS REQUIREMENTS. Temporary impact attenuators shall be NCHRP 350 or MASH approved as a gating device. Temporary impact attenuators that use liquid or other materials as a filler or to provide ballast will be evaluated for potential environmental impacts and/or seasonal limitations. Temporary impact attenuators meeting the requirements of NCHRP 350 or MASH Test Level 2 are acceptable only as Test Level 2 devices. A Temporary impact attenuator accepted as a Test Level 3 device is also acceptable as Test Level 2 device. Temporary impact attenuators will be approved for use in shielding an object of a maximum width as specified in the Approved List, and specific configurations may be approved for maximum speeds. Approach ends of Temporary impact attenuators shall have impact attenuator markings in accordance with the MUTCD.

Concrete Grouting Material	701-05
Anchoring Materials - Chemically Curing	701-07

If a temporary foundation slab is required, concrete shall be Class A concrete conforming to Section 501 *Portland Cement Concrete - General*; reinforcing steel shall conform to §709-01 *Bar Reinforcement, Grade 420*.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have Test Level 2 or Test Level 3 temporary impact attenuators approved shall prepare and submit copies of drawings, specifications, test reports, and Federal acceptance letters to the Director of the Materials Bureau. The review process requires a minimum of 30 calendar days. Upon approval, the name of the manufacturer and the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Test Level 2 or Test Level 3 temporary impact attenuators will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-12 TRUCK-MOUNTED AND TRAILER MOUNTED IMPACT ATTENUATORS

SCOPE. This specification covers the material and performance requirements for truck mounted impact attenuators or trailer mounted impact attenuators (TMIAs) mounted on the rear of work vehicles and barrier trailers. Impact attenuators are defined by FHWA as a Category III device.

MATERIALS REQUIREMENTS. TMIAs shall be NCHRP 350 or MASH approved. TMIAs meeting the requirements of NCHRP 350 or MASH Test Level 3 are also acceptable as a Test Level 2 device. TMIAs meeting the requirements of NCHRP 350 or MASH Test Level 2 are acceptable only as Test Level 2 devices. Approach ends of TMIAs shall have impact attenuator markings in accordance with the MUTCD.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have products considered for inclusion on the Approved List shall prepare and submit copies of drawings, specifications, test reports, and Federal Acceptance Letters to the Director of the Materials Bureau. The review process requires a minimum of 30 calendar days. Upon approval, the name of the manufacturer and the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Test Level 2 or Test Level 3 TMIAs will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-13 TEMPORARY SAND BARRELS

SCOPE. This specification covers the material and performance requirements for sand barrels. Sand barrels are defined by FHWA as a Category III device.

MATERIAL REQUIREMENTS. Sand barrels of each size module shall be NCHRP 350 or MASH approved. Sand barrels shall be yellow, durable, waterproof, ultraviolet-stable plastic. The first barrel in the array shall have impact attenuator markings in accordance with the MUTCD.

Sand barrels shall resist deformation from dynamic loadings due to vibration in the placement area and long-term stresses induced by thermal expansion/contraction and fill settlement. Sand barrels shall be free draining with respect to residual moisture in the fill sand. Lids shall divert precipitation and prevent moisture from entering the module. Lids shall be fastened or otherwise secured to provide a closed, reasonably vandal-resistant barrel.

The fill sand shall conform to the requirements of either '703-06 *Cushion Sand* or '703-07 *Concrete Sand*. Sodium chloride, as dry rock salt, equal to 3-5 % by weight of the sand, shall be thoroughly mixed into the sand. Sodium chloride shall meet the requirements of '712-03 *Sodium Chloride*.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have products considered for inclusion on the Approved List shall prepare and submit copies of drawings, specifications, test reports, and Federal Acceptance Letters to the Director of the Materials Bureau. The review process requires a minimum of 30 calendar days. Upon approval, the name of the manufacturer and the product will be placed on the Approved List.

BASIS OF ACCEPTANCE. Sand barrels will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-14 VEHICLE-ARRESTING SYSTEMS

SCOPE. This specification covers the material and performance requirements for vehicle-arresting systems. Vehicle-arresting systems are defined by FHWA as a Category III device.

MATERIAL REQUIREMENTS. Vehicle-arresting systems shall be NCHRP 350 or MASH approved.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have products considered for inclusion on the Approved List shall prepare and submit copies of drawings, specifications, test reports, and Federal Acceptance Letters to the Director of the Materials Bureau. The review process requires a minimum of 30 calendar days.

BASIS OF ACCEPTANCE. Vehicle-arresting systems will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-15 ARROW PANELS

SCOPE. This specification covers the material and performance requirements for arrow panels. Arrow panels are defined by FHWA as a Category IV device.

MATERIAL REQUIREMENTS. Arrow panels shall be signs with a matrix of illuminated elements capable of either flashing or sequential arrow displays that meets the requirements of the MUTCD. Arrow panels shall be equipped with a sign control console, mounted in a lockable, weather-resistant compartment.

Arrow panels shall not bear any advertising message or any other message that is not related to traffic control. A nonretroreflective logo or name and telephone number of the contractor or supplier may be located on the back of the arrow panel or on the arrow panel trailer. The logo shall not exceed 0.1 m^2. The name and telephone number shall not exceed inches in height. The rear face of the arrow panel shall contain one or more clear lamp(s) to indicate that the arrow board is operating properly.

Truck-Mounted Series B. Arrow panels consist of a 60 x 30 inch rectangular panel mounted at a minimum of 5 feet above the roadway. The arrow display shall be legible at a minimum distance of 3/4 mile on a bright, sunny day or a clear night when the sight line is unobstructed.

Trailer-Mounted or Truck-Mounted Series C. Arrow panels consist of a 96 x 48 inch rectangular panel mounted at a minimum of 7 feet above the roadway for trailer mounted arrow panels and 5 feet above the roadway for truck mounted arrow panels. Arrow panels shall be powered by self-contained engine-driven generator systems, capable of energizing the arrow displays for 72 hours unattended and shall be capable of being powered by 110V AC supply; solar-powered, capable of energizing the arrow displays continuously for 21 days unattended; or powered by a truck. Arrow panel operation controls shall be mounted in a lockable enclosure. The arrow display shall be legible at a minimum distance of 1 mile on a bright, sunny day or a clear night when the sight line is unobstructed.

TESTING. Manufacturers or material suppliers desiring to have Truck-Mounted Series B arrow panels considered for inclusion on the Approved List shall submit a material certification that the arrow panel conforms to this specification and the requirements of the MUTCD, and provide an arrow panel to the Director, Materials Bureau in Albany for initial field testing. Field testing will include evaluation of arrow panel operation during various light conditions for brightness, legibility, and angularity. The review process requires a minimum of 30 calendar days.

Manufacturers or material suppliers desiring to have Trailer-Mounted or Truck-Mounted Series C arrow panels considered for inclusion on the Approved List shall submit test results from the AASHTO National Transportation Product Evaluation Program (NTPEP), a material certification that the arrow panel conforms to this specification and the requirements of the MUTCD, and provide an arrow panel to the Director of the Materials Bureau in Albany for initial field testing. Field testing will include evaluation of arrow panel operation during various light conditions for brightness, legibility, and angularity. The review process requires a minimum of 30 calendar days.

BASIS OF APPROVAL. Truck-Mounted Series B arrow panels meeting the requirements of this specification and having satisfactory initial field test results will be placed on the Approved List.

Trailer-Mounted or Truck-Mounted Series C arrow panels meeting the requirements of this specification and satisfactory initial field test results, as well as satisfactory NTPEP test results will be placed on the Approved List. Trailer-Mounted or Truck-Mounted Series C arrow panels for which NTPEP test results have not been submitted may be provisionally placed on the Approved List for a maximum of one year. After one year of provisional approval, the manufacturer may request an extension for one additional year based on a pending application filed with NTPEP for testing. No extensions of provisional approvals past two years will be granted. If satisfactory test results are not provided by the expiration date of the provisional approval, all units provided or in use shall be removed and replaced by the Contractor with approved units at no additional cost to the State. Arrow panels on the Approved List that have repeated poor evaluations will be removed from the Approved List.

BASIS OF ACCEPTANCE. Arrow panels will be accepted on the basis of the product appearing on the Approved List and a material certification that the product meets this specification and is the same as the one appearing on the Approved List.

729-16 PORTABLE VARIABLE-MESSAGE SIGNS (PVMS)

SCOPE. This specification covers the material and performance requirements for variable-message signs. Variable-message signs are defined by FHWA as a Category IV device.

MATERIAL REQUIREMENTS. Portable variable-message signs (PVMS) shall be tested by the National Transportation Product Evaluation Program (NTPEP) of the American Association of State and Highway Transportation Officials (AASHTO) demonstrating the arrow panel meets the requirements of this specification and the MUTCD. PVMS shall be trailer mounted and equipped for use on public highways in accordance with NYS Vehicle and Traffic Law. The unit shall operate primarily from a solar-powered electrical system and shall be capable of energizing the message display for a minimum of 21 days without auxiliary charge. The electrical system shall

consist of batteries and a solar array panel and on-board auxiliary charging system to enable the batteries to be recharged via a 110V AC connection.

PVMS shall have a 3 line display with a minimum of 8 characters per line, and shall be capable of displaying 3 separate messages in a cyclical sequence. Characters shall be a minimum of 18 inches high.

PVMS shall be visible at a minimum distance of 1/2 mile during the day and at night. For highways with a posted pre-construction speed limit of 55 mph or greater, PVMS messages shall be legible from a minimum distance of 800 feet during the day, and 600 feet at night. For highways with a posted pre-construction speed limit of 50 mph or less, PVMS messages shall be legible from a minimum distance of 650 feet during the day. PVMS shall not bear any advertising message or any other message that is not related to traffic control. A nonretroreflective logo or name and telephone number of the contractor or supplier may be located on the back of the PVMS or on the PVMS trailer. The logo shall not exceed 1 square foot. The name and telephone number shall not exceed 2 inches in height.

PVMS shall be equipped with a sign control console, mounted in a lockable, weather-resistant compartment. The sign controller shall have programmable memory capable of storing messages pertinent to planned construction activities, including emergency messages. The controller shall be equipped with 14 day calendar programming capability, providing the ability to start and stop the display of a minimum of three (3) different messages on a repeating schedule without an operator present. The controller shall be capable of producing an accurate log of all messages and the times they were displayed. The controller shall have programmable messages, display rate, and display interval settings. The controller shall blank the sign if the output voltage drops below the manufacturer's recommended output level.

PVMS shall be equipped with control software using a Microsoft Windows operating system. The Contractor shall supply the Engineer with two copies of operating instructions for the PVMS and the control software. Electronic copies of software instructions are acceptable.

A. Light-Emitting Diode (LED) Type. LED type PVMS shall have light-emitting diodes arranged in arrays and the arrays shall be arranged in a matrix for each character to be 7 pixels high by 5 pixels wide. The LED display shall have the ability to display characters at a minimum height of 18 inches. The controller shall provide a means of dimming the pixels.

B. Hybrid Flip-Disk Type. Hybrid, flip-disk type PVMS shall have pixels consisting of individual electromagnetic disks with at least two (2) high-output amber LEDs. The disk face shall be covered with yellow prismatic retroreflective sheeting or an approved equal. The PVMS shall operate using both flip-disk and light-emitting diode (LED) during nighttime and low-light periods. The hybrid flip disk type shall be arranged in a matrix of 7 disks high by 5 disks wide for each character.

C. Cellular Communications Option. PVMS with cellular communications shall be equipped with a cellular telephone with cellular service and a modem capable of remotely operating the control software. The phone numbers for PVMS on a contract shall be sequential whenever possible to facilitate remote control of multiple devices. The unit shall accept a land line telephone connection mode without rewiring or modification.

D. Radar Option. The PVMS with radar shall be equipped with a radar speed detection option, providing the system with the ability to determine the speed of an approaching vehicle and interrupt the programmed sequence with a special default message displaying the vehicle=s speed. The unit shall collect and store vehicle speed data for retrieval.

E. NTCIP Communication Protocol Option. PVMS units that will be operated by the Department, typically from a Transportation Management Center (TMC), shall be equipped with communications and control systems that are National Transportation Communications for ITS Protocol (NTCIP) compliant.

TESTING. Manufacturers or material suppliers desiring to have PVMS considered for inclusion on the Approved List shall submit test results from the AASHTO National Transportation Product Evaluation Program (NTPEP), a material certification that the PVMS conforms to this specification and the requirements of the MUTCD, and provide a PVMS to the Director, Materials Bureau in Albany for initial field testing. Field testing will include evaluation of PVMS

operation during various light conditions for brightness, legibility, and angularity. The initial testing process requires a minimum of 30 calendar days.

BASIS OF APPROVAL. PVMS meeting the specification, having satisfactory NTPEP test results, and having satisfactory initial field test results will be placed on the Approved List.

PVMS meeting the specification, and having satisfactory initial field test results, that do not have NTPEP test results may be provisionally placed on the Approved List for a maximum of one year. After one year of provisional approval, the manufacturer may request an extension for one additional year based on a pending application filed with NTPEP for testing. No extensions of provisional approvals past two years will be granted. No extensions of provisional approvals will be granted. If satisfactory test results are not provided by the expiration date of the provisional approval, all units provided or in use shall be removed and replaced by the Contractor with approved units at no additional cost to the State. PVMS on the Approved List that have repeated poor evaluations will be removed from the Approved List.

BASIS OF ACCEPTANCE. PVMS will be accepted on the basis of the product appearing on the Approved List and a material certification that the product meets this specification and is the same as the one appearing on the Approved List.

729-17 TEMPORARY GLARE SCREENS

SCOPE. This specification covers the material and performance requirements for temporary glare screens. Glare screens are not defined separately by FHWA, but rather are considered a system component.

MATERIAL REQUIREMENTS. Temporary glare screens shall consist of a opaque screen on a horizontal base which is, in turn, mounted on a concrete barrier. The system shall be modular to allow flexible use and ease of maintenance.

The screen shall be constructed of durable, lightweight, flexible, weather-resistant and impact-resistant materials of a single, uniform dark color. The minimum height of the screen shall be approximately 24 inches. The screen shall be reflectorized at a uniform maximum spacing of 40 feet. If barrier delineation is blocked, the screen shall be reflectorized on both sides with a 3 inch wide by 6 inch high (minimum) piece of reflective sheeting, ASTM Type I (Class A), ASTM Type III (Class B), or higher. Yellow reflective sheeting shall be used facing traffic which is to pass to the right of the glare screen. White reflective sheeting shall be used facing traffic which is to pass to the left of the glare screen.

Individual temporary glare screen modules shall not span a joint between concrete barrier sections, and bases shall not overhang the face of the barrier. Temporary glare screens shall not have any horizontal rigid members that could potentially spear an impacting vehicle, or shall be NCHRP 350 or MASH approved if the system has horizontal rigid members.

The base shall have sufficient rigidity to facilitate ease of handling and proper screen support and position. The connection of the base to the vertical components shall prevent unintentional screen rotation or dislocation. The base shall be properly secured to prevent it from being dislodged upon impact.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-18 WARNING LIGHTS

SCOPE. This specification covers the material and performance requirements for warning lights. Warning lights are not defined separately by FHWA, but rather are considered a system component.

MATERIAL REQUIREMENTS. Warning lights shall be mounted on signs or channelizing devices in a manner that, if hit by an errant vehicle, they will not be likely to penetrate the windshield. Warning lights shall be Type A (low-intensity flashing), Type B (high-intensity flashing), or Type C (steady-burning). Warning lights shall meet the requirements of the MUTCD Section 6F.83 and the ITE *Purchase Specification for Flashing and Steady Burn Warning Lights.* Warning lights shall have a minimum nominal diameter of 7 inches and shall emit yellow light.

Flashing warning lights shall flash between 55 and 75 times per minute. Flashing warning lights required to operate 24 hours per day shall be Type B. Steady-burning warning lights shall operate from one-half hour after sunset to one-half hour before sunrise. Warning lights shall have a minimum mounting height of 30 inches to the bottom of the lens. Warning lights shall be powered by batteries, line power, or solar cells adequate to maintain the required luminance during all periods of required operation.

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-19 AUTOMATED FLAGGER ASSISTANCE DEVICES

SCOPE. This specification covers the material and performance requirements for automated flagger assistance devices (AFAD) designed to control road users through work zones to be remotely operated by a flagger. AFADs are defined by FHWA as a Category IV device.

MATERIAL REQUIREMENTS. AFADs shall meet the requirements of the MUTCD. Each AFAD shall consist of a remotely controlled self-contained trailer or movable cart consisting of *STOP/SLOW* signs or *RED/YELLOW* lenses.

Stop/Slow Sign AFAD shall consist of:

- A STOP/SLOW sign (R1-1/W20-8) having an octagonal shape of at least 36 x 36 inch with letters at least 12 inches high.
  - One red stop beacon, 12 inch diameter red Light Emitting Diode (LED), mounted above the *STOP* sign.
  - At least one amber beacon, 12 inch diameter amber Light Emitting Diode (LED) or Type B high-intensity flashing warning light mounted above, below or to the side(s) of the *SLOW* sign.
- A gate arm capable of extending up to 8.5 feet.
- *WAIT ON STOP* (R1-7) and *GO ON SLOW* (R1-8) signs mounted under the *STOP/SLOW* sign.
  - *WAIT ON STOP* sign shall be a 24 x 30 inches with black legend and black border on a white background with letters at least 2 inches high.
  - *GO ON SLOW* sign shall be a 24 x 30 inches with black legend and black border on a white background with letters at least 2 inches high.
- All sign sheeting shall conform to §730-05 *Reflective Sheeting* ASTM Type IX (Class E).

RED/Yellow Lens AFAD shall consist of:

- Circular red and circular yellow 12 inch diameter Light Emitting Diode (LED) displays.
- A gate arm capable to extend up to 8.5 feet.
- STOP HERE ON RED sign (R10-6) 24 x 30 inches.
- All sign sheeting shall conform to §730-05 *Reflective Sheeting* ASTM Type IX (Class E).

The AFADs shall be controlled by a single flagger with a remote control, which shall allow safe operation of two AFADs remotely, employ bi-directional communications to verify each command sent from the handheld was successfully received, be equipped with conflict monitoring to prevent displaying a SLOW message simultaneously in both directions, permit an override feature to allow a simultaneous slow display, and show the current status of each AFAD. The control console and power supply shall be housed in a locked compartment. Each trailer/cart shall be equipped with a remote control warning horn alerting workers of intruding vehicles.

Trailers/carts shall display a minimum of 2 inch wide band of reflective sheeting on all four sides of the trailer. Reflective sheeting shall conform to §730-05 *Reflective Sheeting* ASTM Type III (Class B), ASTM Type VII (Class C) or ASTM Type IX (Class E). The sheeting need not be continuous, but the sum of the length of the segments shall be at least one-half the length of the trailer. AFADs shall not bear an advertising message(s) or any other message that is not related to traffic control. A nonretroreflective logo or name and telephone number of the contractor or supplier not to exceed 1.0 square feet may be located on the trailer or cart. The name and telephone number shall not exceed 2 inches in height.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have AFADs be considered for inclusion on the Approved List shall submit a material certification that the AFADs meet this specification and the requirements of the MUTCD, as well as provide one AFAD for initial field testing to the Director of the Materials Bureau in Albany for review. Initial field testing will include evaluating the AFADs for operation, sign visibility/legibility, retractable arm functionality/visibility and beacon/warning light brightness and angularity. The review process requires a minimum of 30 calendar days.

AFADs having acceptable certifications and satisfactory initial field test results will be placed on the Approved List. AFADs that consistently have repeated poor evaluations will be removed from the approved list.

BASIS OF ACCEPTANCE. AFADs will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-20 PORTABLE TRAFFIC SIGNALS

SCOPE. This specification covers the material and performance requirements for portable traffic signals. Portable traffic signals are defined by FHWA as a Category IV device.

MATERIAL REQUIREMENTS. Portable traffic signals shall meet the requirements of the MUTCD. Portable traffic signals shall consist of two self-contained, trailer-mounted traffic signals, each with a vertical signal mast, horizontal mast arm and two - 3 section traffic signal heads. Each traffic signal head shall have 12 inch diameter circular red, yellow and green Light Emitting Diode (LED) modules.

The portable traffic signal system shall be able to function continuously and independent of utility power sources. The signal control console and power supply shall be housed in a locked compartment. The traffic signal controller shall be password protected, capable of providing traffic-actuated control with microwave detector sensors, have a built-in conflict monitor to prevent the display of conflicting indications, shall be hard-wired or radio-controlled to keep the signal indications synchronized, and have adequate phasing to serve expected traffic movements.

Trailers shall display a minimum of 2 inch wide band of reflective sheeting on all four sides of the trailer. Reflective sheeting shall conform to §730-05 *Reflective Sheeting* ASTM Type III (Class B), ASTM Type VII (Class D) or ASTM Type IX (Class E). The sheeting need not be continuous, but the sum of the length of the segments shall be at least one-half the length of the trailer. Portable traffic signals shall not bear an advertising message(s) or any other message that is not related to traffic control. A nonretroreflective logo or name and telephone number of the contractor or supplier may be located on the portable traffic signal trailer. The logo shall not exceed 1.0 square feet. The name and telephone number shall not exceed 2 inches in height.

BASIS OF APPROVAL. Manufacturers or material suppliers desiring to have Portable Traffic Signals considered for inclusion on the Approved List shall submit a material certification that the Portable Traffic Signal meets this specification and the requirements of the MUTCD, as well as one portable traffic signal for initial field testing to the Director of the Materials Bureau in Albany for review. Initial field testing will include evaluating the traffic signal system for phasing, clearances, detector operation and layout of the signal faces for brightness and angularity. The review process requires a minimum of 30 calendar days. Portable traffic signals having acceptable certifications and satisfactory initial field test results will be placed on the Approved List.

Portable traffic signals on the Approved List that consistently have poor evaluations will be removed from the Approved List.

BASIS OF ACCEPTANCE. Portable traffic signals will be accepted on the basis of the product appearing on the Approved List and a material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification.

729-21 TEMPORARY OVERLAY MARKERS

SCOPE. This specification covers the material and performance requirements for temporary overlay markers.

MATERIAL REQUIREMENTS. Temporary overlay markers are flexible polymer "L" shaped road reflectors with an adhesive on its base to adhere to the pavement surface. Temporary overlay markers are approximately 4 inches wide by 2 inches high with at least a 1 inch base. Yellow temporary overlay markers have a yellow reflective sheeting strip a minimum of 1/4 inch in height at the top of the vertical section on both sides. White temporary overlay markers have a white reflective strip a minimum of 1/4 inch in height at the top of the vertical section on one side only. Reflective sheeting shall conform to §730-05 *Reflective Sheeting* ASTM Type III (Class B), ASTM Type VII (Class D) or ASTM Type IX (Class E).

BASIS OF ACCEPTANCE. Upon request, the Contractor shall provide a material certification that the product conforms to this specification.

729-21 TEMPORARY OVERLAY MARKERS
730-21 FLEXIBLE DELINEATOR POSTS

Make the following modification to EI 11-018:

Page 13

729-21 TEMPORARY OVERLAY MARKERS

Delete the **MATERIAL REQUIREMENTS** Section in its entirety and **replace** it with the following:

"MATERIAL REQUIREMENTS. Temporary overlay markers are flexible polymer "L" shaped road reflectors with an adhesive on its base to adhere to the pavement surface. Temporary overlay markers are approximately 4 inches wide by 2 inches high with at least a 1 inch base. Yellow temporary overlay markers have a yellow reflective sheeting strip a minimum of ¼ inch in height at the top of the vertical section on both sides. White temporary overlay markers have a white reflective strip a minimum of ¼ inch in height at the top of the vertical section on one side only. Reflective sheeting shall conform to §730-05 *Reflective Sheeting* ASTM Type III (Class B), ASTM Type V (Class C), ASTM Type VII (Class D) or ASTM Type IX (Class E)."

Make the following change to the Standard Specifications of May 1, 2008:

Page 1037 under **730-21 FLEXIBLE DELINEATOR POSTS, delete** the **MATERIAL REQUIREMENTS** Section in its entirety and **replace** it with the following:

"MATERIALS REQUIREMENTS. Flexible delineator posts shall be supplied with reflective sheeting of a size and color as required by the contract documents. The color of the posts shall match the color of the reflective sheeting unless otherwise specified in the contract documents. Where double unit reflectors are specified, elongated reflective sheeting may be substituted as in accordance with the MUTCD.

Reflective sheeting shall be fabricated of a material conforming to the requirements of §730-05 Reflective Sheeting, Class B, Class C, or Class E. Sheeting shall be applied in accordance with the sheeting manufacturer's written instructions."

REFLECTORIZED SHEETING SIGN CHARACTERS

Make the following changes to the Standard Specifications of May 1, 2008:

Page 1036:
Delete entirely Standard Spec 730-12 and ***replace*** with:
"**730-12 REFLECTORIZED SHEETING SIGN CHARACTERS (TYPE IV)**

SCOPE. These specifications cover the material requirements for Type IV reflectorized sheeting sign characters.

MATERIAL REQUIREMENTS. Type IV characters shall consist of cutout reflective sheeting material meeting the requirements of §730-05 Reflective Sheeting, Materials Designation 730-05.02 (Class B).

Characters or borders shall be applied directly to clean, dust-free reflective sheeting background panels. Characters or borders shall be applied mechanically with equipment and in a manner specified by the sheeting manufacturer. Borders shall be cut neatly and butt-joined at corners and panel joints.

TESTING. The Department reserves the right to conduct tests on samples taken by a representative of the Department as follows: 2% or a minimum of five (5) characters (whichever is the greater) for each size character used; and 2% or a minimum of 2 ft of border (whichever is greater) for each width of border used.

When performed, tests will be conducted in accordance with §730-05 Reflective Sheeting.

BASIS OF ACCEPTANCE. Type IV characters will be accepted on the basis of a material certification that the product conforms to this specification."

Page 1036:
Delete entirely Standard Spec 730-13 and ***replace*** with:
"730-13 REFLECTORIZED SHEETING SIGN CHARACTERS (TYPE V)

SCOPE. These specifications cover the material requirements for Type V reflectorized sheeting sign characters.

MATERIAL REQUIREMENTS. Type V characters shall consist of a painted, screened, or reverse-screened application of paint, paste, or transparent color of a type and in a manner recommended by the manufacturer of the reflective material.

Reflective material used for reverse-screened signs shall meet the requirements of §730-05 **Reflective Sheeting**, Materials Designation 730-05.02 (Class B).

TESTING. The Department reserves the right to conduct tests on samples taken by a representative of the Department as follows: 2% or a minimum of five (5) characters (whichever is the greater) for each size character used; and 2% or a minimum of 2 ft of border (whichever is greater) for each width of border used.

When performed, tests will be conducted in accordance with §730-05 Reflective Sheeting.

BASIS OF ACCEPTANCE. Type V characters will be accepted on the basis of a material certification that the product conforms to this specification."

SECTION 733 – EARTHWORK MATERIALS

Make the following changes to the Standard Specifications dated May 1, 2008:

Page **1049**, **Delete** SECTION 733 AND 734 (VACANT) and **Replace** it with the following:

SECTION 733 – EARTHWORK MATERIALS

733-01 B FLOWABLE FILL

SCOPE. This specification covers the material requirements and methods of testing flowable fill. The following flowable fill types are evaluated in this specification:

733.0101 – Controlled Low Strength Material (CLSM)
733.0102 – Controlled Low Strength Material (CLSM) (No Fly Ash)
733.0103 – Lightweight Concrete Fill (Type A)
733.0104 – Lightweight Concrete Fill (Type B)

GENERAL.

A. Controlled Low Strength Material. Provide CLSM with certified test results supplied by a qualified independent testing laboratory for the mix design verifying the unconfined compressive strength meets the requirements of the specification. Design the CLSM mix so that it sets within the time stated in the contract documents. If no set time is required, design the set time to meet Contractor's operational requirements.

B. Lightweight Concrete Fill. Provide Lightweight Concrete Fill with certified test results supplied by a qualified independent testing laboratory for the mix design verifying the wet cast density and unconfined compressive strength meet the requirements of the specification for the type(s) identified in the contract documents. Design the Lightweight Concrete Fill utilizing a foaming agent appearing on the Departments Approved List.

MATERIAL REQUIREMENTS.

A. Controlled Low Strength Material.

1. Material. 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 Table 733-01A *CLSM Material Requirements*:

TABLE 733-01A CLSM MATERIAL REQUIREMENTS	
Material	**Subsection**
Portland Cement, Type 1 or Type 2	§701-01
Water	§712-01

If used, provide materials meeting Table 733-01B *Requirements for Optional CLSM Material:*

SECTION 733 – EARTHWORK MATERIALS

TABLE 733-01B REQUIREMENTS FOR OPTIONAL CLSM MATERIAL	
Material	**Subsection**
Aggregate Gradation	§703-07 *Concrete Sand*
Fly Ash	Provide fly ash that complies with the requirements of §711-10 *Fly Ash* except that the loss on ignition requirement is waived.
Chemical Admixtures	Provide admixtures that comply with §711-08 *Admixtures*. The mix may include high air generators manufactured for CLSM.

2. Unconfined Compressive Strength. Provide CLSM with a mix design generating an unconfined compressive strength in Table 733-01C *CLSM Unconfined Compressive Strength:*

TABLE 733-01C CLSM UNCONFINED COMPRESSIVE STRENGTH	
Test Age	**Unconfined Compressive Strength**
28 days	40 psi $\leq q_u \leq$ 150 psi

3. Sampling and Testing.

i. Spread Diameter. Provide CLSM that has, at the time of placement, a minimum diameter spread of 8 in. as determined by a Department Representative in accordance with ASTM D6103 *Standard Test Method for Flow Consistency of Controlled Low Strength Material (CLSM)*.

ii. Cylinder Cast. A Department Representative will cast three specimens (cylinders) for each batch of CLSM for QA testing. A batch is defined as the amount of material that can be mixed at one time.

B. Lightweight Concrete Fill.

1. Material. Provide materials meeting the requirements of Table 733-01D *Lightweight Concrete Fill Material Requirements*:

TABLE 733-01D LIGHTWEIGHT CONCRETE FILL MATERIAL REQUIREMENTS	
Material	**Subsection**
Portland Cement, Type 1, 2 of 3	§701-01
Water	§712-01
Admixtures	§711-08
Foaming Agent	See Below

The Foaming Agent shall conform to the requirements of ASTM C 869. Foaming Agents which are on the Approved List shall be accepted at the site on the basis of the brand name labeled on the Foaming Agent container and certified documentation provided by the supplier.

A Foaming Agent not on the Approved List will be evaluated based on submitted information and sample testing by the Materials Bureau (minimum of six months). For each class of material

submitted for evaluation, specimens will be required for testing of compressive strength, air-dry density, freeze-thaw and water absorption characteristics, and other testing as deemed appropriate. For detailed information contact the Materials Bureau.

2. Concrete Fill Types. Provide lightweight concrete fill conforming to the type(s) specified in the contract documents and meeting the requirements identified in Table 733-01E *Lightweight Concrete Fill Density and Compressive Strength Requirements.*

TABLE 733-01E LIGHTWEIGHT CONCRETE FILL DENSITY AND UNCONFINED COMPRESSIVE STRENGTH REQUIREMENTS		
Type	**Maximum Cast Wet Density (pcf)**	**Minimum Unconfined Compressive Strength – 28 days (psi)**
A	30	40
B	42	100

The Contractor shall be responsible for designing the mix so that each type of lightweight concrete fill meets the corresponding criteria listed above. The lightweight concrete fill shall be mixed in accordance with the recommendations of a representative of the supplier of the foaming agent.

3. Sampling and Testing.

i. Density. A Department Representative will sample and test the wet cast density. After the initial test and approval to proceed, the density will be monitored at 30 minute intervals during placement for QA purposes.

ii. Cylinder Cast. A Department Representative will cast four specimens (cylinders) at the point of placement for each day's pour or each 100 yd^3 of material placed, whichever is more frequent, for QA purposes.

BASIS OF APPROVAL.

A. Controlled Low Strength Material. Mix designs will be approved based on certified test results supplied by a qualified independent testing laboratory for the unconfined compressive strength in accordance with the specification. The methods of installation will be approved based on an evaluation of the equipment's appropriateness with respect to the site conditions.

B. Lightweight Concrete Fill. Mix designs will be approved based on (1) certified test results supplied by a qualified independent testing laboratory for the maximum wet cast density and minimum unconfined compressive strength in accordance with the specification, and (2) the brand name labeled on the foaming agent appearing on the Approved List. The methods of installation will be approved based on an evaluation of the equipment's appropriateness with respect to the site conditions.

BASIS OF ACCEPTANCE.

SECTION 733 – EARTHWORK MATERIALS

A. Controlled Low Strength Material. CLSM material will be accepted on the jobsite upon submission of certified test results of the mix design to the Engineer.

CLSM material will be accepted after employment of the approved method of installation and upon acceptable test results for spread diameter and unconfined compressive strength.

B. Lightweight Concrete Fill. Lightweight Concrete Fill material will be accepted on the jobsite upon submission of a certified mix design to the Engineer and confirmation that the brand name labeled on the foaming agent appears on the Approved List.

Lightweight Concrete Fill material will be accepted after employment of the approved method of installation and upon acceptable test results for density and unconfined compressive strength.

733-02 B MECHANICALLY STABILIZED EARTH SYSTEM BACKFILL MATERIAL

SCOPE. This specification covers the material requirements and methods of testing backfill material generally used for the construction of a MSES.

SAMPLING. Perform material tests and assurance methods pertaining to the backfill requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

GENERAL. Provide backfill material for any MSES from a single source unless prior approval for use of designated multiple sources is obtained from the Director, GEB.

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile the backfill material in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide backfill material of one of the following types:

1. Type A. Material consisting of any mineral (inorganic) soil, blasted or broken rock, or similar materials of natural origin, including mixtures thereof, and having a gradation in accordance with TABLE 733-02A *Backfill Gradation*.

TABLE 733-02A BACKFILL GRADATION	
Sieve Size Designation	**Percentage Passing by Weight**
4 in.	100
¼ in.	30-100
No. 40	0-60
No. 200	0-15

2. Type B. Material consisting of crushed stone conforming to §703-02 *Coarse Aggregate*, Size Designation 2.

3. Type C. Material consisting of recycled Portland Cement Concrete Aggregate (RCA). Type C backfill consists of at least 95%, by weight, of RCA and is free from organic and other deleterious material. Material may contain up to 5% by weight asphalt and/or brick. Gradation for

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Type C backfill conforms to Table 733-02A *Backfill Gradation*.

4. Type D. Material consisting of recycled Portland Cement Concrete Aggregate (RCA). Type D backfill consists of at least 95%, by weight, of RCA and is free from organic and other deleterious material. Material may contain up to 5% by weight asphalt and/or brick. Gradation for Type D backfill conforms to §703-02 *Coarse Aggregate*, Size Designation 2.

C. PLASTICITY INDEX. Provide material having a Plasticity Index not exceeding 5.

D. DURABILITY. Provide material having a Magnesium Sulfate Soundness loss less than 30 percent.

E. CORROSION POTENTIAL (METAL REINFORCING AND/OR CONNECTORS ONLY). The Department will test for the corrosion potential of any system with exposed metal in the backfill. Stockpiled materials will be tested for resistivity and pH, and may be tested for sulfides at the Department's discretion. Material failing to meet the following requirements of Table 733-02B *Resistivity, Soluble Salts and pH Requirements*, will be rejected except as specified below:

Material failing to meet the resistivity criterion may be tested for sulfate and chlorides. Material meeting the criteria for both sulfates and chlorides and having a resistivity greater than 10 ohm-m will be acceptable. Chemical testing (i.e. resistivity, sulfate ion content, sulfide ion content, and chloride ion content) is not required for Type B backfill or for Type D backfill.

TABLE 733-02B RESISTIVITY, SOLUBLE SALTS AND pH REQUIREMENTS

Property		Test Method	Acceptance Criteria
Resistivity		AASHTO T288	$\rho \geq 30$ ohm-m
Chlorides		AASHTO T291 Method A	$Cl^- \leq 100$ mg/kg
Sulfates		AASHTO T290 Method A, gravimetric	$SO_4^{2-} \leq 200$ mg/kg
		AASHTO T290 Method B, turbidmetric	
Sulfides		NYSDOT Test Method 711-12C	$S^{2-} \leq 300$ mg/kg
pH	Type A or C	NYSDOT GTM-24	$5 \leq pH \leq 10$
	Type B or D	NYSDOT GTM-24	$5 \leq pH \leq 12.5$

BASIS OF APPROVAL. Stockpiles of MSES backfill material will be approved by the GEB in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*" and the procedural directives of the GEB.

BASIS OF ACCEPTANCE. Backfill material from approved stockpiles will be accepted on the contract site by delivery ticket. Each delivery ticket shall identify the Suppliers name, Suppliers granular source number (GSN), date, NYSDOT contract number, stockpile number, item number and quantity.

Backfill material from approved stockpiles will be accepted as part of the MSES upon confirmation that the material gradation type provided by the Contractor, outlined in §733-02B *Gradation,* conforms to the MSES submittal provided by the wall system designer-supplier and upon successful completion of the

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Quality Assurance (QA) program indicating that the material conforms to the specification. In addition to the requirements of Section 106 *Control of Material*, the Department will sample and test backfill taken from behind the newly-constructed wall to assure quality. The number of samples and their locations (plan and elevation) will be determined based on the quantity of material to be used in each MSES structure in accordance with the geotechnical control procedure "*Procedure for Taking Random Samples of Backfill Material for Mechanically Stabilized Earth Systems*". Results from chemical testing (i.e. resistivity, sulfate ion content, sulfide ion content, and chloride ion content) can take several weeks to obtain.

733-03 B GEOSYNTHETIC REINFORCED EARTH SYSTEM SLOPE BACKFILL MATERIAL

SCOPE. This specification covers the material requirements and methods of testing backfill material generally used for the construction of over steepened slopes utilizing Geosynthetic Reinforced Earth System (GRES).

SAMPLING. Obtain a representative sample of the source for the performance of a gradation analysis in accordance with the procedures contained in the geotechnical test method "*Test Method for the Grain-Size Analysis of Granular Soil Materials*".

MATERIAL REQUIREMENTS. Any mineral (inorganic) soil, blasted or broken rock, or similar materials of natural origin, including mixtures thereof, may be suitable materials subject to the following:

A. GRADATION. Provide backfill material conforming to the following:

1. Gradation Spread. Provide backfill material having a gradation in accordance with TABLE 733-03A *Backfill Gradation*.

TABLE 733-03A BACKFILL GRADATION	
Sieve Size Designation	**Percentage Passing by Weight**
6 in.	100
No. 40	0-60
No. 200	0-40

2. Gradation Ratio. Provide backfill material having a gradation ratio in accordance with the following formula:

$$\frac{Percent\ Pass.\ No.200\ sieve}{Percent\ Pass.\ No.40\ sieve} x100 \leq 70$$

The gradation is evaluated at the contract level.

BASIS OF APPROVAL. Sources will be approved upon successful completion of the gradation tests indicating that the material conforms to the specification.

BASIS OF ACCEPTANCE. Backfill material will be accepted based upon successful completion of the gradation tests indicating that the material conforms to the specification.

733-04 B SUBBASE COURSE

SCOPE. This specification covers the material requirements and methods of testing subbase material

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generally used in the construction of a pavement structure. The following subbase types are evaluated in this specification:

733.0401 – Subbase Course, Type 1
733.0402 – Subbase Course, Type 2
733.0403 – Subbase Course, Type 3
733.0404 – Subbase Course, Type 4

Subbase course types are based on the gradation of the material as outlined in Table 733-04A *Subbase Gradation*.

SAMPLING. Perform material tests and assurance methods pertaining to subbase requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

GENERAL. Provide suitable material conforming to the requirements of Section 203 *Excavation and Embankment* and to the requirements contained herein.

MATERIAL REQUIREMENTS. For Types 1, 3 and 4 furnish materials consisting of approved Blast Furnace Slag, Stone, Sand, and Gravel, or blends of these materials.

For Type 2, furnish materials consisting of approved Blast Furnace Slag or of Stone which is the product of crushing or blasting ledge rock, or a blend of Blast Furnace Slag and of Stone.

A. STOCKPILE. Stockpile subbase material in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*" except as noted herein.

1. Type 3. Material furnished under Type 3 will not be required to be stockpiled unless it contains RCA, glass, or Corian®.

2. Recycled Materials, Alternate C. Stockpiling of the Reclaimed Asphalt Pavement (RAP) for Alternate C is not required.

B. GRADATION. Provide subbase material having a gradation in accordance with TABLE 733-04A *Subbase Gradation*.

TABLE 733-04A SUBBASE GRADATION

Sieve Size Designation	Percentage Passing by Weight			
	Type 1	Type 2	Type 3	Type 4
4 in.	-	-	100	-
3 in.	100	-	-	-
2 in.	90-100	100	-	100
¼ in.	30-65	25-60	30-75	30-65
No. 40	5-40	5-40	5-40	5-40
No. 200	0-10	0-10	0-10	0-10

C. PLASTICITY INDEX. Provide material having a Plasticity Index based on the material passing the No. 40 mesh sieve equal to or less than 5.0.

D. DURABILITY.

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1. Types 1, 2 and 4. Provide material for Types 1, 2 and 4 having a Magnesium Sulfate Soundness loss less than 20% after four (4) cycles, unless material meeting the requirements of *Alternate C* (F. Recycled Materials) is used.

2. Type 3. Provide material for Type 3 having a Magnesium Sulfate Soundness loss less than 30% after four (4) cycles.

E. ELONGATED PARTICLES. A flat or elongated particle is defined herein as one which has its greatest dimension more than three (3) times its least dimension. Provide material consisting of particles where not more than 30%, by weight, of the particles retained on a ½ in. sieve is flat or elongated. When the State elects to test for this requirement, material with a percentage greater than 30 will be rejected. Acceptance for this requirement will normally be based on a visual inspection by the Regional Geotechnical Engineer.

F. RECYCLED MATERIALS. The following materials are an acceptable replacement for Types 1, 3 and 4. Only one alternate shall be selected for use per stockpile.

- ***Alternate A***. Recycled Portland Cement Concrete Aggregate (RCA) meeting the requirements of §733-07 Recycled Portland Cement Concrete Aggregate, Alternate A.
- ***Alternate B***. Recycled Portland Cement Concrete Aggregate (RCA) meeting the requirements of §733-07 Recycled Portland Cement Concrete Aggregate, Alternate B.
- ***Alternate C***. Reclaimed Asphalt Pavement (RAP) meeting the requirements of §733-06 Reclaimed Asphalt Pavement for Earthwork and Subbase.
- ***Alternate D***. Blends of Blast Furnace Slag, Stone, Sand, and Gravel, with not more than 30% by weight of glass. Glass shall meet the requirements of §733-05 Glass Backfill.
- ***Alternate E***. Blend of Alternate A with not more than 5% by weight of Corian®. Corian® shall meet the requirements of §733-19 Corian® Backfill.
- ***Alternate F***. Blend of Alternate B with not more than 5% by weight of Corian®. Corian® shall meet the requirements of §733-19 Corian® Backfill.

G. MATERIAL FOR TEMPORARY WORK. Material used as a subbase for the construction of temporary work may be approved by a Departmental Geotechnical Engineer by visual inspection in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*". Do not permanently incorporate material so approved into the work without following the appropriate acceptance procedure.

BASIS OF APPROVAL. Stockpiles of subbase material will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

BASIS OF ACCEPTANCE. Subbase material from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, subbase material will be accepted upon the basis of the stockpile approval.

733-05 B GLASS BACKFILL

SCOPE. This specification covers the material requirements and methods of assessing glass backfill

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material generally used as fill material.

SAMPLING. Perform material tests and assurance methods pertaining to the glass backfill requirements in conformance with the procedures for stockpiled granular materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile glass backfill material in accordance with the procedures for stockpiled granular materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide glass crushed to a maximum particle size of 3/8 in. The material shall be subject to visual inspection by the Regional Geotechnical Engineer.

C. CHARACTERISTICS. Glass may contain up to a maximum of 5% by volume of china, ceramics, plate glass products, paper, plastics or other deleterious materials.

BASIS OF APPROVAL. Glass backfill will be approved in accordance with the procedures for stockpiled granular materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

The material shall be subject to visual inspection by the Regional Geotechnical Engineer.

BASIS OF ACCEPTANCE. Approved glass backfill material will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, glass backfill material will be accepted upon the basis of the stockpile approval.

733-06 B RECLAIMED ASPHALT PAVEMENT FOR EARTHWORK AND SUBBASE

SCOPE. This specification covers the material requirements and methods of assessing Reclaimed Asphalt Pavement (RAP) generally used as fill material.

SAMPLING. Perform material tests and assurance methods pertaining to the RAP requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. SOURCE. Provide written documentation that the reclaimed bituminous material originated on a Department project. Include an identifier, such as State Highway number, construction contract number or Department Project Identification Number (PIN).

B. GRADATION.

1. Gradation Spread. Provide RAP having a maximum top size of 2 in. at the time of

placement.

2. Elongated Particles. A flat or elongated particle is defined herein as one which has its greatest dimension more than three (3) times its least dimension. Provide material consisting of particles where not more than 30%, by weight, of the particles retained on a ½ in. sieve are flat or elongated. When the State elects to test for this requirement, material with a percentage greater than 30 will be rejected. Acceptance for this requirement will normally be based on a visual inspection by the Regional Geotechnical Engineer.

C. CHARACTERISTICS. Bituminous material that is well-graded from coarse to fine and free from organic or other deleterious material, including tar. This material is at least 95%, by weight, reclaimed bituminous material. No soundness or Plasticity Index testing will be required.

BASIS OF APPROVAL. RAP will be approved based upon a visual inspection by the Regional Geotechnical Engineer.

BASIS OF ACCEPTANCE. If this material becomes unstable during construction, it may be necessary to add a mixture of natural suitable material to the RAP. Acceptance of the final product will be based on an evaluation by the Engineer.

Approved RAP will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, RAP will be accepted upon the basis of the visual inspection by the Regional Geotechnical Engineer.

733-07 B RECYCLED PORTLAND CEMENT CONCRETE AGGREGATE

SCOPE. This specification covers the material requirements and methods of testing Recycled Portland Cement Concrete Aggregate (RCA) generally used as fill material. The following RCA types are evaluated in this specification:

733.0701 – Recycled Portland Cement Concrete Aggregate
733.0702 – Recycled Portland Cement Concrete Aggregate Mixture

SAMPLING. Perform material tests and assurance methods pertaining to the RCA requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile RCA in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

If RCA comes from other than a Department project, provide documentation showing that the material obtained is from a NYSDEC registered or permitted construction and demolition (C&D) debris processing facility as specified in Section 360-16.1 of 6NYCRR Part 360, "Solid Waste Management Facilities".

B. GRADATION.

1. Gradation Spread. Provide RCA meeting the gradation requirements for the appropriate item of use.

2. Elongated Particles. A flat or elongated particle is defined herein as one which has its greatest dimension more than three (3) times its least dimension. Provide material consisting of particles where not more than 30%, by weight, of the particles retained on a ½ in. sieve are flat or elongated. When the State elects to test for this requirement, material with a percentage greater than 30 will be rejected. Acceptance for this requirement will normally be based on a visual inspection by the Regional Geotechnical Engineer.

C. CHARACTERISTICS.

1. Alternate A. At least 95%, by weight, of Recycled Portland Cement Concrete Aggregate (RCA), and free from organic and other deleterious material. This material may contain up to 5% by weight asphalt and/or brick.

2. Alternate B. A mixture of Recycled Portland Cement Concrete Aggregate (RCA) conforming to Alternate A above mixed with stone, sand, gravel or blast furnace slag. This material may contain up to 5% by weight asphalt and/or brick.

BASIS OF APPROVAL. Stockpiles of RCA will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

BASIS OF ACCEPTANCE. RCA from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, RCA will be accepted upon the basis of the stockpile approval.

733-08 B EMBANKMENT IN PLACE

SCOPE. This specification covers the material requirements and methods of assessing material generally used for embankment construction.

MATERIAL REQUIREMENTS. In general, any mineral (inorganic) soil, blasted or broken rock and similar materials of natural or man made (i.e. recycled) origin, including mixtures thereof, are considered suitable materials.

A. GRADATION. Provide suitable backfill material having no particles with a dimension in excess of two-thirds of the loose lift thickness controlled by the compaction equipment supplied by the Contractor.

Glass incorporated into embankments shall be thoroughly mixed with other suitable material so that Glass constitutes no more than 30% by weight anywhere in the embankment.

The material shall be subject to visual inspection by the Engineer.

BASIS OF ACCEPTANCE. Embankment material will be accepted upon visual inspection by the Engineer.

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733-09 B SELECT BORROW

SCOPE. This specification covers the material requirements and methods of testing select borrow material generally used for backfilling in areas beneath the watertable.

SAMPLING. Perform material tests and quality assurance methods pertaining to the backfill requirements in conformance with the procedures for non-stockpiled materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. SOURCE. Provide backfill material from a source approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide material consisting of rock, stone, slag, cobbles, or gravel, substantially free of shale or other soft, poor durability particles having no particles greater than 3 ft. in maximum dimension. Of the portion passing the 4 in. square sieve, the material shall have a gradation in accordance with TABLE 733-09A *Select Borrow Gradation*.

TABLE 733-09A SELECT BORROW GRADATION	
Sieve Size Designation	**Percentage Passing by Weight**
No. 40	0-70
No. 200	0-15

The gradation is evaluated at the project level.

C. DURABILITY. Provide material having a Magnesium Sulfate Soundness loss less than 35%.

D. COMPOSITION. RAP shall not be used.

BASIS OF APPROVAL. Sources will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

A preceding source evaluation will be valid for the time identified in the manual. For sources without a current evaluation, samples shall be obtained under the direction of the Departmental Geotechnical Engineer and will be tested and evaluated by the Geotechnical Engineering Bureau.

BASIS OF ACCEPTANCE. Approved select borrow backfill material from approved sources will be accepted upon successful completion of the gradation tests and Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, approved select borrow material will be accepted upon successful completion of the gradation tests.

733-10 B SELECT FILL

SCOPE. This specification covers the material requirements and methods of testing select fill material

generally used for backfilling in areas beneath the watertable.

SAMPLING. The sampling procedure contained in §733-09 *Select Borrow* shall apply.

MATERIAL REQUIREMENTS. The material requirements contained in §733-09 *Select Borrow* shall apply.

BASIS OF APPROVAL. The basis of approval contained in §733-09 *Select Borrow* shall apply.

BASIS OF ACCEPTANCE. The basis of acceptance contained in §733-09 *Select Borrow* shall apply.

733-11 B SELECT GRANULAR FILL

SCOPE. This specification covers the material requirements and methods of testing select granular fill material generally used for backfilling around pipes. The following materials are evaluated in this specification:

733.1101 – Select Granular Fill (Typical)
733.1102 – Select Granular Fill for Corrugated Aluminum Pipe

SAMPLING. Perform material tests and quality assurance methods pertaining to the backfill requirements in conformance with the procedures for non-stockpiled materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. SOURCE. Provide backfill material from an approved source in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide material consisting of rock, stone, slag, cobbles, or gravel, substantially free of shale or other soft, poor durability particles and conforming to the following requirements:

1. Typical. Except when used as backfill material for aluminum pipe with Type IR corrugations (Spiral Rib Pipe), the material shall have a gradation in accordance with TABLE 733-11A *Select Granular Fill Gradation*.

TABLE 733-11A SELECT GRANULAR FILL GRADATION	
Sieve Size Designation	**Percentage Passing by Weight**
4 in.	100
No. 40	0-70
No. 200	0-15

2. Exception. When used as backfill for Corrugated Aluminum Pipe, Type 1R (Spiral Rib Pipe) 100% of the material shall also pass the 2 in. sieve.

The gradation is evaluated at the project level.

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C. DURABILITY. Provide materials substantially free of shale and soft, poor durability particles. Provide material having a Magnesium Sulfate Soundness loss less than 30%.

D. COMPOSITION. RAP shall not be used.

When used as backfill for aluminum pipe, the material shall be free of Portland cement or Portland cement concrete.

E. pH. Where the State elects to test for this requirement, the material shall have a pH in accordance with TABLE 733-11B *Select Granular Fill pH Requirement.*

TABLE 733-11B SELECT GRANULAR FILL pH REQUIREMENT		
Property	**Test Method**	**Acceptance Criteria**
pH	NYSDOT GTM-24	$5 \leq pH \leq 10$

When RCA is used as backfill in a non-aluminum pipe application, the pH requirements are waived.

BASIS OF APPROVAL. Sources will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

A preceding source evaluation will be valid for the time identified in the manual. For sources without a current evaluation, samples shall be obtained under the direction of the Departmental Geotechnical Engineer and will be tested and evaluated by the Geotechnical Engineering Bureau.

BASIS OF ACCEPTANCE. Approved select granular fill backfill material from approved sources will be accepted upon successful completion of the gradation tests and Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, approved select granular fill backfill material will be accepted upon successful completion of the gradation tests.

733-12 B SELECT GRANULAR FILL SLOPE PROTECTION

SCOPE. This specification covers the material requirements and methods of testing select granular fill slope protection material generally used for stabilizing sloughing slopes. The following materials are evaluated in this specification:

733.1201 – Select Granular Fill Slope Protection (Blasted Rock)
733.1202 – Select Granular Fill Slope Protection (Typical)

SAMPLING. Perform material tests and quality assurance methods pertaining to the backfill requirements in conformance with the procedures for non-stockpiled materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. SOURCE. Provide backfill material from an approved source in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

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B. GRADATION. Provide material consisting of rock, stone, slag, cobbles, or gravel, substantially free of shale or other soft, poor durability particles.

1. Broken or blasted unweathered rock used for this item shall be well graded, having no particles greater than 24 in. in maximum dimension, and be substantially free from particles greater than 12 in. in maximum dimension, containing little or no material passing the No. 10 mesh sieve.

2. All materials, other than broken or blasted unweathered rock, shall have a gradation in accordance with TABLE 733-12A *Select Granular Fill Slope Protection Gradation*.

TABLE 733-12A SELECT GRANULAR FILL SLOPE PROTECTION GRADATION

Sieve Size Designation	Percentage Passing by Weight
24 in. maximum dimension	100
6 in. maximum dimension	90-100
2 in. square sieve	0-30
¼ in. sieve	0-10

The gradation is evaluated at the project level.

C. DURABILITY. Provide material having a Magnesium Sulfate Soundness loss less than 35%.

BASIS OF APPROVAL. Sources will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

A preceding source evaluation will be valid for the time identified in the manual. For sources without a current evaluation, samples shall be obtained under the direction of the Departmental Geotechnical Engineer and will be tested and evaluated by the Geotechnical Engineering Bureau.

BASIS OF ACCEPTANCE. Approved select granular fill slope protection backfill material from approved sources will be accepted upon successful completion of the gradation tests and Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, approved select granular fill slope protection backfill material will be accepted upon successful completion of the gradation tests.

733-13 B SELECT GRANULAR SUBGRADE

SCOPE. This specification covers the material requirements and methods of testing select granular subgrade material generally used for backfilling undercuts. The following materials are evaluated in this specification:

733.1301 – Select Granular Subgrade (Blasted Rock)
733.1302 – Select Granular Subgrade (Typical)
733.1303 – Select Granular Subgrade (RCA)
733.1304 – Select Granular Subgrade (RCA Mixture)
733.1305 – Select Granular Subgrade (RAP)

SAMPLING. Perform material tests and quality assurance methods pertaining to the backfill requirements in conformance with the procedures for non-stockpiled materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

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MATERIAL REQUIREMENTS.

A. SOURCE. Provide backfill material from an approved source in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide material consisting of rock, stone, slag, cobbles, or gravel, substantially free of shale or other soft, poor durability particles.

1. Well graded rock may be used for this item. Particles shall not exceed 12 in. in greatest dimension nor ⅔ of the loose lift thickness, whichever is less.

2. All materials, other than well graded rock, furnished under this item shall have no particles greater than 6 in. in maximum dimension. Of the portion passing the 4 in. square sieve, the material shall have a gradation in accordance with TABLE 733-13A *Select Granular Subgrade Gradation*.

TABLE 733-13A SELECT GRANULAR SUBGRADE GRADATION

Sieve Size Designation	Percentage Passing by Weight
¼ in.	30-100
No. 40	0-50
No. 200	0-10

The gradation is evaluated at the project level.

C. DURABILITY. Provide material having a Magnesium Sulfate Soundness loss less than 35%.

D RECYCLED MATERIALS. The following materials are an acceptable replacement for natural material:

- ***Alternate A***. Recycled Portland Cement Concrete Aggregate (RCA) meeting the requirements of §733-07 Recycled Portland Cement Concrete Aggregate, Alternate A.

- ***Alternate B***. Recycled Portland Cement Concrete Aggregate (RCA) meeting the requirements of §733-07 Recycled Portland Cement Concrete Aggregate, Alternate B.

- ***Alternate C***. Reclaimed Asphalt Pavement (RAP) meeting the requirements of §733-06 Reclaimed Asphalt Pavement for Earthwork and Subbase.

BASIS OF APPROVAL. Sources will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

A preceding source evaluation will be valid for the time identified in the manual. For sources without a current evaluation, samples shall be obtained under the direction of the Departmental Geotechnical Engineer and will be tested and evaluated by the Geotechnical Engineering Bureau.

BASIS OF ACCEPTANCE. Approved select granular subgrade backfill material from approved sources will be accepted upon successful completion of the gradation tests and Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced,

approved select granular subgrade backfill material will be accepted upon successful completion of the gradation tests.

733-14 B SELECT STRUCTURAL FILL

SCOPE. This specification covers the material requirements and methods of testing select granular fill material generally used for backfilling behind structures.

SAMPLING. The sampling procedure contained in §733-11 *Select Granular Fill* shall apply.

MATERIAL REQUIREMENTS. The material requirements contained in §733-11 *Select Granular Fill* shall apply.

BASIS OF APPROVAL. The basis of approval contained in §733-11 *Select Granular Fill* shall apply.

BASIS OF ACCEPTANCE. The basis of acceptance contained in §733-11 *Select Granular Fill* shall apply.

733-15 B SAND BACKFILL

SCOPE. This specification covers the material requirements and methods of testing sand backfill generally used for backfilling around utilities.

SAMPLING. Perform material tests and quality assurance methods pertaining to the backfill requirements in conformance with the procedures for non-stockpiled materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. SOURCE. Provide backfill material from an approved source in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide material have a gradation in accordance with TABLE 733-15A *Sand Backfill Gradation*.

TABLE 733-15A SAND BACKFILL GRADATION

Sieve Size Designation	Percentage Passing by Weight
½ in.	100
¼ in.	90-100
No. 200	0-5

The gradation is evaluated at the project level.

C. DURABILITY. Provide materials substantially free of shale and soft, poor durability particles.

D. pH. Where the State elects to test for this requirement, the material shall have a pH in accordance with TABLE 733-15B *Sand Backfill pH Requirement.*

TABLE 733-15B SAND BACKFILL pH REQUIREMENT		
Property	**Test Method**	**Acceptance Criteria**
pH	NYSDOT GTM-24	$5 \leq pH \leq 10$

BASIS OF APPROVAL. Sources will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

A preceding source evaluation will be valid for the time identified in the manual. For sources without a current evaluation, samples shall be obtained under the direction of the Departmental Geotechnical Engineer and will be tested and evaluated by the Geotechnical Engineering Bureau.

BASIS OF ACCEPTANCE. Approved sand backfill material from approved sources will be accepted upon successful completion of the gradation tests and Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, approved sand backfill material will be accepted upon successful completion of the gradation tests.

733-16 B WINTER EARTHWORK

SCOPE. This specification addresses the material requirements and methods of assessing earthwork materials placed during construction operations between November 1st and April 1st. The following materials are evaluated in this specification:

733.1601 – Winter Earthwork Material for Embankment In Place
733.1602 – Winter Earthwork Material for Select Borrow
733.1603 – Winter Earthwork Material for Select Fill
733.160401 – Winter Earthwork Material for Select Granular Fill (Typical)
733.160402 – Winter Earthwork Material for Select Granular Fill for Corrugated Aluminum Pipe
733.160501 – Winter Earthwork Material for Select Granular Subgrade (Blasted Rock)
733.160502 – Winter Earthwork Material for Select Granular Subgrade (Typical)
733.160503 – Winter Earthwork Material for Select Granular Subgrade (RCA)
733.160504 – Winter Earthwork Material for Select Granular Subgrade (RCA Mixture)
733.1606 – Winter Earthwork Material for Select Structural Fill
733.1607 – Winter Earthwork Material for GRES Slope Backfill

SAMPLING. Perform material tests and quality assurance methods pertaining to the backfill requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. SOURCE. Provide unfrozen backfill material from an approved source in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION.

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1. Winter Earthwork Material for Embankment In Place. Provide material consisting of rock, stone, slag, cobbles, or gravel, substantially free of shale or other soft, poor durability particles. The material shall have no particles greater than 12 in. in maximum dimension. The material shall have a gradation in accordance with TABLE 733-16A Gradation of Winter Earthwork Material.

TABLE 733-16A GRADATION OF WINTER EARTHWORK MATERIAL

Sieve Size Designation	Percentage Passing by Weight
Maximum Dimension	100
0.5(Maximum Dimension)	0-50
¼ in.	0-10
No. 200	0-4

The gradation is evaluated at the project level.

2. Winter Earthwork Material for Select Borrow. Provide material meeting the requirements of §733-09 *Select Borrow* with the following gradation adjustment:

The material shall have no particles greater than 3 ft. in maximum dimension. The material shall have a gradation in accordance with TABLE 733-16A Gradation of Winter Earthwork Material. The gradation is evaluated at the project level.

3. Winter Earthwork Material for Select Fill. The material requirements contained in §733-16 B.2. *Winter Earthwork Material for Select Borrow* shall apply.

4. Winter Earthwork Material for Select Granular Fill. Provide material meeting the requirements of §733-11 *Select Granular Fill* with the following gradation adjustment:

The material shall have no particles greater than 4 in. in maximum dimension. The material shall have a gradation in accordance with TABLE 733-16A Gradation of Winter Earthwork Material. The gradation is evaluated at the project level.

5. Winter Earthwork Material for Select Granular Subgrade. Provide material meeting the requirements of §733-13 *Select Granular Subgrade* with the following material and gradation adjustment:

The material shall have no particles greater than 6 in. in maximum dimension. The material shall have a gradation in accordance with TABLE 733-16A Gradation of Winter Earthwork Material. RAP shall not be used. The gradation is evaluated at the project level.

6. Winter Earthwork Material for Select Structure Fill. The material requirements contained in §733-16 B.4. *Winter Earthwork Material for Select Granular Fill* shall apply.

7. Winter Earthwork Material for GRES Slope Backfill. The material requirements contained in §733-16 B.5. *Winter Earthwork Material for Select Granular Subgrade* shall apply.

C. CHARACTERISTICS.

1. No frozen material is to be incorporated into or be allowed to remain in any of the work.

2. Material of silt, clay, or high moisture content will not be permitted under any circumstances.

SECTION 733 – EARTHWORK MATERIALS

BASIS OF APPROVAL. Sources will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

A preceding source evaluation will be valid for the time identified in the manual. For sources without a current evaluation, samples shall be obtained under the direction of the Departmental Geotechnical Engineer and will be tested and evaluated by the Geotechnical Engineering Bureau.

BASIS OF ACCEPTANCE. Approved winter earthwork material from approved sources for the substitution of embankment in place, select borrow, select fill, select granular fill, select granular subgrade, select structural fill, or GRES slope backfill will be accepted upon successful completion of the gradation tests and Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, approved winter earthwork material will be accepted upon successful completion of the gradation tests.

733-17 B SURFACE SETTLEMENT GAUGE

SCOPE. This specification covers the material requirements and methods of installation of the embankment construction control device surface settlement gauge generally used for monitoring embankment construction. The following materials are evaluated in this specification:

733.1701 – Surface Settlement Gauge (Pipe Gauge)
733.1702 – Surface Settlement Gauge (Manometer Gauge)

MATERIAL REQUIREMENTS. Provide material in conformance with the geotechnical control procedure "*Settlement Gauges and Settlement Rods*" including:

A. PIPE GAUGE.

1. ***Pipe.*** Provide a minimum 2 ½ in. diameter metal pipe with steel flange meeting the requirements of §732-02 *Drive Pipe*. Provide a sufficient amount of pipe extensions to meet the rise requirements identified in the geotechnical control procedure "*Settlement Gauges and Settlement Rods*".

2. ***Base.*** Provide either of the following:
   a. ***Steel.*** Provide a minimum ¼ in. thick steel plate meeting the requirements of §715-01 *Structural Steel.*

   b. ***Wood.*** Provide wood to the sizes shown in the geotechnical control procedure "*Settlement Gauges and Settlement Rods*" conforming to the requirements of §712-14 *Stress Graded Timber and Lumber*. Treat wood in accordance with §708-31 *Wood Preservative - Waterborne* and applied in conformance with American Wood Preservers Association (AWPA) Use Category Designation UC4B.

B. MANOMETER GAUGE. Provide materials specified for A. *Pipe Gauge* with the exception of the pipe extensions. To obtain readings from the buried device, provide the following connection:

1. ***Interconnection.***

SECTION 733 – EARTHWORK MATERIALS

a. Tubing. Provide ½ in. O.D. polyethylene tubing indicated in the geotechnical control procedure "*Settlement Gauges and Settlement Rods*".

b. Sand. Provide sand conforming to the requirement of §703-07 *Concrete Sand*.

c. *Fluid.* Provide a 50-50 mixture of ethylene glycol and water.

2. Readout Box. Provide wood to the sizes shown in the geotechnical control procedure "*Settlement Gauges and Settlement Rods*" conforming to the requirements of §712-14 *Stress Graded Timber and Lumber*. Treat wood in accordance with §708-31 *Wood Preservative - Waterborne* and applied in conformance with American Wood Preservers Association (AWPA) Use Category Designation UC4B.

3. Base. Provide wood to the sizes shown in the geotechnical control procedure "*Settlement Gauges and Settlement Rods*" conforming to the requirements of §712-14 *Stress Graded Timber and Lumber*. Treat wood in accordance with §708-31 *Wood Preservative - Waterborne* and applied in conformance with American Wood Preservers Association (AWPA) Use Category Designation UC4B.

BASIS OF APPROVAL. The material shall be approved on the basis of manufacturer's certification that the material conforms to the specification.

BASIS OF ACCEPTANCE. Approved material will be accepted upon successful assemblage and installation in accordance with the geotechnical control procedure "*Settlement Gauges and Settlement Rods*".

733-18 B SETTLEMENT ROD

SCOPE. This specification covers the material requirements and methods of installation of the embankment construction control device settlement rod generally used for monitoring embankment construction.

MATERIAL REQUIREMENTS. Provide material in conformance with the geotechnical control procedure "*Settlement Gauges and Settlement Rods*" including:

A. ROD. Provide a minimum ½ in. diameter steel rod meeting the requirements of §709-01 *Bar Reinforcement, Grade 60*.

B. PIPE. Provide a minimum 3 in. diameter metal pipe and cap meeting the requirements of §732-02 *Drive Pipe*.

BASIS OF APPROVAL. The material shall be approved on the basis of manufacturer's certification that the material conforms to the specification.

BASIS OF ACCEPTANCE. Approved material will be accepted upon successful assemblage and installation in accordance with the geotechnical control procedure "*Settlement Gauges and Settlement*

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Rods".

733-19 B CORIAN® BACKFILL

SCOPE. This specification covers the material requirements and methods of assessing Corian® backfill material generally used as fill material.

SAMPLING. Perform material tests and assurance methods pertaining to the Corian® backfill requirements in conformance with the procedures for stockpiled granular materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile Corian® backfill material in accordance with the procedures for stockpiled granular materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

B. GRADATION. Provide Corian® crushed to a maximum particle size of 2 in. The material shall be subject to visual inspection by the Regional Geotechnical Engineer.

BASIS OF APPROVAL. Corian® backfill will be approved in accordance with the procedures for stockpiled granular materials contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

The material shall be subject to visual inspection by the Regional Geotechnical Engineer.

BASIS OF ACCEPTANCE. Approved Corian® backfill material will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, Corian® backfill material will be accepted upon the basis of the stockpile approval.

733-20 UNDERDRAIN FILTER MATERIAL

SCOPE. This specification covers the material requirements and methods of testing underdrain filter material generally used in drainage systems. The following underdrain filter types are evaluated in this specification:

733.2001 – Underdrain Filter, Type 1
733.2002 – Underdrain Filter, Type 2

Underdrain filter types are based on the gradation of the material as outlined in Table 733-20A *Underdrain Filter Material Gradation* or alternate recycled material as outlined in Table 733-20B *Underdrain Filter Material, Glass Substitution Gradation*.

SAMPLING. Perform material tests and assurance methods pertaining to underdrain filter material requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

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MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile underdrain filter material in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*" except as noted herein.

B. GRADATION. Provide material consisting of crushed stone, sand, gravel, or screened gravel having a gradation in accordance with TABLE 733-20A *Underdrain Filter Material Gradation*.

TABLE 733-20A UNDERDRAIN FILTER MATERIAL GRADATION		
Sieve Size Designation	**Percentage Passing by Weight**	
	Type 1	**Type 2**
1 in.	100	-
½ in.	30-100	100
¼ in.	0-30	20-100
No. 10	0-10	0-15
No. 20	0-5	0-5

C. DURABILITY. Provide material meeting the soundness requirements of §703-02 *Coarse Aggregates* or §703-10 *Lightweight Aggregates*. When electing to use material from sources not approved under §703-02 or §703-10, provide material having a Magnesium Sulfate Soundness loss less than 20% in conformance with the procedures contained in the geotechnical test method "*Test Method for Magnesium Sulfate Soundness of Granular Materials*".

D. RECYCLED MATERIALS. The following material is an acceptable replacement for Types 1 or 2.

- ***Alternate A***. Crushed glass backfill. Glass shall meet the requirements of §733-05 Glass Backfill and have a gradation in accordance with TABLE 733-20B *Underdrain Filter Material, Glass Substitution Gradation*.

TABLE 733-20B UNDERDRAIN FILTER MATERIAL, GLASS SUBSTITUTION GRADATION	
Sieve Size Designation	**Percentage Passing by Weight**
½ in.	100
⅜ in.	90 – 100
No. 200	0-5

BASIS OF APPROVAL. Stockpiles of underdrain filter material will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

BASIS OF ACCEPTANCE. Underdrain filter material from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, underdrain filter material will be accepted upon the basis of the stockpile approval.

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733-21 B STONE FILLING

SCOPE. This specification covers the material requirements and methods of testing stone filling generally used in stream bank channel protection. The following stone filling types are evaluated in this specification:

733.2101 – Stone Filling, Fine
733.2102 – Stone Filling, Light
733.2103 – Stone Filling, Medium
733.2104 – Stone Filling, Heavy

Stone filling types are based on the gradation of the material as outlined in Table 733-21A *Stone Filling Gradation* and Table 733-21B *Stone Filling Approximate Shape*.

SAMPLING. Perform material tests and assurance methods pertaining to stone filling requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*".

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile stone filling in accordance with the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*" except as noted herein.

B. GRADATION. Provide material having a gradation in accordance with TABLE 733-21A *Stone Filling Gradation* and Table 733-21B *Stone Filling Approximate Shape*.

TABLE 733-21A STONE FILLING GRADATION

Stone Filling Item	See Notes	Stone Size	Percent of Total by Weight
Fine	2, 3, 4	Smaller than 8 in.	90-100
		Larger than 3 in.	50-100
		Smaller than No. 10 sieve	0-10
Light	2, 3, 4	Lighter than 100 lbs.	90-100
		Larger than 6 in.	50-100
		Smaller than ½ in.	0-10
Medium	2, 4	Heavier than 100 lbs.	50-100
		Smaller than 4 in.	0-10
Heavy	2, 4, 5	Heavier than 600 lbs.	50-100
		Smaller than 6 in.	0-10

TABLE 733-21B STONE FILLING APPROXIMATE SHAPE

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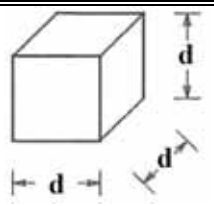
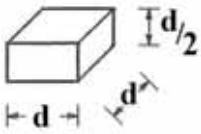
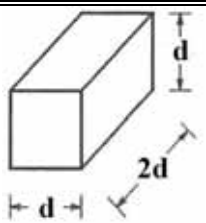
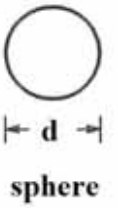
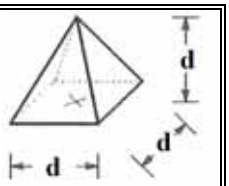
Specified Weights and Sizes					
600 lbs.	d=18 in.	d=23 in.	d=15 in.	d=23 in.	d=27 in.
300 lbs.	d=15 in.	d=18 in.	d=12 in.	d=18 in.	d=21 in.
150 lbs.	d=12 in.	d=15 in.	d=9 in.	d=15 in.	d=17 in.
100 lbs.	d=10 in.	d=13 in.	d=8 in.	d=13 in.	d=15 in.
d = 8 in.	50 lbs.	25 lbs.	100 lbs.	25 lbs.	16 lbs.
d = 6 in.	20 lbs.	10 lbs.	40 lbs.	10 lbs.	7 lbs.

Notes:

1. Stone sizes, other than weights, refer to the average of the maximum and minimum dimensions of a stone particle as estimated by the Engineer.
2. Materials shall contain less than 20% of stones with a ratio of maximum to minimum dimension greater than three.
3. Air-cooled blast furnace slag, cobbles or gravel having at least one fractured face per particle are acceptable substitutes for stone under these items, provided that the soundness and gradation requirements are met.
4. Materials shall contain a sufficient amount of stones smaller than the average stone size to fill in the spaces between the larger stones.
5. Heavier gradings of this item may be required on some projects, in which case the requirements will be stated in the contract documents.

C. DURABILITY. The soundness of all material used for stone filling shall be approved on the basis of a geologic evaluation in accordance with the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*".

Where the State elects to conduct soundness tests, stone filling shall have a Magnesium Sulfate Soundness loss less than 10%, by weight, after 10 cycles.

BASIS OF APPROVAL. Stockpiles of stone filling will be approved in accordance with the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*".

BASIS OF ACCEPTANCE. Stone filling from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, stone filling will be accepted upon the basis of the stockpile approval.

733-22 B RIP-RAP

SCOPE. This specification covers the material requirements and methods of testing rip-rap generally used in stream bank channel protection. The following rip-rap types are evaluated in this specification:

733.2201 – Dry Rip-Rap

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733.2202 – Grouted Rip-Rap

SAMPLING. Perform material tests and assurance methods pertaining to rip-rap requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*".

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile rip-rap in accordance with the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*" except as noted herein.

B. GRADATION. Provide material consisting of stones shaped as nearly as practicable in the form of right rectangular prisms having a gradation in accordance with TABLE 733-22A *Rip-Rap Gradation*. One dimension of each of the stones furnished shall be at least equal to the thickness of the rip-rap shown in the contract documents.

TABLE 733-22A RIP-RAP GRADATION	
Stone Weight	**Gradation Spread**
Heavier than 300 lbs.	50-100 percent of total by weight
100 lbs. $\leq \gamma \leq$ 300 lbs.	Remainder of stones

C. DURABILITY. The soundness of all material used for rip-rap shall be approved on the basis of a geologic evaluation in accordance with the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*".

Where the State elects to conduct soundness tests, rip-rap shall have a Magnesium Sulfate Soundness loss less than 10%, by weight, after 10 cycles.

D. GROUT. Provide grout manufacture materials conforming to Table 733-22B *Grouted Rip-Rap Grout Requirements*:

TABLE 733-22B GROUTED RIP-RAP GROUT REQUIREMENTS		
Material	**Subsection**	**Grout Mix**
Portland Cement Type 2	§701-01	1 part
Concrete Sand	§703-07	3 parts

BASIS OF APPROVAL. Stockpiles of rip-rap will be approved in accordance with the geotechnical control procedure "*Procedure for the Control of Stone Filling and Rip-Rap Items*".

The material shall be subject to visual inspection by the Regional Geotechnical Engineer.

BASIS OF ACCEPTANCE. Rip-rap from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, rip-rap will be accepted upon the basis of the stockpile approval

733-23 B BEDDING MATERIAL

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SCOPE. This specification covers the material requirements and methods of testing bedding material generally used as a foundation material prior to placing stone filling or rip-rap.

SAMPLING. Perform material tests and assurance methods pertaining to bedding material requirements in conformance with the procedures contained in the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

MATERIAL REQUIREMENTS.

A. STOCKPILE. Stockpile bedding material in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*" except as noted herein.

B. GRADATION. Provide material consisting of crushed stone, crushed air-cooled blast furnace slag, or gravel, free of soft, non-durable particles, organic material, and thin or elongated particles having a gradation in accordance with TABLE 733-23A *Bedding Material Gradation*.

TABLE 733-23A BEDDING MATERIAL GRADATION

Sieve Size Designation	Percentage Passing by Weight
4 in.	100
1 in.	15-60
¼ in.	0-25
No. 40	0-10

BASIS OF APPROVAL. Stockpiles of bedding material will be approved in accordance with the geotechnical control procedure "*Procedure for the Control and Quality Assurance of Granular Materials*".

BASIS OF ACCEPTANCE. Bedding material from approved stockpiles will be accepted upon successful completion of the Quality Assurance (QA) program indicating that the material conforms to the specification. If the QA program is not introduced, bedding material will be accepted upon the basis of the stockpile approval.

SECTION 734 (VACANT)

SECTION 737 – GEOSYNTHETICS

Make the following changes to the Standard Specifications dated May 1, 2008:

Replace Section 737 in its entirety with the following:

SECTION 737 B GEOSYNTHETICS

QUALITY ASSURANCE PROGRAM. The Department maintains a Quality Assurance (QA) program for geosynthetics. For monitoring purposes, the Geotechnical Engineering Bureau will test a sample of the geosynthetic material delivered to the project site to compare its properties to those properties determined at the time of the product's initial approval, which may indicate a change has occurred in the manufacturer's process or Quality Control (QC) process.

Several scenarios may develop as a result of the QA testing.

1. The properties are shown to be the same as originally determined within the statistical validity of the test. No action will be taken.
2. The properties are shown to be significantly different than originally determined.
   a. If the results are within the acceptable minimum for approval, contact with the manufacturer will be made by the Geotechnical Engineering Bureau to determine what has changed.
   b. If the results are below the minimum acceptable for approval, the product's status on the Approved List will be re-evaluated. The manufacturer will be notified of the review.

737-01 GEOTEXTILES

SCOPE. This specification covers the material requirements and methods of testing geosynthetic materials used in highway construction. The following Geotextile Structure Types are evaluated in this specification:

737.0101 – Needle-Punched – Non-Woven	(NP – NW)
737.0102 – Heatbonded – Non-Woven	(HB – NW)
737.0103 – Monofilament - Woven	(MF – W)
737.0104 – Multifilament – Woven	(MuF – W)
737.0105 – Slit Film – Woven	(SF – W)
737.0106 – Combination Monofilament/Fibrillated Yarn – Woven	(C – W)
737.0107 – Recycled/ Reinforced Needle-Punched – Non-Woven	(R/R NP – NW)
737.0108 – Circular – Woven	(Cir – W)

GENERAL. The Department's evaluation of geotextiles submitted will be based on the following tests:

1. Soil Retention - The test to evaluate this characteristic will be performed in accordance with the Apparent Opening Size Test, ASTM D4751.
2. Flow Capacity - The test to evaluate this characteristic will be performed in accordance with the Permittivity Test, ASTM Method D4491.
3. Tensile Strength - The tests to evaluate this characteristic will be performed in accordance with the following:
   a. Grab Test Method, ASTM D4632
   b. Trapezoid Tear Test Method, ASTM D4533
   c. Static Puncture Strength Using a 2 in. Probe, ASTM D6241

SECTION 737 – GEOSYNTHETICS

Applications. Based on the above tests and criteria that follow, the Geotextiles may be accepted for the following:

- Geotextile Bedding
- Geotextile Separation
- Geotextile Drainage
- Geotextile Slope Protection
- Geotextile Stabilization
- Turbidity Curtains
- Silt Fence

MATERIAL REQUIREMENTS. Following is a table of the requirements by applications:

A. Geotextile Bedding. Geotextile bedding shall meet the requirements of Table 737-01A.

Table 737-01A Bedding Geotextile Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements					Bedding Class Requirements			
		Class	Percent Elongation (%)	Grab Strength (lbf)	Tear Strength (lbf)	Puncture Strength (lbf)	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Designation	Minimum Permittivity (sec^{-1})
Geotextile Bedding	C – W	1	< 50%	315	112	618	A	0.0165	No. 40	0.7
			≥ 50%	202	79	433	B	0.0098	No. 60	0.2
	MF - W	2	< 50%	247	56	495	C	0.0083	No. 70	0.1
			≥ 50%	157	56	309				

B. Geotextile Separation. Geotextile separation shall meet the requirements of Table 737-01B.

Table 737-01B Separation Geotextile Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements					Separation Class Requirements			
		Class	Percent Elongation (%)	Grab Strength (lbf)	Tear Strength (lbf)	Puncture Strength (lbf)	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Designation	Minimum Permittivity (sec^{-1})
Geotextile Separation	Any type listed in §737-01 Scope	2	< 50%	247	90 [1]	495	NA (X)	0.0234	No. 30	0.02
			≥ 50%	157	56	309				

Table 737-01B Notes:

[1] For woven monofilament geotextiles the minimum average value is 56 lbf.

SECTION 737 – GEOSYNTHETICS

C. Geotextile Drainage. Geotextile drainage shall meet the requirements of Table 737-01C.

Table 737-01C Drainage Geotextile Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements					Drainage Class Requirements			
		Class	Percent Elongation (%)	Grab Strength (lbf)	Tear Strength (lbf)	Puncture Strength (lbf)	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Designation	Minimum Permittivity (sec^{-1})
Geotextile Drainage	Non-Woven	2	< 50%	247	90	495	A	0.0165	No. 40	0.5
			≥ 50%	157	56	309	B	0.0098	No. 60	0.2
							C	0.0083	No. 70	0.1

D. Geotextile Slope Protection. Geotextile slope protection shall meet the requirements of Table 737-01D.

Table 737-01D Slope Protection Geotextile Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements					Slope Protection Class Requirements			
		Class	Percent Elongation (%)	Grab Strength (lbf)	Tear Strength (lbf)	Puncture Strength (lbf)	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Designation	Minimum Permittivity (sec^{-1})
Geotextile Slope Protection	NP - NW	1	< 50%	315	112	618	A	0.0165	No. 40	0.7
			≥ 50%	202	79	433	B	0.0098	No. 60	0.2
							C	0.0083	No. 70	0.1

E. Geotextile Stabilization. Geotextile stabilization shall meet the requirements of Table 737-01E.

Table 737-01E Stabilization Geotextile Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements					Stabilization Class Requirements			
		Class	Percent Elongation (%)	Grab Strength (lbf)	Tear Strength (lbf)	Puncture Strength (lbf)	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Designation	Minimum Permittivity (sec^{-1})
Geotextile Stabilization	Any type listed in §737-01 Scope	1	< 50%	315	112	618	NA (X)	0.0165	No. 40	0.05
			≥ 50%	202	79	433				

SECTION 737 – GEOSYNTHETICS

F. Turbidity Curtain. Turbidity curtains shall meet the requirements of Table 737-01F.

Table 737-01F Turbidity Curtain Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements					Turbidity Curtain Class Requirements			
		Class	Percent Elongation (%)	Grab Strength (lbf)	Tear Strength (lbf)	Puncture Strength (lbf)	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Designation	Minimum Permittivity (sec^{-1})
Turbidity Curtain	Any type listed in §737-01 Scope	2	< 50%	247	90 [1]	495	NA (X)	0.0117	No. 50	0.4
			≥ 50%	157	56	309				

Table 737-01F Notes:
[1] For woven monofilament geotextiles the minimum average value is 56 lbf.

G. Silt Fence. Silt fences shall meet the requirements of Table 737-01G.

Table 737-01G Silt Fence Requirements

Application	Geotextile Structure	Minimum Strength Class Requirements						Silt Fence Class Requirements			
		Max. Post Spacing (ft.)	Percent Elongation (%)	Grab Strength (lbf)	Orient-ation[3]	Fence Between Posts	Design-ation	Class	Apparent Opening Size (maximum) Sieve Size (in.)	Apparent Opening Size (maximum) Sieve Desig.	Minimum Permittivity (sec^{-1})
Silt Fence	Any type listed in §737-01 Scope	4.0	NA	90	MD	Supported [1]	s	NA (X)	0.0234	No. 30	0.05
					XD						
		4.0	≥ 50% [2]	123	MD	Unsupported	us 4.0				
				101	XD						
		6.5	< 50% [2]	123	MD	Unsupported	us 6.5				
				101	XD						

Table 737-01G Notes:
[1] Silt fence support shall consist of 14 gage steel wire with a mesh spacing of 6 in. x 6 in. or prefabricated polymeric mesh with a minimum ultimate tensile strength of 200 lb/ft in both machine and cross machine directions measured in accordance with ASTM D6637.
[2] As measured in accordance with ASTM D4632.
[3] MD = Machine Direction, XD = Cross-Machine Direction.

BASIS OF APPROVAL. All geotextiles, including those sold under a private label agreement, being submitted for testing and approval must be submitted through the American Association of State Highway and Transportation Officials (AASHTO) National Transportation Product Evaluation Program

(NTPEP). The program has four submittal periods per calendar year. Information regarding submittal is available at the address shown below:

AASHTO-NTPEP Coordinator
444 N. Capitol St., NW, Suite 249
Washington, DC 20001

The approval criterion for geotextiles is based on AASHTO M-288 *Specification for Geotextiles* and the NTPEP Report.

Approved geotextiles will be added to the Approved List.

BASIS OF ACCEPTANCE. Geotextiles will be accepted on the basis of:

1. The roll of material being properly identified either by a label on the geotextile or the container. The container may be either the cover wrapping or the core around which the geotextile is rolled,
2. The material brand name and style appearing on the Approved List for the intended application,
3. The material certification submitted with the geotextile stating that the material conforms to the specification and that it is the same one appearing on the Approved List, and
4. The swatch of the submitted geotextile successfully passing a visual inspection by the Regional Geotechnical Engineer.

737-02 GEOMEMBRANES

SCOPE. This specification covers the material requirements and methods of testing geomembranes used in highway construction.

GENERAL. The Department's evaluation of geomembranes submitted will be based on the following tests:

1. Tensile Strength - Test in accordance with ASTM D4632, Grab Test Method.
2. Elongation - Test in accordance with ASTM D4632.
3. Trapezoidal Tear Resistance - Test in accordance with ASTM D4533, Trapezoid Tear Test Method.
4. Puncture - Test in accordance with ASTM D4833, Index Puncture Resistance.

MATERIAL REQUIREMENTS. Geomembranes shall meet the following requirements:

1. Ultimate Tensile Strength – 180 lbf[(1)]
2. Ultimate Elongation - 65%[(1)]
3. Trapezoid Tear Resistance - 60 lbf[(1)]
4. Puncture - 90 lbf[(2)]

(1) Minimum value in weaker principal direction. The average of the test results in the weaker principal direction shall be equal to or greater than the stated values.

(2) The average of the test results for puncture shall meet or exceed the stated value.

BASIS OF APPROVAL. Producers of geomembranes shall demonstrate the quality of their products before being placed on the Department's Approved List. The producer shall provide:

1. A completed Form Number SM 465 *Product Evaluation Form*.
2. A test data sheet identifying the geomembrane properties.

3. A 20 sq yd sample of geomembrane to allow for testing by the Department.

Approved geomembranes will be added to the Approved List.

BASIS OF ACCEPTANCE. Geomembranes will be accepted on the basis of:
1. The roll of material being properly identified either by a label on the geomembrane or the container. The container may be either the cover wrapping or the core around which the geomembrane is rolled,
2. The material brand name and style appearing on the Approved List for the intended application, and
3. The material certification submitted with the geomembrane stating that the material conforms to the specification and that it is the same one appearing on the Approved List.

737-03 PREFABRICATED VERTICAL DRAINS

SCOPE. This specification covers the material requirements and methods of testing prefabricated vertical drains used in highway construction.

GENERAL. The Department's evaluation of prefabricated vertical drains submitted will be based on the following tests:
1. Prefabricated Vertical Drain:
    a. Equivalent Sand Drain Diameter - Test in accordance with NYSDOT - GEB Large Diameter Consolidation Test.
2. Cover Geotextile Wrapping:
    a. The requirements listed in Geotextile Drainage (Table 737-01C).

MATERIAL REQUIREMENTS. Prefabricated Vertical Drains shall meet the following requirements:
1. Prefabricated Vertical Drain:
    a. Equivalent Sand Drain Diameters – 1 ½ in. minimum.(1)
2. Cover Geotextile Wrapping:
    a. The requirements listed in Geotextile Drainage (Table 737-01C). The geotextile shall be tightly wrapped around the core.

(1) The average of the test results shall meet or exceed the stated values.

BASIS OF APPROVAL. Producers of prefabricated vertical drains shall demonstrate the quality of their products before being placed on the Department's Approved List. The producer shall provide:
1. A completed Form Number SM 465 *Product Evaluation Form*.
2. A test data sheet identifying the cover geotextile and core and their properties.
3. A 30 ft. long sample of the prefabricated vertical drain to allow for testing by the Department.

Approved prefabricated vertical drains will be added to the Approved List.

BASIS OF ACCEPTANCE. Prefabricated vertical drains will be accepted on the basis of:
1. The roll of material being properly identified either by a label on the prefabricated vertical drain or the container. The container may be either the cover wrapping or the core around which the prefabricated vertical drain is rolled,

2. The material brand name and style appearing on the Approved List for the intended application,
3. The material certification submitted with the prefabricated vertical drain stating that the material conforms to the specification and that it is the same one appearing on the Approved List, and
4. The letter, accompanying the material certification, identifying the cover geotextile wrapping demonstrates that the geotextile appears on the Approved List for Geotextile Drainage.

737-04 PREFABRICATED COMPOSITE STRUCTURAL DRAINS

SCOPE. This specification covers the material requirements and methods of testing prefabricated composite structural drains (PCSD's)[(1)] used in highway construction.

GENERAL. The Department's evaluation of PCSD's submitted will be based on the following tests:

1. PCSD: Flow Capacity Under Load - Test in accordance with ASTM D4716, Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
2. Cover Geotextile Wrapping: The requirements listed in Geotextile Drainage (Table 737-01C).

MATERIAL REQUIREMENTS. The PCSD shall meet the following requirements:

1. PCSD:
    a. Hydraulic Transmissivity
        i. For impermeable cores, where flow is allowed on both sides, the hydraulic transmissivity shall be 4.0 gal./min./ft. of width under 1500 psf and a hydraulic gradient of 0.1[(2)].

        ii. For permeable cores, or one sided flow impermeable cores, the hydraulic transmissivity shall be 2.0 gal./min./ft. of width under 1500 psf and a hydraulic gradient of 0.1[(2)].
2. Cover Geotextile Wrapping:
    a. The requirements listed in Geotextile Drainage (Table 737-01C) Class A. The geotextile shall be bonded to the core.

(1) This includes prefabricated composite structural drains used as integral abutment drains.

(2) The average of the test results shall meet or exceed the stated values.

BASIS OF APPROVAL. Producers of PCSD's shall demonstrate the quality of their products before being placed on the Department's Approved List. The producer shall provide:

1. A completed Form Number SM 465 *Product Evaluation Form*.
2. A test data sheet identifying the properties of the protective geotextile and the core.
3. A 16 sq. ft. sample of the PCSD drain to allow for testing by the Department.

Approved PCSD's will be added to the Approved List.

BASIS OF ACCEPTANCE. PCSD's will be accepted on the basis of:

1. The roll of material being properly identified either by a label on the PCSD or the container. The container may be either the cover wrapping or the core around which the PCSD is rolled,
2. The material brand name and style appearing on the Approved List for the intended application,
3. The material certification submitted with the PCSD stating that the material conforms to the specification and that it is the same one appearing on the Approved List, and

4. The letter, accompanying the material certification, identifying the cover geotextile wrapping demonstrates that the geotextile appears on the Approved List for Geotextile Drainage.

737-05 PREFABRICATED COMPOSITE INTEGRAL ABUTMENT DRAINS

SCOPE. This specification covers the material requirements and methods of testing prefabricated composite integral abutment drains (PCIAD's) used in highway construction.

GENERAL. PCIAD's shall meet the requirements of PCSD except that the minimum thickness of the PCIAD shall be 0.4 in. as measured by ASTM D5199.

BASIS OF APPROVAL. Producers of PCIAD's shall demonstrate the quality of their products before being placed on the Department's Approved List. The approval procedure for PCIAD's follows the approval procedure for PCSD's.

Approved PCIAD's will be added to the Approved List.

BASIS OF ACCEPTANCE. PCIAD's will be accepted on the basis of:

1. The roll of material being properly identified either by a label on the PCIAD or the container. The container may be either the cover wrapping or the core around which the PCIAD is rolled,
2. The material brand name and style appearing on the Approved List for the intended application,
3. The material certification submitted with the PCIAD stating that the material conforms to the specification and that it is the same one appearing on the Approved List, and
4. The letter, accompanying the material certification, identifying the cover geotextile wrapping demonstrates that the geotextile appears on the Approved List for Geotextile Drainage.

737-06 PREFABRICATED COMPOSITE EDGE DRAINS

SCOPE. This specification covers the material requirements and methods of testing prefabricated composite edge drains (PCED's) used in highway construction.

GENERAL. The Department's evaluation of PCED's submitted will be based on the following tests:

1. PCED:
    a. Flow Capacity - Test in accordance with ASTM D4716, Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
2. Cover Geotextile Wrapping:
    a. The requirements listed in Geotextile Drainage (Table 737-01C).

MATERIAL REQUIREMENTS. PCED's shall meet the following requirements:

1. PCED:
    a. Flow Capacity – 15 gal./min./ft. of width when tested at a 10 psi load after 100 hours, at a hydraulic gradient of 0.1. If the flow channel is separated into two or more parts, only the flow rate of the section facing the pavement will be considered.
2. Cover Geotextile Wrapping:
    a. The requirements listed in Geotextile Drainage (Table 737-01C). The geotextile shall be

bonded to the core or tightly wrapped around the core.

BASIS OF APPROVAL. Producers of PCED's shall demonstrate the quality of their products before being placed on the Department's Approved List. The producer shall provide:

1. A completed Form Number SM 465 *Product Evaluation Form.*
2. A test data sheet identifying the cover geotextile and core and their properties.
3. A 16 sq. ft. sample of the PCED.

Approved PCED's will be added to the Approved List.

BASIS OF ACCEPTANCE. PCED's will be accepted on the basis of:

1. The roll of material being properly identified either by a label on the PCED or the container. The container may be either the cover wrapping or the core around which the PCED is rolled,
2. The material brand name and style appearing on the Approved List for the intended application,
3. The material certification submitted with the PCED stating that the material conforms to the specification and that it is the same one appearing on the Approved List, and
4. The letter, accompanying the material certification, identifying the cover geotextile wrapping demonstrates that the geotextile appears on the Approved List for Geotextile Drainage.

737-07 GEOGRIDS

SCOPE. This specification covers the material requirements and methods of testing geogrids used in highway construction.

GENERAL. Submit the geogrid material certification with the material. Include in the certification the geogrid manufacturer's name, the geogrid name, the test lot number, the minimum average roll value for Ultimate Tensile Strength, the long-term design tensile strength, and the reduction factors used to calculate the long-term design tensile strength. The following definitions apply:

A. T_D **.** Long Term Design Tensile Strength = T_{ULT}/RF.

B. T_{ULT} **.** Ultimate Tensile Strength. Determined in the primary strength direction in accordance with ASTM D4595 or D6637, based on the Minimum Average Roll Value (MARV), per ASTM D4759, for the product.

C. ***RF*** **.** Total Reduction Factor= $RF_{CR} \times RF_{ID} \times RF_{DU}$. The minimum RF value permitted is 3.0.

D. RF_{CR} **.** Reduction Factor for Creep Deformation for 100 Year Design Life. Calculated in accordance with Geosynthetic Research Institute Standard Practice GRI-GG4 using ASTM D5262 to determine long term strength, T_{LT}, and ASTM D4595 to determine short term strength, T_{ST}.

E. RF_{ID} **.** Reduction Factor For Installation Damage Calculated in Accordance with Geosynthetic Research Institute Standard Practice GRI-GG4. The minimum tested RF_{ID} value permitted is 1.1.

F. RF_{DU} **.** Reduction Factor for Durability. Determined in Accordance with EPA9090 and ASTM D4595. The minimum tested RF_{DU} value permitted is 1.1.

MATERIAL REQUIREMENTS. Geogrid reinforcing shall be tested and certified to meet the minimum requirements for geosynthetic products in accordance with AASHTO Specifications for Highway Bridges, *Geosynthetic Reinforcement*.

SECTION 737 – GEOSYNTHETICS

BASIS OF ACCEPTANCE. Geogrids will be accepted on the basis of:

1. A material certification identifying:
    a. The geogrid manufacturer's name,
    b. The geogrid name,
    c. The test lot number,
    d. The minimum average roll value for Ultimate Tensile Strength,
    e. The long-term design tensile strength, and
    f. The reduction factors used to calculate the long-term design tensile strength.
2. An evaluation that the information on the material certification meets the minimum requirements for the geogrids stated in the contract documents.

737-08 GEOCELLS

SCOPE. This specification covers the material requirements and methods of testing geocells used in highway construction.

GENERAL. Submit the geocell material certification with the material. Include in the certification the geocell manufacturer's name, the geocell name, the test lot number, the minimum thickness, the cell seam peel strength, the ultraviolet stability, and the environmental stress crack resistance.

MATERIAL REQUIREMENTS. Geocells shall be made of High Density Polyethylene (HDPE) of the size(s) and dimensions shown in the contract documents. Geocells shall be tested and certified to meet the minimum requirements listed in Table 737-08 *Geocell Requirements*.

TABLE 737-08 GEOCELL REQUIREMENTS

Property	Test Method	Requirement
Thickness	ASTM D 5199	0.04 in. minimum
Cell Seam Peel Strength	Per U.S. Army Corps of Engineers Technical Report GL-86-19 Appendix A	56 lbf per inch of cell depth, minimum
Ultraviolet Stability	ASTM D 1603 or ASTM D 4218	1.5 % by weight carbon black minimum
Environmental Stress Crack Resistance	ASTM D 1693	2000 hrs minimum

Geocells will be perforated with the exception of the fascia, which will be solid and green in color.

BASIS OF ACCEPTANCE. Geocells will be accepted on the basis of

1. A material certification identifying:
    a. The geocell manufacturer's name,
    b. The geocell name,
    c. The test lot number,
    d. The minimum thickness,
    e. The cell seam peel strength,

f. The ultraviolet stability, and
g. The environmental stress crack resistance.

2. An evaluation that the information on the material certification meets the minimum requirements for the geogrids stated in Table 737-08 and the contract documents.

737-09 GEOSYNTHETIC FIBERS

SCOPE. This specification covers the material requirements and methods of testing geosynthetic fibers used in highway construction.

GENERAL. Submit the geosynthetic fiber material certification with the material. Include in the certification the geosynthetic fiber manufacturer's name, the geosynthetic fiber name, the test lot number, the polypropylene percentage, fiber length, specific gravity, carbon black content, tensile strength, tensile elongation and Young's modulus.

MATERIAL REQUIREMENTS. Geosynthetic fibers shall consist of fibrillated polypropylene strands and shall be tested and certified to meet the minimum requirements listed in Table 737-09 *Geosynthetic Fiber Requirements*.

TABLE 737-09 GEOSYNTHETIC FIBER REQUIREMENTS

Property	Test Method	Requirement
Polypropylene	ASTM D4101 Group 1/ Class 1/ Grade 2	99.4 % minimum
Fiber Length	Measured	1 inch
Specific Gravity	ASTM D792	0.033 lb/in^3
Carbon black Content	ASTM D1603	0.6 % minimum
Tensile Strength	ASTM D2256	45 ksi minimum
Tensile Elongation	ASTM D2256	15 % maximum
Young's Modulus	ASTM D2101	700 ksi minimum

BASIS OF ACCEPTANCE. Geosynthetic fibers will be accepted on the basis of

1. A material certification identifying:
   a. The geosynthetic fiber manufacturer's name,
   b. The geosynthetic fiber name,
   c. The test lot number,
   d. The polypropylene percentage,
   e. The fiber length,
   f. The specific gravity,
   g. The carbon black content,
   h. The tensile strength,
   i. The tensile elongation, and
   j. Young's modulus.
2. An evaluation that the information on the material certification meets the minimum requirements for the geosynthetic fiber stated in Table 737-09 *Geosynthetic Fiber Requirements* and the contract documents.

SPECIAL NOTES

Location Maps

Landscape Development Notes

R.O.W.

Thruway

Canal

Funding

Specialty Items

Other Special Notes

Other Project Special Notes

NOTE: This form was developed for repetitive use throughout all contract proposals and may identify items not applicable to this specific project.

SPECIAL NOTE
MODIFICATION TO INSURANCE REQUIREMENTS

The Contractor will not be required to provide Builder's Risk insurance coverage as required by the revised §107-06 *Insurance* inserted in the contract proposal.

Where required for professional services requiring the signature, stamp or certification of a licensed professional, the Contractor shall provide insurance coverage for Professional Liability/Errors and Omissions in accordance with §107-06B.8. *Professional Liability/Errors and Omissions.* The insurance coverage for this contract shall be not less than $1,000,000 per claim and $1,000,000 in the aggregate.

D262172
SPECIAL NOTE - Special Specification Pay Item Numbers

The contractor's attention is directed to the special specification pay item formats used in this contract. Special specification pay items may be presented in three different formats:

Format 1. Pay items for a special specification will have five digits to the left of the decimal point and up to six digits to the right of the decimal point. The two left-most digits represent the origin of the specification. Reference Standard Specification §101-02 Specifications.

Format 2. Pay items for a special specification will have three digits to the left of the decimal point and up to eight digits to the right of the decimal. Spaces may appear in the third to sixth places after the decimal. The 7th and 8th digits to the right of the decimal will represent the origin of the specification.

Format 3. Pay items for a special specification will have three digits to the left of the decimal point and up to eight digits to the right of the decimal. Dashes may appear in the third to sixth places after the decimal. The 7th and 8th digits to the right of the decimal will represent the origin of the specification.

Where items in this contract appear in multiple formats, the formats shall be equated to each other as illustrated below:

Format 1	Format 2	Format 3
xxxxx.xx	xxx.xx xx	xxx.xx----xx
xxxxx.xxxx	xxx.xxxx xx	xxx.xxxx--xx
xxxxx.xxxxxx	xxx.xxxxxxxx	xxx.xxxxxxxx

SPECIAL NOTES

GREEN CONSTRUCTION REQUIREMENTS

ULTRA LOW SULFUR DIESEL FUEL

In order to reduce diesel emissions, the Contractor shall use Ultra Low Sulfur Diesel (ULSD) fuel to operate all diesel engines used to complete the work that will operate for 10 hours or more on the contract site. ULSD fuel requirements shall apply to:

- All diesel engines/equipment.
- Stationary and mobile equipment.
- Owned, leased and rented equipment.

The hours the piece of equipment is used to complete the work is defined as the actual time the engine is running. The time may be continuous or discontinuous and includes warm-up periods idling, in traffic periods, etc.

The term “Contractor” is intended to mean both Prime Contractors and Subcontractors. Materials delivery vehicles not owned by the Contactor/Subcontractor are exempt from this requirement, but should minimize idling time at construction sites when ever possible.

The Contractor will be notified when any diesel powered construction equipment is in non-compliance. Non-compliance shall be corrected within a 24-hour period.

SPECIAL NOTES

GREEN CONSTRUCTION REQUIREMENTS

CONTROLLING EXPOSURE TO DIESEL EXHAUST

The Contractor shall exercise measures to protect “Sensitive Receptors” from the impacts of diesel exhaust fumes. Sensitive Receptors include, but are not limited to: hospitals, schools, daycare facilities, building fresh air or ventilation intakes, elderly housing or convalescent facilities. The Contractor shall ensure that diesel powered engines are located away from building air conditioners and windows.

The goal is to minimize exposure of Sensitive Receptors in close proximity to diesel exhaust, in terms of both concentration and time. In general, close proximity is defined as within 15 meters of a Sensitive Receptor. Mitigation techniques include positioning stationary equipment exhausts greater than 15 meters from Sensitive Receptors, extension of equipment exhausts through the use of flexible tubing; protecting building air intakes; and the use of moving operations.

Idling time for diesel powered equipment shall be limited to three consecutive minutes for delivery and dump trucks and all other diesel powered equipment except as follows:

- When a “mobile source” (vehicle) is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control.
- When it is necessary to operate a loading, unloading or processing device.
- When the outdoor temperature is less than - 3°C (27°F).
- When the “mobile source” is being repaired.

Arrow panels and portable variable message signs shall be solar powered wherever possible or practical.

Whenever possible and practicable, the Contractor shall establish staging areas for diesel powered vehicles waiting to load or unload materials at the work site. Such areas shall be located where diesel emissions have the least impact on Sensitive Receptors and the general public.

SPECIAL NOTES

GREEN CONSTRUCTION REQUIREMENTS

DUST CONTROL

The Contractor shall minimize dust from disturbed soil surfaces or other materials that can cause off-site damage, health hazards and traffic safety problems. Dusty conditions resulting from the Contractor's operations shall be corrected at no additional cost to the State. Buffer areas of vegetation should be left where practical. Water quality shall be considered when selecting materials for dust control. An approved dust palliative may be used in conformance with applicable conditions placed on its use. A list of acceptable dust palliatives is available at: www.nysdot.gov/divisions/engineering/technical-services/geotechnical-engineering-bureau/dust-palliatives .

For areas not subject to traffic, products and materials may be applied or placed on soil surfaces to prevent airborne migration of soil particles, including:

- Vegetative Cover –provides the most practical method of dust control.
- Mulch (including rolled erosion control products) –provides a fast, effective method of dust control.
- Spray Adhesives –Generally composed of polymers in a liquid or solid form mixed with water to form an emulsion that is sprayed on the soil surface. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. Adhesives shall not be applied to wet soils or if there is a probability of precipitation within 48 hours.

For areas subject to traffic (traveling public or construction traffic) products and materials may be applied or placed on soil surfaces to prevent airborne migration of soil particles, including:

- Water Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access routes.
- Polymer Additives –Polymers shall be mixed with water and applied to the driving surface using mixing ratios and application rates in accordance with the manufacturer's recommendations. No application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Any polymers must be used in accordance with the NYSDEC issued "Conditions for Use" and "Application Instructions." This information can be obtained from the NYSDEC website.
- Barriers – Woven geotextiles or stone can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads.
- Windbreak – A silt fence or similar barrier can control air currents at horizontal intervals equal to ten times the barrier height. Preserve existing vegetation that acts as a wind barrier as much as practical.
- Wheel Washing – Mechanical or manual wet-method cleaning of on-road construction vehicle tires prior to leaving site.

D262172
SPECIAL NOTE
Diesel Emission Reduction Act (DERA) Regulatory Compliance

All Department Contractors and Subcontractors are made aware that Environmental Conservation Law (ECL) 19-0323 and New York State Department of Environmental Conservation (NYSDEC) regulation 6 NYCRR Part 248 *Use of Ultra Low Sulfur Diesel (ULSD) Fuel and Best Available Retrofit Technology (BART) for Heavy Duty Vehicles* requires 100% compliance beginning in 2010 for regulated heavy duty diesel vehicles working on all State awarded contracts. DERA is a requirement of ECL, not a contractual requirement of NYSDOT. NYSDEC is responsible for regulatory enforcement. NYSDOT is responsible for annual Regulatory Entity reporting.

All Department Contractors and Subcontractors shall make determinations of regulatory applicability for vehicles in inventory used on active Department contracts beginning January 1st of every year. These determinations shall be based on the definition of Heavy Duty Vehicle (HDV) including on and off road diesel vehicles having gross vehicle weights in excess of 8,500 pounds, excluding vehicles that are exempt as defined in 6 NYCRR 248-1.1(b)(14). Contractors and Subcontractors shall also quantify ULSD fuel used by regulated vehicles beginning with active contract work January 1st of every year.

An electronic copy of 6NYCRR Part 248 can be accessed at www.dec.ny.gov/regulations/56222.html. Electronic copies of the Regulated Entity Vehicle Inventory Form and the Regulated Entity and Contractors Annual Report Form can be accessed under Part 248 Use of Ultra Low Sulfur Diesel Fuel and Best Available Retrofit Technology for Heavy Duty Vehicles at the following link: www.dec.ny.gov/chemical/4754.html.

DERA annual reporting by Department Contractors and Subcontractors shall be submitted to NYSDOT by April 1st of every year (all 2010 information to NYSDOT by April 1, 2011, all 2011 information to NYSDOT by April 1, 2012, etc.). Beginning in 2011the following numbered 2010 information shall be submitted:

1. Contact information including firm name, contact person, phone number and e-mail
2. Annual total quantity of ULSD fuel used by covered vehicles on NYSDOT contracts
3. Annual fleet information for covered vehicles on NYSDOT contracts as provided in the following table:

-Number of on-road HDVs as defined in 248-1.1(b)(14) of 6NYCRR Part 248
-Number of off-road HDVs as defined in 248-1.1(b)(14) of 6NYCRR Part 248
-Number of bi-fuel HDVs as defined in 248-1.1(b)(3) of NYCRR Part 248
-Number of inventoried HDVs retired from your fleet prior to end of reporting year and not replaced
-Number of Alternative-fuel vehicles as defined in 248-1.1(b)(2) of NYCRR Part 248
-Number of HDVs that have been repowered/replaced with 2007 USEPA Diesel certified engines
-Number of HDVs that have been retrofitted with a USEPA or CARB approved device prior to 2/12/07
-Total number of regulated vehicles subject to BART requirements
-Total number of regulated vehicles with a BART device
-Number of NYSDEC approved waiver HDVs
-Total number of compliant vehicles
-Percentage of fleet meeting BART requirements as per 248-3.1(e) of 6NYCRR Part 248

Electronic mail submissions to dera@dot.state.ny.us.

SPECIAL NOTE

Due to safety concerns, the use of §701-07 *Anchoring Materials – Chemical Curing*, will not be allowed in any overhead applications or where sustained tensile loads will exist. This requirement includes but is not limited to direct overhead installations such as utilities to undersides of bridge decks and overhead protective screening.

When such work is required, alternative anchoring methods or materials like mechanical anchors or cementitious grouting operations, must be used in these locations. Use of alternate materials or methods not previously approved shall require approval of the Deputy Chief Engineer Structures (DCES).

Further, use of §701-07 *Anchoring Materials – Chemical Curing* will not be allowed in any horizontal or vertical applications where failure would result in risk or injury to the public. Applications where only cementitious grouts shall be required include but are not limited to decorative railings, pedestrian fence, and screening. Bridge railing installations shall only use §701-05 *Concrete Grout Materials* as presently required by specifications. Substitution of §701-07 *Anchoring Materials – Chemical Curing* shall not be allowed for bridge railing installations.

Use of §701-07 *Anchoring Materials – Chemical Curing,* may be allowed for temporary applications, and when specified, shall be designed and stamped by a PE. Temporary items anchored using §701-07 *Anchoring Materials – Chemical Curing* shall be rendered inoperable upon completion of their use on a project.

SPECIAL NOTE
OPTIONAL USE OF WARM MIX ASPHALT (WMA) TECHNOLOGIES

The contractor has the option of using an Approved WMA Technology in the production of all 402, *Hot Mix Asphalt (HMA)* items, except *SUPERPAVE HMA with Ice Retardant* items, *Waterproofing Bridge Deck HMA* items, and *Paver-Placed Surface Treatment* items, at no additional cost to the State.

If the contractor chooses to use a WMA technology, the provisions of §401 and §402 shall apply including the following:

Use an approved technology appearing on the Approved List for *Technologies for Warm Mix Asphalt*. Design a mixture using a WMA Technology in accordance with MM 5.16, *Superpave Hot Mix Asphalt Mixture Design and Mixture Verification Procedure*. At a minimum, a one point verification of the mixture's volumetric properties is acceptable for the following situations:

- When the WMA mix design is based on an existing Production Status HMA mix design.
- When the WMA mix design is based on, and utilizes a different WMA technology than, an existing Production Status WMA mix design.

Comply with the latest manufacturer's "Production, Testing, and Compaction Details" from the Approved List for incorporating the WMA technology. Test specimens may be made from plant produced or laboratory prepared WMA. Test specimens must be made from plant produced WMA if adding the WMA technology in the lab does not simulate the production process. The Regional Materials Engineer (RME) may require a State representative be present during the fabrication and testing. Submit the WMA design to the RME for review and verification at least 14 calendar days before production, including:

- Name of WMA technology and the target dosage rate.
- If using an additive other than water,
  - Submit a MSDS for the additive.
  - Submit either enough of the additive for the laboratory mix design verification, or the additive pre-blended in the PG Binder at the correct dosage. If the additive is not pre-blended into the PG Binder, include directions for properly incorporating the additive into the laboratory made mixture.
- Prior to the submission of any mix design, contact the RME to determine if there is an increased concern regarding the mixture's moisture susceptibility based on the WMA technology and/or the type of aggregate being used, or the performance of similar mixes. The RME may require AASHTO T 283 moisture susceptibility test results, meeting a minimum Tensile Strength Ration (TSR) of 80%, as part of the mix design submission.

Submit Production Quality Control Plan revisions incorporating the WMA technology if not previously submitted.

For 80 Series Compaction Method, complete all breakdown roller passes before the mat temperature falls below 230° F, unless approved by the Director, Materials Bureau.

When the asphalt mixture is being placed over a *Sheet-Applied Waterproofing Membrane*, maintain a minimum delivery temperature in accordance with the Material Detail Sheets prepared by the membrane manufacturer.

ASPHALT PRICE ADJUSTMENT

ASPHALT PRICE ADJUSTMENT CONVERSION FACTORS		
MATERIAL DESCRIPTION	**CONVERSION FACTOR**	*** ITEM NUMBER**
Bituminous Stabilized Course	0.065 t PGB/yd³	302.01, .0102
Asphalt Treated Permeable Base Type 1	0.030 t PGB/t	402.010901
Asphalt Treated Permeable Base Type 2	0.035 t PGB/t	402.011901
True and Leveling	See Note 5	402.017901, 402.018901
Shim Course	0.0825 t PGB/t	402.058901
Type 10FX Top	0.055 t PGB/t	402.200401 RR
6.3 SUPERPAVE HMA	**0.067** t PGB/t	402.067x01 RR
9.5 SUPERPAVE HMA	**0.062** t PGB/t	402.09xx01, 402.09xx01 RR
12.5 SUPERPAVE HMA	**0.055** t PGB/t	402.12xx01, 402.12xx01 RR
19 SUPERPAVE HMA	**0.049** t PGB/t	402.19xx01
25 SUPERPAVE HMA	**0.045** t PGB/t	402.25xx01
37.5 SUPERPAVE HMA	**0.040** t PGB/t	402.37xx01
Asphaltic Sealants (ASTM 6690)	0.00272 t PGB/gal	402.75XX RR
Paver Placed Surface Treatment Types A, B and C	0.0013 t PGB/yd²	402.918x02 RR, 402.928x02 RR, 402.938x02 RR
Tack Coat (Asphalt Emulsion)	0.0012 t PGB/gal	407.01 RR
Bituminous Material (Pavement, Shoulders)	0.0025 t PGB/gal	410.07
Micro-Surfacing, Type II	0.090 t PGB/t	410.102102 RR
Micro-Surfacing, Type III and Rut Filling	0.075 t PGB/t	410.103102 RR, .104102 RR
Quick-Set Slurry, Type II	0.115 t PGB/t	410.202302 RR
Quick-Set Slurry, Type III	0.100 t PGB/t	410.203302 RR
Asphalt Sidewalks, Driveways	See Note 5	608.02xx RR
Miscellaneous Asphalt 702-07	0.0040t PGB/gal	618.07
Asphalt Emulsion 702-3001	0.0021t PGB/gal	618.3001, 407.02 RR
Asphalt Emulsion 702-3101, 702-3102	0.0024t PGB/gal	618.3101, 618.3102
Asphalt Emulsion 702-3201, 702-3301, 702-3401, 702-3402	0.0025t PGB/gal	618.3201, 618.3301, 618.3401, 618.3402
Asphalt Emulsion 702-3501, 702-3601	0.0022t PGB/gal	618.3501, 618.3601
Cationic Asphalt Emulsion 702-4001	0.0023t PGB/gal	618.4001, 407.02 RR

ASPHALT PRICE ADJUSTMENT

Cationic Asphalt Emulsion 702-4101, 702-4201, 702-4301	0.0025 t PGB/gal	618.4101, 618.4201, 618.4301
Cationic Asphalt Emulsion 702-4401, 702-4501	0.0022 t PGB/gal	618.4401, 618.4501

Notes:

1. In accordance with Standard Specification §698-3.01, the index value for the asphalt price adjustment is the average posted price of Performance Graded Binder (PGB) for the month of bid letting.

2. A two digit suffix (RR) at the end of a contract pay item indicates a special specification.

3. Quality Adjustment Items (402/608) are not eligible for fuel or asphalt price adjustment.

4. The conversion factors for HMA mixed with slag shall be increased by 25%.

5. The conversion factor for True & Leveling, Driveways, or other items that allow mix options will be based on the actual mixtures used.

* Item Number: This is the contract pay item number under which these materials are most frequently paid. Unless indicated otherwise, materials similar to those indicated under the column entitled “Material Description” are also eligible for adjustment using the factor listed for a similar material with the same pay units regardless of the actual contract pay item number. Contact the Regional Materials Engineer with any questions regarding applicability of contract pay items that are not listed.

FUEL PRICE ADJUSTMENT

FUEL PRICE ADJUSTMENT USAGE FACTORS		
MATERIAL DESCRIPTION	**USAGE FACTOR**	*** ITEM NUMBER**
Excavation & Embankment	0.45 gal/yd^3	203.05, 203.06, 203.07, 203.08, 203.20, 203.21 and 203.25
Excavation	0.35 gal/yd^3	203.02
Embankment	0.10 gal/yd^3	203.03
Controlled Low Strength Material	1.00 gal/yd^3	204.01, 204.02
Structure/Trench/Culvert Excavation	0.50 gal/yd^3	206.01, 206.02, and 206.04
Bituminous Stabilized Course	1.40 gal/yd^3	302.01
Subbase Course	1.00 gal/yd^3	All 304 Items
Hot Mix Asphalt	2.50 gal/ton	402 Items and 608.02xx RR
Production Cold Milling	0.10 gal/yd^2	All 490 Items
Portland Cement Concrete Pavement	1.00 gal/yd^3	502 Items
Footing Concrete & Concrete for Structures - All classes(A, F, G, HP, etc.)	1.00 gal/yd^3	555.xx
Approach Slabs and Structural Slabs with bottom formwork	0.25 gal/yd^2	557.xx
Structural Slabs - no bottom formwork	0.15 gal/yd^2	557.xx
Class D Concrete	0.05 gal/yd^2	557.13
Topsoil	0.10 gal/yd^3	613.02, 613.03

Notes:

1. In accordance with Standard Specification §698-3.02, the index value for the fuel price adjustment is the average posted price for the month of bid letting.

2. Quality Adjustment Items (402/502/608) are not eligible for fuel price adjustment.

* Item Number: This is the contract pay item number under which these materials are most frequently paid. Unless indicated otherwise, materials similar to those indicated under the column entitled “Material Description” are also eligible for adjustment using the factor listed for a similar material with the same pay units regardless of the actual contract pay item number. Contact the Regional Materials Engineer with any questions regarding applicability of contract pay items that are not listed.

SPECIAL NOTE

Supplemental Information Availability

The contractor's attention is directed to the fact that the Supplemental Information Available to Bidders for this contract (as indicated in the CD/DVD column on form CONR9 in this proposal) is included on the bid document CD purchased by the contractor (also available for download through BidExpress). Any information checked in the Hard Copy Only column on form CONR9 is available only at the Office having jurisdiction for the project, as identified in the advertisement for bids. Per Section 102-02 of the Standard Specifications, the Supplemental Information is considered a component of the contract documents.

The provision of digital Supplemental Information in this manner is being conducted both in response to contractor feedback and as a cost-cutting measure. It is expected to provide Supplemental Information to prospective bidders in a timely and convenient format. If successful, it may be permanently incorporated into our contract procedures.

Please forward any comments or concerns you have about this pilot process to:

Joseph Zacharia, P.E.
New York State Department of Transportation - Design
250 Veterans Memorial Highway
Hauppauge, NY 11788
Phone: 631.952.6928
e-mail: Joseph.Zacharia@dot.ny.gov

We also encourage feedback on this process in the Contract Document Bid-Ability Survey located in the "Return with Bid Documents" section of this proposal.

FOR SUPERPAVE HOT MIX ASPHALT COURSES

SPECIAL NOTE 1

ATTENTION

FOR ALL SUPERPAVE HOT MIX ASPHALT ITEMS REQUIRING 50, 60 OR 70 SERIES COMPACTION TEST:

The Contractor should be aware that this is a performance-related specification in which the Contractor is responsible for compacting the pavement within a specified density range. The Contractor must be prepared to select, operate, and control the paving and compaction equipment, to monitor the results, and to make necessary adjustments (without direction from the Engineer) to achieve the specified density results. Written instructions for determining pavement density and core locations are available from the Regional Materials Engineer or the Director, Materials Bureau.

SPECIAL NOTE

ATTENTION

Waterproofing Bridge Deck HMA Overlay

The Contractor shall be aware that this is a performance-related specification in which the Contractor is responsible for designing and compaction of the mix.

1. Mixture Design: The mixture shall be designed and tested to meet the performance criteria in the specification prior to placement. The PG binder requirements for this mixture are in the specification. The Contractor shall pay special attention to the requirements since this item is not typically used for normal paving. The mixture design is required to be submitted to the Regional Materials Engineer 3 weeks prior to placement of this mixture.

2. Compaction: The compaction required is not the typical 70 series compaction used for normal paving. The specification requires the Contractor compact the pavement within a specified density range. In order to successfully compact the pavement to the specified density range, the Contractor must be prepared to select, operate, and control the paving and compaction equipment, to monitor the results, and to make necessary adjustments (without direction from the Engineer) to achieve the desired results. Written instructions for determining pavement density are available from the Regional Materials Engineer or the Director, Materials Bureau.

Micro Milling

Micro milling provides a smooth surface compared to regular cold milling due to the drum configuration.

1. The Contractor shall be aware that this specification requires a milling machine to have a drum that is at least 12 feet wide and capable of down-cutting. The down-cut can be described as the rotation of the drum is in the same direction of the machine moving forward.
2. The drum shall have maximum tooth spacing of 3/8 inch and have a minimum of 3 wraps of teeth.

SPECIAL NOTE

OVERTIME (YES)

When Department funds are allocated, the Department intends to have inspection resources available if the contractor desires to work overtime and has received permission to do so.

SPECIAL NOTE

BRIDGE IDENTIFICATION NUMBER (BIN) PLATE

One Bridge Identification Number (BIN) plate will be required for each bridge in this contract. For each bridge there may, or may not, be an existing BIN plate.

Therefore, one of the following conditions will exist with regard to BIN plates for any particular structure:

Condition No. 1. A BIN plate is attached to the structure but the nature of the work to be done does not require its removal.

Condition No. 2. A BIN plate is attached to the structure and the nature of the work to be done requires its removal.

Condition No. 3. A BIN plate is attached to the structure that is defaced, otherwise damaged or incorrect.

Condition No. 4. A BIN plate is not attached to the structure.

Under Condition No. 1. the Contractor's sole obligation shall be to protect the plate from damage during the course of the work.

Under Condition No. 2. the Contractor shall be required to remove and store the BIN plate until such time as the BIN plate may be reinstalled without danger of damage. This requirement shall also apply if the BIN plate is being transferred from an existing abandoned bridge to a new in-service bridge. The Contractor shall furnish all necessary expansion anchors.

Under Condition No. 3. the Contractor shall be required to furnish and install a new BIN plate, and remove the damaged BIN plate. The Contractor shall furnish the panel with reflective background, numerals, and expansion anchors. If the BIN number cannot be deciphered the Engineer will supply the number.

Under Condition No. 4. the Contractor shall be required to furnish and install a BIN plate on the completed structure. The Engineer will supply the Bridge Identification Number. The Contractor shall furnish the panel with reflective background, numerals, and expansion anchors.

Regardless of which condition governs the BIN plate installation, should damage occur to the BIN plate and the Engineer determines it cannot be repaired, the Contractor shall furnish a new plate consisting of the panel with reflective background, numerals and expansion anchors at no expense to the State. If the Engineer determines the BIN plate may be repaired, repair shall be done at no expense to the State. This requirements applies to all four conditions.

SPECIAL NOTE

BRIDGE IDENTIFICATION NUMBER (BIN) PLATE

The material requirements for the three parts of the BIN plate are:

Panel with reflective background. The aluminum panel and reflective background shall conform to the material and fabrication requirements of Material Specification 730-01, Aluminum Sign Panels. The background material shall be green reflective sheeting conforming to Materials Specification 730-05.01 (Class A Sheeting). The size of the panels shall be 1/8 inch thick by 3 inch by 12 inch. The panels shall have two 5/16 inch drilled or punched holes for mounting, located ½ inch from the ends of the panel and 1 ½ inch from the top or bottom of the panel. The reflective sheeting used to form the background shall be a minimum of 3 inch wide by 10 inch long, or may be a full 12 inch long.

Numbers. The numbers shall be reflective sheeting conforming to Materials Specification 730-05.01 (Class A Sheeting, except that the adhesive shall be pressure-sensitive such that the numbers can be applied to the background in the field. The numbers shall be 2 inch high and silver white in color conforming to FHWA series C dimensions.

Prior to placing the cutout numbers on the panel, the reflective background shall be clean and free of dirt and oil which may adversely affect proper adhesion. The numbers shall be placed on the reflective background, perpendicular to the longitudinal axis of the panel, and vertically centered. The reflective background and numbers shall be coated and/or edge sealed in accordance with the recommendations of the sheeting manufacturer.

Expansion Anchors. ¼ inch diameter by 1 ½ inch long stainless steel nail drive expansion anchors meeting GSA Specification A-A-1922 shall be used to attach the BIN plates to concrete and masonry surfaces.

The BIN plates shall be attached to the Beginning abutment of the bridge using expansions anchors. The plate shall be placed high on the abutment, near the fascia of the bridge.

The cost of this work shall be included in the various items of the contract.

SPECIAL NOTE

DEDICATED POLICE SERVICES
SUFFOLK COUNTIES

POLICE ASSISTANCE FOR THE PROJECT SHALL BE COORDINATED BY THE NYS DOT BASED ON THE AVAILABILITY OF THE POLICE AND THE AGREEMENT. THE CONTRACTOR SHALL BE PREPARED TO PROVIDE ALL TRAFFIC CONTROL NECESSARY FOR A SAFE WORK ZONE REGARDLESS OF POLICE PRESENCE ON SITE.

U.S. Department of Homeland Security
United States Coast Guard

Commander
First Coast Guard District

Battery Park Bldg.
One South Street
New York, NY 10004-1466
Staff Symbol: (dpb)
Phone: (212) 668-7195
Fax: (212) 668-7967
Email: Judy.K.Leung-Yee@uscg.mil

16594/4.0H//
Fire Island Inlet/NY//
July 2, 2012

Mr. Ken Murphy
New York State DOT
State Office Building
250 Veterans Memorial Highway
Hauppauge, NY 11788-5518

Dear Mr. Murphy:

We have reviewed the general plan submitted with your letters dated June 21 and June 11, 2012 regarding rehabilitation of Robert Moses Causeway over Fire Island Inlet, mile 4.0, Town of Islip, New York.

To facilitate your planning and preparations, I have included the most common stipulations for this type of work. Upon receipt and review of plans submitted pursuant paragraph (3) of enclosure (1), authorization to work over the waterway will be issued by this office. In addition to the stipulations in enclosure (1), the following stipulations must be adhered to for work on, over, near or affecting the waterway:

a. Installation of temporary work platform is authorized only one half of the navigation channel and the other half of the navigation channel must clear of obstruction at all times.

b. The temporary work platform must not obstruct the operation or visibility of the bridge navigational lights. If permanent bridge navigational lighting cannot be maintained operational during any phase of this project, temporary battery powered lights must be installed at the same locations. These temporary lights must be visible for a distance of 2,000 yards on 90% of the nights of the year. Generally, a lamp of 20 foot-candles will meet these requirements. The temporary lights shall be in place until the construction has been completed or permanent navigation lights have been reinstalled and determined to be operating satisfactorily. Plans for temporary lighting (if used during periods of construction) shall be submitted to this office for written approval. If temporary lights are not installed at the same locations as the permanent lights, specific information regarding proposed locations compared to the permanent position shall be provided. Deviations from the approved temporary lighting shall be permitted only upon written authorization from this office.

c. No barges shall be operating in the navigation and adjacent channels on Memorial Day, 4th July, Labor Day and holiday weekends during each year of work.

d. All barges placed in the waterway must be lighted with constant burning white lights on all four corners. The contractor is required to comply with all provisions of the Navigation Rules International-Inland, regarding the use of work barges or floating equipment in the waterway.

e. Warning signs must be installed on the up and downstream sides of the bridge so as to draw mariners' attention to the fact that the vertical clearance has been reduced.

f. Preventive measures must be taken to prevent any hot work, debris or construction material from entering the waterway.

These stipulations are based on the facts presently before us and additional requirements may be imposed if the contractor submits an approach or action not anticipated by this office.

If you have any questions, please contact me at the above number.

Sincerely,

Judy Leung-Yee
Bridge Program Manager
First Coast Guard District
By direction of the District Commander

Enclosure (1): General Construction Requirements

Copy: Commander – Sector Long Island Sound

U.S. Coast Guard Bridge Administration

GENERAL CONSTRUCTION REQUIREMENTS

1. All bridge closures, or bridge operating schedule changes, must be requested in writing, 60 days in advance, from the First Coast Guard District Bridge Branch Office. No channel restrictions, or vertical clearance reductions may be made without written approval from the above office. Waterway closures or safety zones must also be requested 90 days in advance.

2. All submissions to the Coast Guard for review and approval must first be approved by the *owner of the bridge or their authorized agent*. All submission of plans, scope of work, and schedules of operation must be sent to the First Coast Guard District, Bridge Branch Office.

3. At least 30 days prior to commencement of any work, we must have for our review, a copy of the construction plans, contractor' schedule, preferably depicted in a time line graphic format, and the contractor's daily hours of operation. The construction plan package must show the following: **(1)** a plan of the entire waterway area in the vicinity of the project. **(2)** The location of work barges and any anchor lines during working and off-hours. **(3)** In addition, a drawing must be included, if applicable, depicting any scaffolding or containment used indicating the location and the total vertical or horizontal channel reduction. All vertical clearance reductions below low steel or concrete under the bridge as a result of the use of scaffolding must be clearly detailed on the drawings shown in total feet. **(4)** Emergency 24 hour telephone numbers for all responsible individuals for this project must be submitted to this office before any phase of construction begins in case of an emergency situation during off-hours.

4. Scaffolding used under ANY span of the bridge must be lighted with constant burning red lights every 50 feet and on all corners. The placement of scaffolding must not interfere with the ability of a moveable bridge to open for vessel traffic. Moveable bridges must continue to operate according to their normal schedule unless special drawbridge operation regulation changes have been requested. Warning signs must be posted on both sides of the bridge, visible for a 1-mile range, to warn mariners of the vertical clearance reduction. The signs shall face upstream and downstream so as to draw the mariner's attention to the fact that the clearance has been reduced.

5. All barges placed in the waterway must be lighted with constant burning white lights on all four corners of the barge. The contractor is required to comply with all provisions of the Navigation Rules International-Inland, regarding the use of work barges or floating equipment in the waterway. Copies are available from the U.S. Government Bookstore, 710 N Capitol Street NW, Washington, DC, 20403, (202) 512-0132, or www.navcen.uscg.gov .

6. Placement of construction barges in the navigable channel shall be done so as to provide a minimum horizontal clearance reduction. Only one navigation channel of a swing bridge may be blocked by work equipment at anytime. Barges must be moved out of the navigable channel after working hours unless approved in writing by this office.

7. Barges held in place by anchor lines must be marked by anchor buoys, which should be lighted.

8. An as built survey must be taken upon completion of this project, approved by a professional engineer or land surveyor verifying the bridge clearances.

9. The on-scene contractor must have a VHF-FM marine radio set to the bridge communication channels 16/13 or the designated channel for the bridge. Additional marine radios monitoring the above channels must also be maintained at the main control of any floating equipment or barges on station.

10. Preventive measures must be taken to prevent any hot work, debris, or construction material from entering the waterway. This includes sandblasting material, paint, and any concrete work by-products. Welding and burning must cease upon approach of a vessel and shall not start again until the vessel has passed the bridge.

11. The project manager must contact the Coast Guard Sector Long Island Sound via marine radio before commencement of any and after completion of any Hot Work. A cell phone back-up may be used to contact the above Coast Guard Unit at (203) 468-4401.

12. If permanent bridge navigational lighting cannot be maintained operational during any phase of this project, temporary battery/power lights must be installed at the same locations. These temporary lights must be visible for a distance of **2,000 yards on 90% of the nights of the year**. Generally, a lamp of **(50 candela)** will meet these requirements. Plans for temporary lighting shall be submitted to this office for written approval. Deviations from the approved temporary lighting shall be permitted only upon written authorization from this office.

13. **All newly constructed bridge piers, or those in the process of demolition, must be lighted with either red or white flashing (60 flashes per minute) lights. All cofferdams used during construction must also be lighted with red or white flashing (60 flashes per minute) on all four corners.**

14. Bridge protective fenders shall not be constructed or rebuilt with any metal surfaces on the rubbing face of the fender system. All bolts, spikes, or other metal fastening devices must be countersunk. Metal splicing plates, if used, shall be mounted on back of outer wales.

15. All piles including those previously damaged or broken that are not being used in the new or repaired fender shall be extracted rather than cut off at the mud line. Upon completion of all fender repairs a bottom sweep is required to determine if any piles or debris are present in the waterway. A wire-drag sweep or side-scan sonar is the preferred method.

16. During the progress of work should any debris or equipment enter the waterway and become a hazard to navigation, immediate notice shall be given to the Coast Guard and the object removed as soon as possible. Until removal can be effected, the obstruction shall be properly marked.

17. Spillage of oil and hazardous substances is specifically prohibited by the **Federal Water Pollution Control Act**, as amended. Approved spill containment equipment and absorbent material must be located at the project site in the event of a spill into the waterway or the shoreline. The Coast Guard must be notified immediately at (800) 424-8802.

18. The bridge owner is responsible to ensure that channel depths are not affected by this work. Any material, machinery or equipment lost, dumped, thrown into, or otherwise entering the waterway must be removed immediately. If immediate removal is impractical and the object entering the waterway could possibly obstruct or hazard navigation, the object must be marked immediately to protect navigation and the Coast Guard shall be notified as soon as possible. Upon request of the Coast Guard or Corps of Engineers, the bridge owner/contractor shall provide the necessary equipment and personnel to determine the presence of any suspected obstructions in the waterway.

19. The bridge owner/contractor shall provide any and all necessary equipment and personnel to determine the presence of any "suspected" obstructions in the waterway at any time either during or following the completion of bridge construction or demolition operations.

20. Upon project completion, the bridge owner shall provide the Coast Guard with a written certification by a registered professional engineer that the waterway depths have not been impaired as a result of any construction or demolition operations and that the waterway has been cleared of any and all construction debris or remnants from the existing or previous bridge construction or demolition.

21. This approval may be revoked and/or civil penalties imposed for failure to ensure that the above listed stipulations are adhered to or if work is determined to hazard or impair navigation.

SPECIAL NOTE

BARGE NOTES

We anticipate that some of the work may be performed from a barge and/or by access from the existing bridge. If the Contractor chooses to use a barge, it will not be placed in area where it will contact the bottom sediments. At the end of the workday (unless prior written approval is granted), the barges shall be removed from the navigation channel. We do not anticipate any access to the barge from the shore area and any access from the barge to the shore will be by small boats.

SPECIAL NOTE

ENVIRONMENTAL MONITOR
(THREATENED/ENDANGERED SPECIES)

1. Note that there is a nest box for state-endangered Peregrine Falcons on Pier 13. The nest box may be removed to facilitate work on the bridge, but shall be re-installed in the same location prior to February 1st of each calendar year, and remain in place through the end of the falcon nesting season (July 15th) of each calendar year or until all young have fledged, whichever is later. The Contractor shall ensure that the nest box is clean and functional prior to re-installation.

2. All loud or vibration-inducing work should be completed outside of the falcon nesting season (February 1st through July 15th, or until all young have fledged, whichever is later) of each calendar year.

3. If such work is to be conducted within the nesting season of each calendar year, an approved Environmental Monitor shall be present on-site to perform monitoring inspections throughout the project limits. Inspections shall be performed on three (3) days per working week (one of which must be Monday). All monitoring inspections shall commence prior to the beginning of construction activities for the day, and whenever there is a change in work operations, type, or location.

4. The Contractor shall arrange for the Environmental Monitor to use the contract inspection boat supplied under other contract items to perform the required falcon monitoring observations. The Contractor shall supply a boat captain and necessary safety equipment such as personal floatation devices. All work shall be consistent with OSHA standards Subpart 1926.106 – Working over or near Water.

SPECIAL NOTE

The Contractor shall be aware of NYSDEC-regulated freshwater wetlands and Wild, Scenic and Recreational Rivers Corridor, endangered species habitat and historic sites adjacent to the highway right-of-way.

All work shall be conducted in a manner that avoids disturbance to the protected environmental resources by (1) limiting physical disturbance to those areas shown on the plans; (2) incorporating and effectively maintaining the necessary erosion/sedimentation control measures; and (3) locating staging area and work vehicle parking sites in accordance with an approved Staging Area Permit.

SPECIAL NOTES

No In-Stream Work – Series One – Non Canal Area
Work in Navigable Waters and Other Waterways

1. Responsibilities:

The Contractor's attention is directed to the Fire Island Inlet and the navigation channel therein. It shall be the sole responsibility of the Contractor to conduct operations to comply with all the regulations and requirements of the U.S. Coast Guard, the Corps of Engineers, the New York State Department of Environmental Conservation and the New York State Department of State in connection with, but not limited to, the maintenance of navigation and water pollution control.

The Contractor shall submit five (5) copies of plan and schedule of operations to the New York State Department of Transportation, for approval at least 40 days prior to commencing any work over the navigable waterway. Two (2) copies of the plan and schedule approved by the Department shall in turn be submitted by the Contractor to the U.S. Coast Guard for their information at least 30 days prior to commencement of work.

The plan and schedule or sequence of operation shall include: A sketch of the waterway, the location of any restrictions that will be placed in the waterway, such as barges, anchors and anchor lines, the location and height above mean high water/maximum navigable water of any scaffolding or netting, the placement, type and dimensions of dolphins, spars etc., if used, and a projected set of dates and length of time each operation will take. The schedule shall also include the hours of operation and whether or not equipment will be removed at night.

2. Laws and Regulations:

The Contractor shall comply with the requirements and provisions of all U.S. Coast Guard, Corps of Engineers, New York State Department of State and New York State Department of Environmental Conservation regulations that are applicable to the construction work of this contract and shall pay all costs in connection therewith including, but not necessarily limited to, the cost of any "Notice to Mariners," the cost of relocating existing navigation aids and the cost of services performed by the U.S. Coast Guard, as required, such as special surveys in connection with misplaced material in waterways or making dumping inspections. The cost to the Contractor for compliance as aforesaid shall be included in the prices bid for the various items scheduled in the Proposal.

The Contractor should be familiar with the regulations of Sections 301, 302, 306, 307, 401 and 404 of the Federal Water Pollution Control Act of 1972, Public Law 92-500, 86 Stat. 816; The General Bridge Act of 1946-(33 USC 525) Sections 9 & 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403); Section 404, Stat. 816, P.L. 92-500; Section 103 of the Marine Protection Research and Sanctuaries Act of 1972, 86 Stat. 1052, Public Law 92-532 as they relate to proposed construction activities.

To the best of our knowledge, this project does not require a formal U.S. Coast Guard bridge permit. However, this waterway is a navigable waterway of the U.S. under the jurisdiction

SPECIAL NOTES

No In-Stream Work – Series One – Non Canal Area
Work in Navigable Waters and Other Waterways

of the U.S. Coast Guard and Corps of Engineers. Any cost and delays incurred in securing authorization for work activities not previously approved shall be borne by the Contractor and reflected in the prices bid for various contract items.

The Contractor shall obtain all other permits and licenses and pay all charges and fees incurred. The Contractor shall give all notices necessary and incident to the due and lawful prosecution of the work, and shall comply with all laws, ordinances, rules and regulations of the Federal Government, the State, and other bodies having jurisdiction over the work encompassed in this Contract.

3. Maintenance and Protection of Navigation:

a. All work shall be so conducted that the free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. At no time during construction, shall restrictions be placed upon navigation without first receiving approval of the E.I.C. and U.S. Coast Guard. The Contractor shall contact both Offices at least 21 days prior to the proposed restriction periods.

b. Signal Lights and Markers:

The Contractor shall conduct operations in accordance with the General Regulations of the U.S. Coast Guard. The Contractor will be required to comply with all the provisions of 33 CFR Part 118 and the “Inland Rules of the Road” governing all aspects of this project as they relate to navigable waters.

c. Notice to Mariners:

The Contractor shall notify the Coast Guard and the E.I.C. thirty (30) days in advance of work completion so that the appropriate notice can be given to mariners.

The Contractor shall keep both Offices apprized of conditions existing at the site, which relate to navigation, so that marine traffic may be notified accordingly, on a timely basis.

d. Temporary Removal of Navigation Aids:

The temporary removal or changes in location of channel markers may be required to facilitate navigation. The Contractor shall notify the Engineer at least 30 days prior to the desired removal of any channel marker in order that U.S. Coast Guard permission may be obtained and navigation interests fully informed in advance of the proposed change in location.

e. Preservation of the Existing Waterway:

SPECIAL NOTES

No In-Stream Work – Series One – Non Canal Area
Work in Navigable Waters and Other Waterways

It shall be the responsibility of the Contractor to insure that the waterway and channel depths are not affected by the work. Should it be suspected that river or channel depths may have been impaired or that an obstruction may exist from the work, the Contractor shall, upon request of the E.I.C. or the U.S. Coast Guard, provide the necessary equipment and personnel to undertake a survey to determine the presence of any obstruction, objects, or silting that may have occurred during construction. Should an obstruction be found, the Contractor shall give immediate notice of such obstruction to the E.I.C. and the Coast Guard. Notices shall give a description and location of the object(s) and action being taken to protect navigation. Until removal can be effected, the object(s) shall be properly marked in order to protect navigation. Should the Contractor neglect to promptly remove any such obstruction, the E.I.C. shall have the same removed and charge the cost against monies due to the Contractor or recover under his Bond.

4. Payment:

Payment for all of the items contained in these SPECIAL NOTES shall be included and reflected in the prices bid for the various contract items. No separate payment will be made for compliance with the conditions stated herein.

New York State Department of Environmental Conservation
Division of Environmental Permits, Region One
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790-3409
Phone: (631) 444-0365 **Fax:** (631) 444-0360
Website: www.dec.ny.gov

Joe Martens
Commissioner

November 8, 2012

Gregg T. Williams
NYSDOT Region 10 – State Office Building
250 Veterans Hwy Rm 5A-11
Hauppauge, NY 11788

Re: Permit #1-4728-00663/00017

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather.

Sincerely,

Claire Werner

Claire Werner
Environmental Analyst

cc: BOH-TW
Wildlife
File

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
NYS DEPT OF TRANSPORTATION
50 WOLF RD - POD 5-2

ALBANY, NY 12232

Facility:
ROBERT MOSES CAUSEWAY
ROBERT MOSES PKWY OVER FIRE ISLAND INLET
ISLIP, NY 11751

Facility Application Contact:
GREGG T WILLIAMS
NYSDOT REG 10 - STATE OFFICE BLDG
250 VETERANS HWY RM 5A-11
HAUPPAUGE, NY 11788
(631) 952-6651

Facility Location: in ISLIP in SUFFOLK COUNTY
Facility Principal Reference Point: NYTM-E: 645.755 NYTM-N: 4504.443
Latitude: 40°40'40.8" Longitude: 73°16'31.2"
Project Location: Robert Moses Causeway over Fire Island Inlet Water Course: Fire Island Inlet .
Authorized Activity: Rehabilitate bridge by sand blasting and re-painting below-deck structural steel and performing repairs to steel and bridge deck as needed. No work to abutments, piles or other in-water components is proposed. Work will be conducted from the bridge or via barge with containment in place to capture concrete and other debris to prevent entry into the water. All work must be in strict conformance with the attached plans and as described in the attached Project Description document, stamped NYSDEC approved on 11/8/12. (CKW)

Permit Authorizations

Tidal Wetlands - Under Article 25
Permit ID 1-4728-00663/00017
New Permit Effective Date: 11/8/2012 Expiration Date: 11/7/2017
Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 1-4728-00663/00018
New Permit Effective Date: 11/8/2012 Expiration Date: 11/7/2017
Excavation & Fill in Navigable Waters - Under Article 15, Title 5
Permit ID 1-4728-00663/00019
New Permit Effective Date: 11/8/2012 Expiration Date: 11/7/2017

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: MARK CARRARA, Deputy Regional Permit Administrator
Address: NYSDEC REGION 1 HEADQUARTERS
SUNY @ STONY BROOK|50 CIRCLE RD
STONY BROOK, NY 11790 -3409

Authorized Signature: _____ Date 11/8/12

Distribution List

GREGG T WILLIAMS
Habitat - TW
CHIP HAMILTON
MICHELLE GIBBONS
CLAIRE K WERNER

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: TIDAL WETLANDS; WATER QUALITY CERTIFICATION; EXCAVATION & FILL IN NAVIGABLE WATERS

1. **No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.

2. **Notice of Commencement** At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.

3. **Post Permit Sign** The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

4. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by NYSDOT (3 sheets) and as described in the Project Description document, all stamped NYSDEC approved on 11/8/12.

5. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

6. **Peregrine Falcons** Due to the documented occurrence of the state endangered peregrine falcon (Falco peregrinus) at several locations along the length of the Robert Moses Causeway (RMC), the permittee shall undertake the following activities to reduce conflicts between the authorized work and the nesting activities of the species:

A. The existing falcon nesting box on this section of the bridge may be removed for painting of the structure, but must be re-installed in the same location prior to February 1st of each calendar year, and remain in place through the end of the nesting season (July 15th) of each calendar year or until all young have fledged, whichever is later. The permittee shall ensure that the nesting box is clean and functional prior to re-installation.

B. The installation of orange plastic-mesh construction-site limiting fencing at specific locations on the RMC at the direction of DEC staff to discourage use of those areas by the species.

7. **Authorized Activities** The activities authorized under this permit may not be undertaken during the period from February 1st through July 15th (or until the young in any nests have fledged, whichever is later) if the Department determines that the work will disturb or disrupt peregrine falcons using the Causeway or their nesting activities.

8. **Environmental Monitor** The permittee must retain the services of a qualified, DEC-approved environmental monitor to assist with the oversight and management of the project, and to ensure that the authorized activities do not negatively impact the species. The environmental monitor shall have the following specific tasks and responsibilities:

A. Being present whenever work authorized by this permit is underway during the period from February 1st to July 15th (or until the young in any nests have fledged, whichever is later).

B. Notifying the NYSDEC Region 1 Bureau of Wildlife by telephone (631-444-0308) or electronically: fxhamilt@gw.dec.state.ny.us immediately if a peregrine falcon is observed at or in the vicinity of the active work area.

C. Suspending authorized work if the monitor determines that the work is disturbing the peregrine falcon/s or disrupting nesting activities and immediately notify the Bureau of Wildlife at the above telephone number or address.

D. Submitting a weekly written or electronic report to the Bureau of Wildlife of the monitoring activities conducted at the active work site/s and over the length of the Causeway over Fire Island Inlet.

The permittee and prospective environmental monitor candidates should note that a boat is necessary to adequately observe some portions of the RMC. It is the permittee's responsibility to ensure that all personnel and workers involved with the project, including the DOT Engineer-in-Charge, Field Engineers and other staff, and all employees of all contractors and subcontractors understand and acknowledge that the environmental monitor has the explicit authority to order that work be stopped or modified if she/he determines it necessary to stop or prevent disturbance of the peregrine falcon or its nesting activities. In addition, all employees of the permittee, contractors and subcontractors are hereby notified of the aggressive nature of nesting peregrine falcons and their ability to cause harm to people. Hard hats and optional eye protection should be encouraged for workers in the vicinity of a nest.

9. **Environmental Monitor Qualifications** The environmental monitor must be a qualified field biologist with knowledge and experience in raptor biology. This includes the ability to identify the peregrine falcon in immature and adult plumage and recognize the size differences between female and males. A curriculum vitae or other summary of a candidates's education and experience shall be submitted for review and approval to: NYSDEC Region 1 Bureau of Wildlife, SUNY @ Stony Brook, 50 Circle Rd., Stony Brook, N.Y. 11790-3409. The Department must approve the candidate before she/he can begin falcon monitoring, project supervision and reporting duties.

10. **No Disturbance to Vegetated Tidal Wetlands** There shall be no disturbance to vegetated tidal wetlands or protected buffer areas as a result of the permitted activities.

11. **No Construction Debris in Wetland or Adjacent Area** Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

12. **Concrete Leachate** During construction, no wet or fresh concrete or leachate shall be allowed to escape into any wetlands or waters of New York State, nor shall washings from ready-mixed concrete trucks, mixers, or other devices be allowed to enter any wetland or waters. Only watertight or waterproof forms shall be used. Wet concrete shall not be poured to displace water within the forms.

13. **Storage of Equipment, Materials** The storage of construction equipment and materials shall be confined to the bridge or barge.

14. **Fueling** Fueling areas must be contained by haybales or other approved containment devices and must be underlain with an absorbent pad. Spills must be prevented from entering tidal wetlands and/or waterways. Should a spill occur, the permit holder shall notify the office of Marine Habitat Protection immediately and shall provide a plan for containment, clean-up and restoration of the impacted area for the approval of the Department.

15. **Barges** Barges shall not be moored or placed in shallow areas where they will be in contact with bottom sediments.

16. **Contain Work Areas** All work areas shall be contained in a manner that prevents materials and debris, including but not limited to silts, sediments, fuels, solvents, lubricants, epoxy coatings, paint chips, sand blasting materials, concrete rubble and leachate from entering tidal wetlands or waterway as a result of the approved project. Work areas shall be appropriately contained prior to the commencement of any regulated activities authorized by this permit.

17. **Seeding Disturbed Areas** All areas of soil disturbance resulting from the approved project shall be stabilized with appropriate vegetation (grasses, etc.) immediately following project completion or prior to permit expiration, whichever comes first. If the project site remains inactive for more than 48 hours or planting is impractical due to the season, then the area shall be stabilized with straw or hay mulch or jute matting until weather conditions favor germination.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC REGION 1 HEADQUARTERS
SUNY @ STONY BROOK|50 CIRCLE RD
STONY BROOK, NY11790 -3409

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Tidal Wetlands, Water Quality Certification, Excavation & Fill in Navigable Waters.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

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NOTICE OF COMMENCEMENT OF CONSTRUCTION

D262172

RETURN THIS FORM TO: COMPLIANCE
Bureau of Habitat-TW
50 Circle Road
Stony Brook, NY 11790-3409

Or Fax to: 631-444-0297

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Dear Sir:

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____ _____. We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

*THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS **AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT** AND /OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.*

Cut along this line ✂ ✂ ✂ ✂ ✂ ✂ ✂

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE
Bureau of Habitat- TW
50 Circle Road
Stony Brook, NY 11790-3409

Or Fax to: 631-444-0297

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____ _____. We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

*THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, **MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.***

95-20-1 (8/87)—9d

New York State
Department of Environmental Conservation

NOTICE

The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Regional Permit Administrator

ROGER EVANS

Permit Number 1-4728-00663/00017

Expiration Date 11/7/2017

NOTE: This notice is **NOT** a permit

D262172

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SPECIAL NOTE

HIGHLIGHTING PROPOSED CONTRACT CHANGES ON SHOP DRAWINGS

For those items which require the Contractor to submit shop or working drawings, the Contractor shall indicate on such drawings, by circling, annotating, or otherwise highlighting, those details which propose a change from what is required in the contract plans and specifications.

NEW YORK STATE DEPARTMENT of TRANSPORTATION
REGION 10
PERMIT for CONSTRUCTION STAGING AREA ~ FORM "A"

Application Date _____ **Permit No.** _____

Contractor _____

PIN _____ **CONTRACT NO. D**_____

Project Location _____

Project Limits _____

Type of Project _____
(Reconstruction, 3R, Safety, Drainage, Bridge Painting, etc.)

Project Description _____

_____

Project Duration _____ **Contract Cost: $**_____

Staging Area will be used for:

1. _____Contractors' Field Office **2. _____State Engineers' Field Office**

3. _____ Equipment Storage **4. _____ Material Storage**

5. _____ Stockpiling Excavated Materials **6. _____**

7. _____ _____
(Permit required for each staging area site).

Staging Area Location and Size: _____

_____

_____

_____

Access: _____

_____

_____

Submitted By: _____ **Date:** _____
Contractor's Designee

Site _____ **for further consideration** _____
Accepted/Rejected **Regional Highway Maintenance Engineer/Date**

06/04/01, Revised 03/17/05 03/05/09E

PERMIT for CONSTRUCTION STAGING AREA - FORM "B"

Special Permit Requirements & Restrictions

1. ____Environmental 2. ____ Landscape 3. ____ Grading
4. ____ Drainage 5. ____ Screening/Fencing 6. ____Ingress/Access Road
7. ____ _____ 8. ____ _____ (TE&S Approval)

Have site photographs been provided? _____

(Permit will not be issued without required photos - see page 5)

Specific Conditions and Requirements:

PERMIT - Start Date _____ Expiration Date _____.

Written approval by the EIC is required to extend occupancy beyond the expiration date.

Site restoration shall be completed prior to the expiration date of the Permit.

ACCEPTED BY:

Company Name: _____

Address:_____City_____State____ZIP_____

CONTRACTOR:

_____ Title _____

Print Name Signature Date

APPROVED BY:

_____ _____

REGIONAL CONSTRUCTION ENGINEER **Date**

_____ _____

REGIONAL HIGHWAY MAINTENANCE ENGINEER **Date**

NYSDOT - STAGING AREA PERMIT

The Contractor is required to obtain a Staging Area Permit for short and long term temporary occupancy of State owned land under the maintenance jurisdiction of the New York State Department of Transportation, within or outside the project limits.

A Staging Area Permit is needed for each discontinuous area used for a field office facility, storage of construction supplies, equipment and vehicles, stockpiling of soil, aggregate or excavated materials, or other approved use. The Regional Highway Maintenance Engineer issues the Permit in conjunction with the Highway Maintenance Resident Engineer, Regional Landscape Architect and project Engineer-In-Charge (EIC).

The intent of this Permit is to avert adverse environmental, traffic, visual or public impacts and to establish restoration requirements when the use of the State owned land is no longer required.

The Contractor shall not occupy or use State owned land without an approved Permit.

PERMIT PROCEDURE:

The Contractor initiates the procedure by proposing a site, or sites, to the Regional Highway Maintenance Engineer for consideration by submitting **FORM "A"** (page 1) of the Permit Application immediately after contract award. The Regional Highway Maintenance Engineer, together with the Resident Highway Maintenance Engineer, Regional Landscape Architect and project EIC, will evaluate the proposed site(s) and accept or reject the site(s) for further consideration.

The Regional Highway Maintenance Engineer has discretionary authority to reject a proposed site.

The contractor will be notified by the EIC if the site has been accepted or rejected for further consideration. If accepted, the Contractor shall meet with the Regional Highway Maintenance Engineer, Highway Maintenance Resident Engineer, Regional Landscape Architect and the project EIC to establish the specific requirements of the Permit, **FORM "B"** (pages 2 & 3).

Prior to completing the permit application, the contractor shall:

1. Mark out the perimeter of the proposed site, including the area proposed for ingress and egress.

2. Provide photographs of the proposed site, access areas and surrounding property.

3. Provide any other information, plan, sketch, map, survey data, etc. as required by the State to clearly define the requirements of the Permit.

4. Provide Soil Erosion and Sediment Control Plan for the proposed site.

A no-fee Permit will be issued by the Department upon acceptance in writing by the Contractor of the specific conditions and requirements established by the Regional Highway Maintenance and Regional Construction Engineers.

PROTECTION AND RESTORATION OF EXISTING FEATURES

* The Contractor shall provide three sets of dated 8 inch x 10 inch photographs showing the existing condition of the site, access areas and surrounding property prior to any activity which may disturb the landscape or other features. The number of photographs shall be sufficient to provide complete coverage of the designated areas as determined by the EIC.

* The Regional Landscape Architect shall tag or mark any shrubs, plants, trees or other vegetation approved for removal in the Permit application. Requests for removal of additional plantings or trees not identified in the Permit application, must be inspected and approved by the Regional Landscape Architect in writing.

* Existing turf which is disturbed, damaged or removed, shall be reestablished, in accordance with Subsection 107-08 of the NYSDOT Standard Specifications, when use of the area is no longer required. Areas to be seeded shall be harrowed, disked, roto-tilled, or otherwise pulverized to a state of tillage acceptable to the Regional Landscape Architect. In addition, 6 inch of topsoil conforming to subsection 713-01 of the NYSDOT Standard Specifications, shall be placed over the areas requiring re-establishment prior to seeding or sodding. This work shall be performed at no additional cost to the State, unless otherwise indicated on the plans.

* The Contractor shall control dust and other air blown debris by any approved method including but not limited to furnishing and applying water as directed by the Engineer.

* The Contractor shall provide for soil erosion, water and air pollution abatement in accordance with Subsection 107-08 of the NYSDOT Standard Specifications at no cost to the State.

* All existing plantings, including trees, shrubs, and other vegetation scheduled to remain, which are damaged or destroyed by the contractor's operation, shall be restored to the satisfaction of the Regional Landscape Architect in accordance with the requirements of Section 611 of the NYSDOT Standard Specifications, at no cost to the State.

* All existing physical features scheduled to remain, which are damaged or destroyed by the Contractor's operation, such as, but not limited to, pavements and shoulders, sidewalks, curb, drainage facilities, signs, lighting systems, etc., shall be replaced as directed by the EIC in accordance with State standards at no cost to the State.

GENERAL CONDITIONS:

* The cost of all labor, equipment and materials needed to comply with all the Permit requirements shall be at no additional cost to the State.

* The Contractor shall observe all applicable Federal, State, Municipal and Local laws and regulations. Permits or approvals required from other government agencies, utility companies or other entities having jurisdiction in the area or access to the designated area, shall be obtained by the Contractor prior to occupancy. Particular attention is directed to environmental laws and regulations, for example, Wetlands, SPDES, Solid and Hazardous Waste, etc..

* The Permit does not grant the contractor exclusive right to the site designated. The Contractor shall coordinate occupancy of the site with work being performed by, or for, the NYSDOT, and obtain approval from utility companies and/or other state or local agencies which may be impacted by use of the site as a staging area.

* The State reserves the right to amend the Permit to cover new conditions and to cancel the Permit upon 30 days written notice.

* Liability insurance required by the contract documents shall apply to staging area operations. The Contractor assumes all responsibility for injury to persons, or damage to private and/or State property, caused through the operation of the Permittee, and will save and hold harmless the State from all claims and suits which may arise from such incidents.

* Operations shall be performed in such manner which will not disturb the stability of the designated or adjacent areas. When not specifically provided for by the Permit, damage to the designated or adjacent areas, facilities or appurtenances resulting from the Contractor's operations, shall be restored in accordance with the applicable provisions of the contract at no cost to the State.

* The Contractor shall maintain all staging, access and surrounding areas in a neat, orderly and safe condition as determined by the EIC.

* The Contractor shall provide for the maintenance and protection of traffic, including pedestrian mobility, by keeping all access roads and sidewalks clear of materials, debris, snow and ice and providing appropriate signs, flag persons or other traffic control devices as directed by the Engineer in accordance with Section 619 at no cost to the State.

* **The restoration requirements of the Permit shall be completed prior to the expiration date of the Permit.** The Contractor shall notify the State EIC when the Permitted area is ready for final inspection. The Regional Highway Maintenance Engineer and Regional Landscape Architect must inspect and approve the restoration before final acceptance by the EIC. Final contract acceptance can not be granted without restoration approval and acceptance of the Permitted areas.

MISCELLANEOUS CONDITIONS:

*** Wetland and Buffer Zones -** Special concerns and impact mitigation measures must be addressed when proposing a Construction Staging area within 100 ft of a fresh water wetland and 300 ft of a tidal wetland in accordance with the applicable laws and regulations at no cost to the State.

*** Hazardous Material** - All materials classified as hazardous, such as asbestos, chemicals, gases, flammable materials, etc. shall be removed and disposed or remediated in accordance with all applicable rules, regulations and laws concerning hazardous materials at no cost to the State.

*** Utility Disconnections** - All utility connections to a building or other facility shall be disconnected prior to demolition, moving or relocating in accordance with applicable laws and regulations and the requirements of the respective utility owner. All severed sewer or drain lines shall be capped or otherwise sealed to prevent debris or foreign matter from entering. All work performed shall be at no cost to the State.

The contractor shall be responsible to resolve and settle any claim arising from failure to properly disconnect utility services.

*** Sewage and Drainage Systems** - Effluent from septic tanks, cesspools, leaching basins, drainage basins and related piping which are to be removed, abandoned or disconnected from a building or other facility, shall be removed, handled, transported and disposed of in accordance with applicable local laws and regulations and approved by the EIC at no cost to the State..

*** Oil Storage Tanks** - Oil from oil tanks shall be removed and disposed in accordance with applicable laws and regulations and the approval of the EIC, before excavating and removing tank. Contaminated soil shall be removed and disposed in accordance with applicable rules and regulations issued by the Nassau County Department of Health, Suffolk County Department of Health or NYSDEC at no cost to the State. Approval from these agencies will be required before backfilling to insure that all contaminated soil is removed.

All excavations shall be backfilled with suitable material and compacted in 6 inch lifts at no cost to the State.

SPECIAL NOTE
Structural Painting Details

Unless otherwise noted, the finish color shall be Munsell 7.5 GY 5/4

Structure #	BIN	Containment Items	Painting Items	Structure Length	Structure Width	Vertical Clearance	Structure Over Public Water Supply or NYC Watershed	Stream Classification
01	1058770	570.150001 570.150002	573.010001 573.010002	4233	30.5-35	Varies	No	None
REMARKS: Robert Moses Causeway over Fire Island Inlet								

NOTE: Physical dimensions of the structure are approximated. Contractors should not prepare estimates based solely on these figures.

SPECIAL NOTE

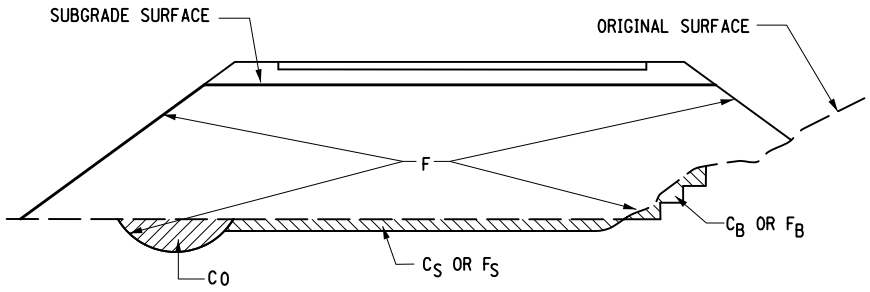
REQUIREMENTS FOR PORTABLE, VARIABLE-MESSAGES SIGNS (PVMSs)

PHASE I

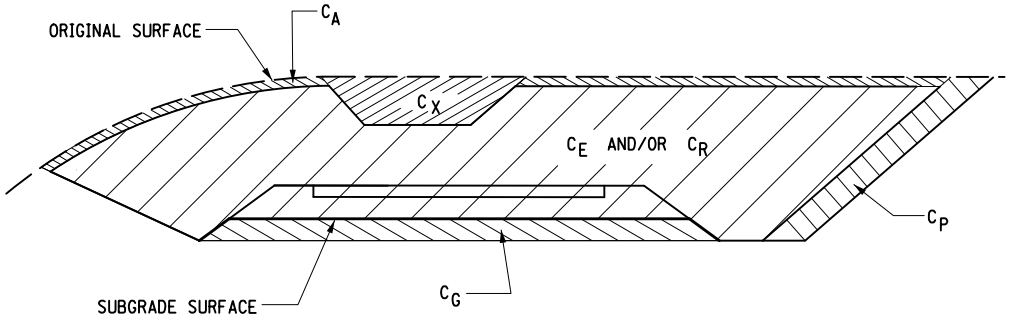
PVMS 1
LOCATION: SOUTHBOUND ROBERT MOSES CAUSEWAY NEAR OCEAN PARKWAY.
DURATION: THIS LOCATION SHOULD BE OCCUPIED FOR THE DURATION OF THE PROJECT.

PVMS 2
LOCATION: NORTHBOUND ROBERT MOSES CAUSEWAY NEAR WATER TOWER.
DURATION: THIS LOCATION SHOULD BE OCCUPIED FOR THE DURATION OF THE PROJECT.

PIN 0017.65 - ROBERT MOSES CAUSEWAY (RMC) OVER
FIRE ISLAND INLET (FII) BRIDGE REHBAILITATION
SUFFOLK COUNTY



FILL SECTION



CUT SECTION

DEFINITIONS:

C_B - EXCAVATION FOR REQUIRED BENCHING, (BOTH LONGITUDINAL AND TRANSVERSE).

C_G - EXCAVATION FOR SUBGRADE IMPROVEMENT.

C_P - EXCAVATION FROM CUT SLOPE NECESSARY TO PLACE SLOPE PROTECTION.

C_E - PORTION OF CUT ASSUMED TO BE EARTH SUITABLE FOR EMBANKMENT CONSTRUCTION, EXCLUDING C_G AND C_P.

T_E - $(C_B + C_G + C_P + C_E)$ TOTAL EARTH EXCAVATION ASSUMED SUITABLE FOR EMBANKMENT CONSTRUCTION.

C_A - EXCAVATION OF TOPSOIL (UNSUITABLE MATERIAL) IN CUT.

C_S - EXCAVATION OF TOPSOIL (UNSUITABLE MATERIAL) UNDER EMBANKMENT.

C_X - EXCAVATION OF UNSUITABLE MATERIAL IN CUT: SWAMP OR DUMP

C_O - EXCAVATION OF UNSUITABLE MATERIAL BENEATH EMBANKMENT: SWAMP OR DUMP

T_U - $(C_A + C_S + C_X + C_O)$ TOTAL EXCAVATION ASSUMED UNSUITABLE FOR EMBANKMENT CONSTRUCTION.

C_R - PORTION OF CUT ASSUMED TO BE ROCK, INCLUDING C_G IF APPLICABLE.

C_T - $(T_E + T_U + C_R)$ TOTAL EXCAVATION.

F_B - FILL REQUIRED TO REPLACE BENCHES.

F_S - FILL REQUIRED TO REPLACE TOPSOIL REMOVED BENEATH EMBANKMENTS.

F - FILL REQUIRED TO COMPLETE EMBANKMENT TO SUBGRADE SURFACE AND SIDE-SLOPES AFTER FOUNDATION IS PREPARED.

F_T - $(F_B + F_S + F)$ TOTAL FILL REQUIRED.

T_A - $(T_E \times F_E + C_R \times F_R)$ THE VOLUME WHICH THE SUITABLE EXCAVATED MATERIAL COULD OCCUPY IN EMBANKMENT.

F_E - SHRINKAGE FACTOR FOR EARTH

F_R - SWELL FACTOR FOR ROCK

ALL DIMENSIONS ARE IN yd^3 UNLESS OTHERWISE NOTED

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

EARTHWORK SUMMARY SHEET DEFINITIONS ES-1A | REGION 10

FILE NAME =
DATE/TIME = 10/18/2012
USER = V.A.

PIN 0017.65 - ROBERT MOSES CAUSEWAY (RMC) OVER
FIRE ISLAND INLET (FII) BRIDGE REHBAILITATION
SUFFOLK COUNTY

SUMMARY OF EARTHWORK
(ITEMS 203.02 AND 203.03 ONLY)

SOURCE	EXCAVATION			ITEM 203.02	ITEM 203.03
	T_E	C_R	T_U	C_T	F_T
BRIDGE	0	0	0	0	0
TOTALS	0	0	0	0	0

*CONTRACTOR MAY REUSE SELECT GRANULAR FILL FROM NY27 MEDIAN BARRIER FOR EMBANKEMENT IN PLACE.

SUMMARY OF TRENCH AND CULVERT EXCAVATION
(ITEMS 206.02 AND 206.04 ONLY)

SOURCE	EXCAVATION		ITEM 206.02	ITEM 206.04
	ROCK	NON-ROCK		
BRIDGE	0	0	0	0
TOTALS	0	0	0	0

NOTES:

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT THESE ARE ESTIMATED, AND ARE PROVIDED FOR THE PURPOSE OF PREPARING AN ESTIMATE. THEY ARE NOT TO BE CONSTRUED AS BEING EXACT. THEY ARE INTENDED TO QUANTIFY AND QUALIFY THE NATURE OF THE WORK. SIGNIFICANT DIFFERENCE FROM THIS REPRESENTATION, WHEN ENCOUNTERED DURING THE ACTUAL WORK, WILL BE HANDLED ACCORDING TO THE SPECIFICATIONS GOVERNING THIS PROJECT

203.02 UNCLASSIFIED EXCAVATION AND DISPOSAL

203.03 EMBANKMENT IN PLACE

206.02 TRENCH AND CULVERT EXCAVATION

206.04 TRENCH AND CULVERT EXCAVATION - O.G.

ALL DIMENSIONS ARE IN yd^3 UNLESS OTHERWISE NOTED

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

EARTHWORK SUMMARY SHEET ES-2A | REGION 10

FILE NAME =
DATE/TIME = 10/18/2012
USER = V.A.

SPECIAL NOTE

SPECIALTY ITEMS

There are no “Specialty Items” for this contract as defined in Subsection 108-05 of the Standard Specifications.

SPECIAL SPECIFICATIONS

NOTE: This form was developed for repetitive use throughout all contract proposals and may identify items not applicable to this specific project.

ITEM 402.25020018 - SAWING AND SEALING JOINTS IN NEW HOT MIX ASPHALT OVERLAYS USING HOT APPLIED SEALANT

DESCRIPTION.

Saw cut, clean and seal transverse joints in new Hot Mix Asphalt (HMA) overlays and shoulders. Construct transverse HMA pavement joints over, and in line with, the existing underlying transverse Portland cement concrete joints contained in the contract documents and as directed by the Engineer.

MATERIALS.

Sealant. Use a sealant meeting the requirements of §705-02, Highway Joint Sealants, and ASTM D6690 Type II; Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements. Deliver the sealant in the manufacturer's original sealed container legibly marked with the following information:

- Manufacturer's name.
- Trade name of sealant.
- Manufacturer's batch or lot number.
- ASTM D6690, Type II.
- Minimum application temperature.
- Maximum (or Safe) heating temperature.

Provide the Engineer with a copy of the manufacturer's recommendations pertaining to heating and application of the sealant prior to commencing work.

Bond Breaker Tape. Use ordinary masking tape or a suitable bond breaker tape designed for use with hot poured sealants. The width of the tape shall be equal to the width of the saw cut (-1/8 in., + 0 in.).

CONSTRUCTION DETAILS.

General. Saw cut, clean and seal transverse joints as a single operation within seven (7) days after placing the top course of the HMA pavement. Saw cut, clean and seal joints that are damaged by traffic at no additional cost to the State.

If the top course is to be placed the following Spring, saw cut all underlying courses to provide a 1 inch deep by 1/8 inch wide channel to facilitate and control reflective cracking. Provide a means of properly referencing the saw cut to be made in the top course. Saw cut all underlying courses within seven (7) days after they are placed and before any evidence of reflective cracking has developed. Do not seal these saw cuts. Include saw cutting underlying courses in the unit bid price.

Saw Cutting of Transverse Joints. Saw cut transverse joints to the appropriate dimensions shown in Figure I and Figure II. Locate saw cut joints directly over the existing Portland cement concrete pavement joints using a pins and stringline method. The details of the method for locating the saw cuts are to be approved by the Engineer.Saw cutting blades shall be of such size and configuration that the desired dimensions of the saw cut can be made with one pass. Either dry or wet cutting will be allowed. No spacers between blades will be allowed.

Extend transverse saw cut joints the full width of the pavement and into the asphalt shoulder to a distance 1 foot beyond the edge of the underlying Portland cement concrete pavement edge or as shown in the contract documents. Transverse joints that are offset at the longitudinal joint by more than 1 inch measured between the centers of the joint cavities require separate saw cuts terminating at the longitudinal joints.

ITEM 402.25020018 - SAWING AND SEALING JOINTS IN NEW HOT MIX ASPHALT OVERLAYS USING HOT APPLIED SEALANT

Joint Preparation. Prepare joints for sealing on the same day that they are to be sealed.

Wash wet saw cut joints with a water blast (50 psi minimum) after sawing to remove any sawing slurry, dirt, or deleterious matter adhering to the joint walls or remaining in the joint cavity. Wash slurry from the pavement surface when the wet process is used. Blow or brush dry dust and material from the pavement surface when the dry saw cut process is used.

Use a high pressure air lance or hot air lance to thoroughly clean and dry saw cut joints of dust, dirt, foreign material, sand and any other extraneous materials immediately prior to sealing joints. Do not burn, scorch or ignite the adjoining pavement when using a hot air lance.

Install suitable traps or devices on the compressed air equipment to prevent moisture and oil from contaminating the joint crack surfaces. Maintain these devices and see that they are functioning properly. Protect the public from potentially objectionable and/or hazardous airborne debris.

Bond Breaking. Place bond breaker tape in the bottom of the saw cut joint after it is cleaned and dried.
Sealant Melting. Heat and melt the sealant in a melter constructed either as a double boiler filled with a heat-transfer medium between the inner and outer shells, or with internal tubes or coils carrying the sealant through a heated oil bath and into a heated double wall hopper. The melter will be equipped with separate thermometers to indicate the temperature of the heat transfer medium and the sealant material, positive temperature controls and with a mechanical agitator or a recirculating pump to assure a homogeneous blend of the sealant. Maintain the sealant at the pouring temperature $\pm 10^{o}$ F indicated on the material packaging.
Check the discharge temperature of the sealant with a non-contact infrared thermometer. Discharge the sealant at a temperature between the manufacturer's recommended pouring and safe heating temperatures indicated on the material packaging. Submit an alternate method for measuring the discharge temperature to the Engineer for approval if desired.

Sealing is not permitted if the melter and discharge temperatures do not meet the requirements described above. Equip the discharge hose with a thermostatically controlled heating apparatus or insulate it to maintain the proper sealant pouring temperature. Holster the discharge hose to the melter if it is not thermostatically heat controlled. Circulate the sealant from the discharge hose and the melter to maintain the proper sealant pouring temperature.

Do not use sealant material heated beyond the safe heating temperature.

If the manufacturer's recommendations allow the sealant to be reheated or heated in excess of six hours, recharge the melter with fresh material amounting to at least 20 percent of the volume of the material remaining in the melter.

Sealing. Sealing is to be done when ambient air temperature is at or above 40^{o} F

Seal the joint by placing the applicator wand in the recess and carefully discharge the sealant. Strike-off the sealant flush with the pavement surface using a squeegee or sealing shoe pressed firmly against the pavement. The level of the sealer will not be greater than 1/8 inch below the pavement or shoulder

ITEM 402.25020018 - SAWING AND SEALING JOINTS IN NEW HOT MIX ASPHALT OVERLAYS USING HOT APPLIED SEALANT

surface after the sealant has cooled. If the sealant sinks into the joint more than 1/8 inch below the pavement surface, clean it with high pressure air and fill it to 1/8 inch below the pavement surface. Properly sealed joints shall be watertight and present a neat fine line.

Do not allow traffic on the sealed joint until the sealant has cured so as not to track. Use a low pressure, light spray of water to accelerate cooling of the sealant. Blotting the sealant with fine aggregate is not allowed.

Remove and dispose sealant in excess of the amount depicted in Figure I or that has not bonded to both sides of the reservoir. Clean sealed joints damaged from traffic with high pressure air and reseal them to meet the specified amount at no additional cost to the State.

METHOD OF MEASUREMENT.

The Engineer will measure the number of feet of joints properly saw cut and sealed in conformance with this specification.

BASIS OF PAYMENT.

In the unit bid price, include the cost of all material, equipment and labor necessary to complete the work.

Item No.	Item	Pay Unit
402.25020018	Sawing and Sealing Joints in New Hot Mix Asphalt Overlays Using Hot Applied Sealant	Feet

ITEM 402.25020018 - SAWING AND SEALING JOINTS IN NEW HOT MIX ASPHALT OVERLAYS USING HOT APPLIED SEALANT

DETAILS FOR TRANSVERSE JOINTS IN ASPHALT CONCRETE OVERLAYS

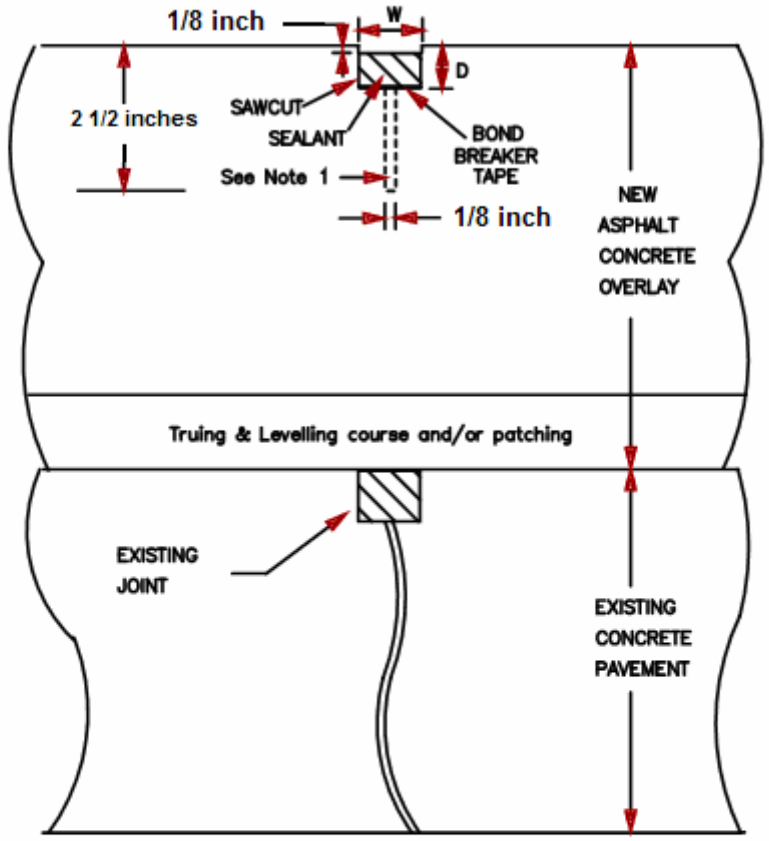
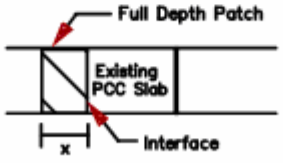


FIGURE I

SAWCUT DIMENSIONS

SLAB LENGTH (ft.)	W (in.)	D (in.)
< 50	1/2	5/8
51 to 61	5/8	5/8
62 to 75	3/4	5/8
76 to 88	7/8	3/4
89 to 100	1	7/8

Note 1: When the total thickness of asphalt concrete over the existing joint exceeds 4 1/2 in., a 1/8 in. wide sawcut shall be included in the joint geometrics to a minimum depth 2 1/2 inches.



If "x" is geater than 6 inch a sawcut is required at patcn slab interface in the overlay.

FIGURE II PLAN VIEW

ITEM 402.90710210 F1 WATERPROOFING BRIDGE DECK HOT MIX ASPHALT (HMA) OVERLAY, 70 SERIES COMPACTION

DESCRIPTION

This work shall consist of formulating and placement of a Waterproofing Bridge Deck Hot Mix Asphalt (HMA) Overlay. The formulation of the mixture shall be done using the mixture design procedure detailed in the current Materials Method 5.16, *"SUPERPAVE Hot Mix Asphalt Mixture Design and Mixture Verification Procedures"* and this specification. The placement of this mixture shall be in accordance with these specifications and in reasonable close conformity with the required lines, grades, thicknesses, and typical sections shown on the plans or established by the Engineer. The Contractor shall be responsible for the compaction of this mixture to a specified density requirement.

MATERIALS

The requirements of §401-2, *Materials*, shall apply except as modified below.

1. **Aggregate.** Use a gradation meeting the requirements in Table 1, *Waterproofing Bridge Deck HMA Overlay Design Gradations.*

Table 1 – Waterproofing Bridge Deck HMA Overlay Design Gradations

Standard Sieves (inches)	General Limits - % Passing		[1]Production Tolerance
	Maximum	Minimum	
3/8	-	100	-
¼	100	85	± 6
#4	85	60	± 6
# 8	67	37	± 5
#16	45	25	± 4
#30	30	17	± 4
# 50	20	10	± 3
#100	16	5	± 2
#200	8	2	± 2

1. Production tolerance limits shall not exceed the design general limits.

2. **Reclaimed Asphalt Pavement (RAP).** The use of RAP is not allowed.

3. **Performance Graded Binder (PG Binder).** Use the appropriate PG Binder listed in Table 2, *PG Binder Requirements*. The PG binder must be modified with Styrene-Butadiene (SB), Styrene-Butadiene-Styrene (SBS), Styrene-Butadiene-Rubber (SBR), or Terminal Blend Crumb Rubber Modified asphalt formulations. The PG binder must be storage-stable and homogeneous. When Terminal Blend Crumb Rubber Modified (CRM) binder is used, the initial crumb rubber particles used to modify the binder must be finer than #50 sieve. The PG Binder must meet AASHTO M 320, *Standard Specification for Performance-Graded Asphalt Binder* and the Elastic Recovery (ER) requirements. When Terminal Blend Crumb Rubber Modified is used, the particles retained in 250 micron sieve shall be no more than 3% by weight of the PG binder. The Elastic Recovery test on the PG binder will be performed on the Rolling Thin Film Oven (RTFO) binder sample. The binder shall also meet the Toughness and Tenacity requirements listed in Table 2. The minimum PG binder content shall be 7.25% by weight of the total mixture.

Alternatively, the Contractor may use a concentrated Thermoplastic Polymeric asphalt modifier, which is added as a dry ingredient during the hot mix asphalt production process. The manufacturer of the Thermoplastic Polymeric asphalt modifier shall provide certification and Data Sheet indicating

the results of the PG binder combined with the Thermoplastic Polymeric asphalt modifier meeting the minimum requirements listed in Table 2. When this process is selected, use PG 64-22 regardless of the project location. The minimum virgin PG Binder content for this process shall be 5% and the minimum Thermoplastic Polymeric modifier shall be 2.25%, both by weight of the total mixture.

Table 2 – Performance Graded (PG) Binder requirements

[1]PG Binder	[2]Elastic Recovery	[3]Toughness	[3]Tenacity
PG 76-22	90% min	20 N*m (min)	12 N*m (min)

1. Modified binders with a high temperature grade of 82°C or higher or a low temperature grade of -28°C or lower may be used.
2. In accordance with ASTM D6084, Testing Procedure A, at 50°F.
3. In accordance with ASTM D5801. The results are for information only.

In addition, the PG Binder must meet the following requirements:

Downstate. The use of PPA modified PG binder is prohibited for mixtures containing limestone, limestone as an aggregate blend component, or limestone as a constituent in crushed gravel aggregate. This prohibition also applies to the use of PPA as a cross-linking agent for polymer modification. "Downstate" is defined as the counties of Orange, Rockland, Putnam, Westchester, Nassau, Suffolk, and the City of New York.

4. Mixture Design. Formulate and submit a Bridge Deck HMA Overlay mixture design to the Regional Materials Engineer (RME) at least 3 weeks prior to construction of this mixture. The design must satisfy the design criteria outlined in Table 3, *Mixture Design Criteria*, and this specification. Placement of this mixture will not begin until the design has been reviewed and accepted by the RME.

Table 3 – Mixture Design Criteria

Design Criteria	Specification
% Air Voids at $N_{design,}$ maximum	1.5
% Voids in the Mineral Aggregate, minimum	15.5
[1]Number of Gyrations @ N_{design}	50
[2]Permeability, ft/day, maximum	2.83×10^{-4}
[3]Flexural Beam Fatigue, minimum cycles	250,000
[4]Rut Test, maximum, mm	3

1. Aggregate Consensus Properties must still meet the requirements based on project ESAL level as outlined in Materials Method 5.16. The project ESAL level will be specified in the contract documents.
2. Permeability, ASTM D5084, using samples with 4.0% ± 1.0% Air Voids.
3. Flexural Beam Fatigue, AASHTO T321 at 750 microstrains, 10 Hz, average of two samples with 4.0% ± 1.0% air voids.
4. Asphalt Pavement Analyzer (APA), T 340, @ 147°F (64°C).

5. Edge and Joint Sealing. Use one of the following joint adhesives in Table 4, *Joint Adhesive,* for all edge and joint sealing requirements.

Table 4 – Joint Adhesive

Product Name	Supplier
XJB eXtruded Joint Bond	Asphalt Materials, Inc 5400 W. 86th Street Indianapolis, IN
Crafco Joint Adhesive	Crafco, Inc. 420 N. Roosevelt Ave. Chandler, AZ
Deery Joint Adhesive	

When the Thermoplastic Polymeric asphalt modifier is utilized in the Bridge Deck HMA Overlay, a special sealant may be required as recommended by the manufacturer of this modifier. Other edge and joint sealers may be used upon approval by the Director, Materials Bureau.

6. Tack Coat. Use undiluted Rapid Setting emulsion Materials Item 702-3002 or 702-4002. The emulsion must be formulated from harder based asphalt such that the residue of the emulsion meets the penetration value range of 40-90. A neat PG 64-22 binder may be substituted in lieu of the emulsified tack coat. Other types of emulsified tack coat may be used with prior approval by the Director, Materials Bureau.

When the Thermoplastic Polymeric asphalt modifier is utilized in the Bridge Deck HMA Overlay, a special tack coat may be required as recommended by the manufacturer of this modifier.

ITEM 402.90710210 F1 WATERPROOFING BRIDGE DECK HOT MIX ASPHALT (HMA) OVERLAY, 70 SERIES COMPACTION

CONSTRUCTION DETAILS

The provisions of **§401-3 and §402-3, Construction Details**, shall apply except as modified below:

1. **Weather and Seasonal Limitations**. The pavement surface temperature shall be a minimum of 50° F and rising at the time of Bridge Deck HMA Overlay placement. The placement of this mixture must be completed during the period of May 1 and October 31. Warranty provision does not apply to this item.

2. **Quality Control.** Quality Control (QC) sampling and testing will be performed on any portion of the lot as determined by the Regional Materials Engineer (RME). The sampling point(s) will be determined by the RME. Exclusion of the first and last 150-ton portion of the lot from testing shall not apply. A Quality Control Technician (QCT) shall be present during all production regardless of the lot size.

3. **Production Temperature.** Produce the mixture within the limits recommended by the PG Binder supplier. When Thermoplastic Polymeric asphalt modifier is utilized, the production limits will be as recommended by the modifier supplier.

4. **Conditioning of Bridge Deck Surface.** Prior to placement of Bridge Deck HMA Overlay, clean the surface thoroughly in accordance with Section 633. The deck must be free of any dust prior to tack coat application. When a PCC bridge deck requires repairs, they must be performed in a timely manner such that the patches are dry (no more than 3% moisture content) prior to overlay.

5. **Application of Joint Adhesive Sealant.** Apply sealant before and after the placement of the Bridge Deck Overlay HMA as follows:

   a. **Prior to Overlay.** Apply a 1/8-inch thick, uniform coating of the sealant to all vertical faces of the bridge deck that will be in contact with the Bridge Deck HMA Overlay such as curbs, parapet walls, headers, drains, scuppers, and joints in order to reduce moisture infiltration around the Bridge Deck HMA Overlay and joints. In addition, apply a 1/8 thick sealant, 4 to 6 inches wide on the horizontal surface of the deck adjacent to the vertical faces before the Bridge Deck HMA Overlay application. When practical, apply the sealant the day before or as early as possible on the day of paving to maximize drying time.

   b. **Joints.** When placement of Bridge Deck HMA Overlay is performed in stages, apply sealant to the vertical faces of all longitudinal and transverse joints prior to placement of the adjacent lane. Apply sealant only when the vertical face of the joint has cooled below 150°F.

   c. **After the Overlay.** Once the overlay is placed and compacted, apply a 1/8 thick, uniform coating of sealant to seal the joint between the overlay and all the vertical faces along the perimeter of the bridge deck and other surfaces mentioned above. The width of the sealer at these joints shall be at least 2 inches vertical and 2 inches horizontal. In addition, apply joint sealer to every longitudinal and transverse joint with a maximum of 2-inch wide band.

When the Thermoplastic Polymeric asphalt modifier is utilized in the Bridge Deck HMA Overlay, a special sealant may be required. In that case, apply the sealant as mentioned above and in accordance with the guidelines recommended by the supplier of the Thermoplastic Polymeric asphalt modifier.

6. A**pplication of Tack Coat.** Once the deck has been thoroughly cleaned, apply tack coat with a spreader at a uniform rate to achieve a residual asphalt content of 0.1 to 0.15 gal/sq. yd. When the surface is milled, apply the tack coat at a uniform rate to achieve a residual asphalt content of 0.15

gal/sq. yd. For smaller bridge decks, as defined by the Engineer, apply the tack coat by hand with a brush, roller, or hand-wand sprayer. Allow the tack coat to cure until it is dry to touch. When practical, apply the tack coat the day before or as early as possible on the day of paving to maximize drying time. The tack coat application shall cover at least 90% of the surface.

7. **Delivery and Compaction Temperature.** Deliver the mixture to the project site at a temperature not to exceed 325°F unless recommended by the PG binder supplier. When Thermoplastic Polymeric asphalt modifier is utilized, deliver the mixture within the temperatures recommended by the supplier. Complete the breakdown and intermediate compaction before the mixture temperature falls below 250°F.

8. **Rollers.** Use of pneumatic rubber-tired rollers will not be allowed. All rollers shall be double-drum steel rollers operated in static mode. When Thermoplastic Polymeric asphalt modifier is utilized, follow the supplier's recommendation on the number of rollers and their setup. When rollers require more frequent filling, provide an additional roller to replace the roller being filled with water. Also provide a small roller or vibratory plate tamper to compact smaller areas such as headers, scuppers, expansion joints, etc. that cannot accommodate a full-size roller.

9. **Compaction.** The provisions of §402-3.07C "70 Series Compaction Method" shall apply except as modified below:

a. **Project Target Density (PTD).** Prior to paving operations, the Regional Materials Engineer (RME) will calculate and submit the PTD to the Engineer. The PTD will be calculated by taking 96% of the Mixtures Maximum Theoretical Density (MMTD) from the mix design and applying a known correction factor for the density gauge(s) to be used on the project. If a correction factor is not available, assume a correction factor of zero. Only the density gauge(s) correlated for this project will be allowed to be used during routine paving operations. If another density gauge is anticipated to be used, a new PTD must be established by the RME. Once the production begins, the RME will verify the PTD by using the MMTD of the HMA being produced.

b. **Density Gauge Testing Frequency.** The density gauge will be required to take density readings at the longitudinal intervals outlined in Table 5, *Density Gauge Testing Frequency*. None of the areas, including transverse or longitudinal joints are excluded from density testing. The transverse distance will be every 2 feet across the mat beginning at a joint.

Table 5 - Density Gauge Testing Frequency

Lane Feet of Paving, L	Frequency of Readings
$L \leq 100$	every 15 ft
$100 < L \leq 1500$	every 50 ft

c. **Density Requirements.** The pavement and all the joints shall be compacted sufficiently to achieve the Project Target Density (PTD) at each test location as determined by the density gauge. If the density at two consecutive test locations is below the PTD, stop routine paving. RME will verify the PTD as described earlier by using the produced mixture's maximum theoretical density. Routine paving shall only resume when either a PTD has been verified, in that case increase compaction effort, or use the new established PTD.

10. **Opening to Traffic.** Open lanes to traffic only when the Bridge Deck HMA Overlay pavement temperature is 140°F or below. The Engineer may allow traffic a minimum of one hour after

compaction is completed to improve traffic flow.

METHOD OF MEASUREMENT

The provisions of **§401-4 and §402-4, Method of Measurement**, shall apply except the following:

"The plant production Quality Adjustment Factors do not apply."

BASIS OF PAYMENT

The provisions of **§402-5, Basis of Payment** shall apply except the following:

"The unit bid price will also include all material and labor costs associated with the placement of Bridge Deck HMA Overlay and Joint Adhesive. The cleaning of the surface and the Tack Coat shall be paid under individual items."

Payment will be made under:

Item No.	Item	Pay Unit
402.90710210	F1 Waterproofing Bridge Deck Hot Mix Asphalt (HMA) Overlay, 70 Series Compaction	Ton

ITEM 490.17010010 - PRODUCTION COLD MICRO MILLING

DESCRIPTION. This work shall consist of the production cold milling, shaping and removal of portions of existing Hot Mix Asphalt (HMA) pavement surfaces and subsequent cleaning as indicated in the contract documents and as directed by the Engineer.

MATERIALS. Provisions of §490-2, Materials, shall apply except as modified below:

Equipment. The micro milling machine shall be capable of removal of a 12-foot travel lane and cleaning up both edge seams in the single pass. Milling shall be performed using a down-cut drum. The Contractor shall be knowledgeable of equipment capabilities and is advised that the texture specified may not be obtainable at high production speeds. Drum shall have maximum tooth spacing of 3/8 inch and have a minimum of 3 wraps of teeth. The carbide cutting teeth shall be uniform in diameter with a uniform length of ±0.02 inches. The tooth holder blocks shall be uniform and not cause variations in the cut radius greater than ±0.02 inches. The Contractor shall submit a copy of manufacturer's specifications 2 days prior to test section indicating the drum configuration meets the requirements of this specification. The Contractor shall supply documentation showing the recommended RPMs and the advancing speed for the machine.

The advancing ground speed of the milling operation shall be a function of the RPM's of the milling drum such that the full uniform texture pattern is achieved. The speed of milling operation, in feet per minute, shall be limited to 2/3 times drum RPM's. Any proposal to advance faster than this speed shall be discussed with the Engineer and proven on the test strip, and result in no repeated inconsistencies in texture during production milling. If these inconsistencies are present, the machine speed will be reduced to the recommended speed as stated above.

CONSTRUCTION DETAILS. Provisions of §490-3, Construction Details, shall apply except as modified below:

The extent of milling will be as indicated on the plans or as ordered by the Engineer-in-Charge. In rutted areas, the cut shall be no deeper than necessary to texture the low points of wheel ruts. The entire surface shall be textured, substantially free from waves or irregularities, and shall not vary from a 10-foot straight edge by more than 1/8 inch. There can be occasional exceptions where the bottom of a wheel path may not be textured and other low point defects in order to maintain acceptable profile. The texture produced for the finished pavement shall be a uniform surface with longitudinal striations. The difference between the high and low of the surface texture shall be approximately 1/16 inch.

Any non-mainline areas (shoulders, ramps, gore areas, turnouts, etc.) may require equipment utilizing a milling head less than 12 feet in width. The equipment used to do this work will be capable of providing a textured surface similar to the mainline milled surface and to the same tolerances as the mainline micro milling machine.

On first day of milling, after acceptance of proposed equipment submittal, the Contractor shall construct a test section at recommended ground speed. The texture and consistency of profile and cross slope of this test section shall be evaluated by the Engineer. If the Contractor proposes to mill

ITEM 490.17010010 - PRODUCTION COLD MICRO MILLING

at higher speeds than the recommended speed, a test section must be constructed to demonstrate the texture achieved will meet the specification limits.

METHOD OF MEASUREMENT. Provisions of §490-4, Method of Measurement, shall apply.

BASIS OF PAYMENT. Provisions of §490-5, Basis of Payment, shall apply.

Payment will be made under:

Item No	Item	Pay Unit
490.17010010	Production Cold Micro Milling	Square Yard

ITEM 520.09000010 - SAW CUTTING ASPHALT CONCRETE

DESCRIPTION. This work shall consist of saw cutting existing asphalt concrete pavement or sidewalk at the locations indicated on the plans or where directed by the Engineer.

MATERIALS. All equipment proposed for this work shall be approved by the Engineer prior to actual use.

CONSTRUCTION DETAILS. Saw cutting shall be along a neat line as indicated on the plans or where directed by the Engineer. Saw cuts shall be made to the depth(s) indicated on the plans.

Any damage to material not indicated for removal, caused by the Contractor's operations shall be repaired by the Contractor. All repair shall be done in a manner satisfactory to the Engineer.

METHOD OF MEASUREMENT. This work will be measured by the number of linear feet of saw cutting done. No allowances will be made for saw cuts of different depths.

No saw cutting will be measured for payment under this item which the Contractor may choose to do for his own convenience.

BASIS OF PAYMENT. The unit price bid per linear foot of saw cutting shall include the cost of all labor, materials, and equipment necessary to complete the work.

Any repairs made necessary by the Contractor's operations shall be done to the satisfaction of the Engineer at no additional cost to the State.

ITEM 584.07090011 - SURFACE PREPARATION FOR RAPID SETTING CONCRETE BRIDGE AND APPROACH SLAB

ITEM 584.07090111 - FURNISH AND PLACEMENT OF RAPID SETTING CONCRETE BRIDGE AND APPROACH SLAB REPAIRS

DESCRIPTION: This work shall consist of patching spalls, potholes, corner breaks or other surface distress in Portland cement concrete bridge and approach slabs. The patch area shall be prepared by removal of all existing patching material, broken, damaged or disintegrated concrete, and patched with one of the rapid setting concrete products listed below where indicated on the plans or directed by the Engineer. The depth of cavity, prior to patching, shall be a minimum of 2-inches.

MATERIAL: The materials used shall meet the following requirements:

Coarse Aggregate (703-0204 Crushed Slag shall not be used)	703-02
Rapid Setting Concrete Repair Material HD-50, Fastcrete or other materials on the Approved List with the same characteristics.	
Products submitted as having the same characteristics to the above alternatives shall be subject to review and approved by the Director, Materials Bureau.	HD-50, as supplied by Dayton Superior Corp Oregon, IL Fastcrete, as supplied by Silpro Masonry Systems, Inc Ayer, MA
Water	712-01
Insulating Blankets	711-07
Burlap	711-06

The aggregate shall be size as follows, based upon the depth of application of the mixture:

Depth of Application	Gradation
Up to 4-inches	Type CAl Table 501-2
4-inches and greater	Type CA2 Table 501-2

The dry prepackaged component of the patching material shall be extended, by weight, with 60-65% Type CA1 or CA2 coarse aggregate.

Mixing water shall be added per the manufacturer's instructions. The Contractor shall determine the moisture content of the aggregate. The Contractor shall adjust the amount of mixing water to allow for the aggregate moisture content. The Engineer shall approve this adjustment before mixing.

CONSTRUCTION DETAILS: The areas to be repaired are indicated on the plans or will be

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designated by the Engineer. Repairs shall conform to the details shown on the plans or be in accordance with the directions of the Engineer. The area around the spall or other distress shall be sounded with a 32 to 50 ounce hammer to identify delaminations. The delaminated area plus 6-inches shall be designated by the Engineer for removal. To minimize possible shrinkage cracking and to maximize the service life of the bridge and approach slab repair, patch areas should approach rectangular dimensions and preferably square dimensions when feasible. Patches should refrain from tapers or dimensions that result in narrow, pointed shapes. All asphalt concrete, foreign materials of any kinds, and unsound concrete shall be removed from the repair area.

All wire mesh reinforcement encountered during concrete removal shall be cut out and disposed of by the Contractor. The Contractor will not be required to replace wire mesh reinforcement removed from a patch area.

If steel reinforcing bars are encountered during removal of deteriorated concrete, the terms and conditions of subsections 579-1.02 Exposure of Reinforcing Bars and 579-3.02 Reinforcing Bar Exposure shall apply. If reinforcement is encountered and exposed with the 25 mm clearance as called for in subsection 579-1.02B, only CAl aggregate shall be used to extend the repair material regardless of the total patch depth.

The Contractor has the option of using chipping hammers, a milling machine approved by the Engineer, or high pressure water blast for concrete removal.

1. *Chipping Hammers.* The edges of the patch shall be sawcut 3/4-inch deep with the remainder of the patch depth chipped to a rough sound edge with an inward slope of approximately 45° as detailed on the Contract Plans. The floor of the patched area shall be chipped away to produce a minimum patch depth of 2-inches, however, at slabs with top reinforcing, the depth shall extend to an even plane a minimum of 1-inch below the bottom of the upper reinforcing bar mat at all points within the patch.

   Chipping hammers that are used shall not damage the concrete that is to remain. Chipping hammers shall weigh not more than 45-pounds with the bit and muffler removed. The hammer shall deliver no more than 1600 blows per minute. The Contractor shall provide the Engineer with information from the hammer manufacturer that these requirements are not exceeded. The air pressure used to power the hammer shall not exceed 100 psi measured at the air compressor. An air pressure gauge in proper working condition shall be provided. Only sharp, 3-inch minimum width chisel point bits shall be used. All bits determined by the Engineer to be dull shall be sharpened or replaced. If the Engineer determines that the Contractor's operations are resulting in damage to concrete that is to remain, the Contractor shall make immediate corrections. These corrections shall include the use of a lighter chipping hammer if so ordered by the Engineer. 'Damage caused by the Contractor's

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operations shall be repaired to the satisfaction of the Engineer at no additional cost to the State.

2. *Milling Machines.* Milling machines that are used for concrete removal shall result in the same surface preparation as in *1. Chipping Hammers.* Their use shall be approved by the Engineer.

3. *High Pressure Water Blast.* Hydrodemolition equipment shall meet the requirements of subsection 579-3.04. The edges of the patch shall be sawcut and chip hammered to a slope of approximately 45° in accordance with Paragraph 1, Chipping Hammers. The floor of the patched area shall be water blasted away to produce a minimum patch depth of 2-inches, however, at slabs with top reinforcing, the depth shall extend to an even plane a minimum of 1-inch below the bottom of the upper reinforcing bar mat at all points within the patch.

   Blast cleaning shall follow concrete removal to remove all remaining contaminants or loose chips of concrete.

   Immediately prior to placing the patching material, the area to be patched shall be cleaned of all loose material by vacuum or air blasting. The air used for sand and air blasting shall be free of oil or any other foreign substances that would contaminate the cleaned surfaces. Air compressors shall be equipped with moisture traps. Air blasting shall have a pressure sufficient to remove all loose debris. The Contractor is required, at all times while sand, water or air blasting to provide protection by means of screening, approved by the Engineer, to prevent damage to, or interference with, traffic in adjacent lanes.

   If patching material is not placed during the same working day as when the patch area is prepared, the area shall be reblasted clean, followed by vacuum or air blasting before patching material placement.

   Only when using cement based grouts, prior to placing the patching material, the sides and bottom of the existing concrete , in contact with the patching material, shall be soaked with water. Remove all standing water within the patched area.

   Patching material shall not be placed in wet weather. If, in the opinion of the Engineer, the patching material is damaged, it shall be removed and replaced.

   Temperature Limitations. The rapid setting concrete material shall be placed when the ambient air temperature is within a range of 40° F to 90° F.

   Handling, Placing, and Mixing. The materials shall be mixed in a mortar-type mixer or mixer of such capacity that one batch will completely fill the area(s) to be patched. The mixer(s) shall be inspected and approved by the Engineer prior to use. If water is required, it shall be the first

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material added to the mixer. The moisture content of the aggregate used to extend the yield shall be determined and the amount of mixing water added shall be adjusted accordingly to compensate for the moisture content. The Contractor shall provide a device to accurately measure the amount of water and aggregate. The materials shall be mixed by adding the mixing water into the mixer and then adding the patch material into the mixer. Continue mixing until the material is free of lumps (approximately 3 to 5 minutes) or as per manufacturer's recommendations. Mix as close as possible to the area to be repaired. Do not allow material to build up on equipment and wash equipment periodically with water. Do not retemper the mixed material or use admixtures. Place immediately after mixing, working the material firmly into the sides and bottom, eliminating any air pockets and assuring maximum bond.

If patching material is to be placed at a joint or slab edge, the necessary forms or joint forming material as indicated on the plans or ordered by the Engineer shall be provided. Any forms or joint spacers shall be coated with a material that will not react with the patching material and will not adhere to it.

The patching material shall be placed in one lift, starting at one edge of the repair area and working to the opposite edge. All patches equal to or greater than 2-inches in depth shall be consolidated by internal vibration following Standard Specification Subsection 555-3.04E *"Vibration"* to minimize the possibility of voids in the patch.

Cold Weather Applications. When the ambient air temperature falls, or is expected to fall below 50° F but remains above 40° F during the concrete placement, the following cold weather provisions shall apply:

1. Heat the surrounding concrete until warm to the touch by a method approved by the Engineer;
2. Warm the patch material; and
3. Use approximately 90° F minimum mixing water such that concrete drop temperature range of 50-75° F is achieved.

Finishing. The patching material shall be hand screeded and finished to meet the adjacent elevation, cross slopes, and texture.

Curing. Patching material shall be cured in accordance with the following cure schedule:

Ambient Temperature Time *(during curing time)*	Cure time
Above 64° F to 90° F	1 hour
50° F to 64° F	2 hours
40° F to 49.8° F	3 hours

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Patch material placed under cold weather provisions, when the ambient air temperature is between 40° F to 49.8° F, shall be protected from the cold by installing insulated blankets over the patch area. Patch material cured between 80° F to 90° F shall be covered with continuously wetted burlap during the cure time specified hereinbefore. After the curing is completed, traffic may travel over the patch area.

METHOD OF MEASUREMENT:

Surface Preparation for Rapid Setting Concrete Bridge and Approach Slab Repairs. The quantity to be measured will be the number of square meters of prepared area plane to the surface of the bridge and approach slab.

Furnish and Placement of Rapid Setting Concrete Bridge and Approach Slab Repairs. The quantity to be measured shall be the number of kilograms of dry prepackage component of the rapid setting repair material incorporated into the work.

BASIS OF PAYMENT:

Surface Preparation for Rapid Setting Concrete Bridge and Approach Slab Repairs. The unit price bid per square meter shall include the cost of all labor and equipment necessary, including disposal of the removed material, to complete the surface preparation up to and including blast cleaning. Damage caused by the Contractor's operations shall be repaired at no additional cost to the State.

Furnish and Replacement of Rapid Setting Concrete Bridge and Approach Slab Repairs. The unit price bid per kilogram of dry prepackaged material shall include the cost of all labor, material and equipment necessary to complete the work including, air blasting, vacuuming, forms, and cold weather concreting provisions.

Payment will be made under:

Item No.	Item	Pay Unit
584.07090011	Surface Preparation for Rapid Setting Concrete Bridge and Approach Slab Repairs	Square Feet
584.07090111	Furnish and Placement of Rapid Setting Concrete Bridge and Approach Slab Repairs	Pounds

ITEM 584.14000016 - RAPID HARDENING CONCRETE FOR BRIDGE AND APPROACH SLAB REPAIRS

DESCRIPTION. This work shall consist of excavating loose and deteriorated concrete, exposing and cleaning reinforcing bars, cleaning and preparing the cavity, furnishing and placing the concrete repair material and reopening the surface to traffic one hour after placement of repair material. The contractor shall have the option of using one of the types of repair material listed below.

MATERIALS. The materials used shall meet the requirements of the following subsections:

Coarse Aggregate (703-0204 Crushed Slag shall not be used)	703-02
Rapid Hardening Concrete Repair Material - Normal Weather	701-09
Rapid Hardening Polymer Concrete	721-20
Water	712-01

The aggregate shall be sized as follows, based upon the depth of repair material placement:

Depth of Placement	Gradation
Up to 4 inches	Type CA1 Table 501-2
4 inches or greater	Type CA2 Table 501-2

The following aggregate extension rates by weight of the dry component of the patching material shall be used:

PATCH MATERIAL	AGGREGATE
701-09	60-65% Type CA1 or CA2
721-20	75-80% Type CA1

The quantity of water (if required) added shall be no greater than that required by the patching material manufacturer's instructions. The moisture content of the aggregate shall be determined by the Contractor. The Contractor shall adjust the patching material manufacturer's water content allowing for the aggregate moisture content. This adjustment shall be approved by the Engineer before mixing.

Aggregate used in Rapid Hardening Polymer Concrete shall be completely dry at the time of mixing.

Rapid Hardening Polymer Concrete is flammable. Safety precautions shall be taken to prevent fire and explosion. Protective equipment shall be worn to prevent skin contact.

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CONSTRUCTION DETAILS. The locations to be repaired are indicated on the plans or will be designated by the Engineer. Repairs shall conform to the details shown on the plans or be in accordance with the directions of the Engineer. The area around the spall or other distress will be sounded with a 1 to 2 pound hammer and the perimeter of the area to be patched will be designated by the Engineer. All asphalt concrete, foreign materials of any kind, and unsound concrete shall be removed from the repair area.

All wire mesh reinforcement encountered during concrete removal shall be cut out and disposed of by the contractor. The contractor will not be required to replace wire mesh reinforcement removed from a patch area.

If steel reinforcing bars are encountered during removal of deteriorated concrete, the terms and conditions of subsections 579-1.02 Exposure of Reinforcing Bars and 579-3.02 Reinforcing Bar Exposure shall apply. If reinforcement is encountered and exposed with the 1 inch clearance as called for in subsection 579-1.02B, only CA1 aggregate shall be used to extend the repair material regardless of the total patch depth.

The Contractor has the option of using chipping hammers, a milling machine approved by the Engineer, or high pressure water blast for concrete removal. If Rapid Hardening Polymer Concrete is proposed for use, high pressure water blast is not permitted.

1. Chipping Hammers. The edges of the patch shall be chipped to produce a nearly vertical, intentionally rough sound edge. No undercutting shall be required or permitted. The floor of the patched area shall be chipped away to produce a minimum patch depth of 1 inch at all points within the patch if Rapid Hardening Polymer Concrete is used. Patches that use other materials shall be a minimum of 2 inches deep.

   Chipping hammers that are used shall not damage the concrete that is to remain. Chipping hammers shall weigh not more than 45 pounds with the bit and muffler removed. The hammer shall deliver no more than 1600 blows per minute. The Contractor shall provide the Engineer with information from the hammer manufacturer that these requirements are not exceeded. The air pressure used to power the hammer shall not exceed 100 psi measured at the air compressor. An air pressure gauge in proper working condition shall be provided. Only 3 inch sharp chisel bits shall be used. All bits determined by the Engineer to be dull shall be sharpened or replaced. If the Engineer determines that the Contractor's operations are resulting in damage to concrete that is to remain, the Contractor shall make immediate corrections. These corrections shall include the use of a lighter chipping hammer if so ordered by the Engineer.

2. Milling Machine. Milling machines that are used for concrete removal shall result in the same surface preparation as in 1. Chipping Hammers. Their use shall be approved by the Engineer.

3. High Pressure Water Blast. The edges of the patch shall be blasted to produce a nearly vertical, intentionally rough sound edge. No undercutting shall be required or permitted. the floor of the patched area shall be blasted away to produce the minimum patch thickness required by the type of material, at all points within the patch.

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Water blasters shall have a minimum pressure of 10 ksi when measured at the machine.

Sand blasting shall follow concrete removal to remove any remaining contaminants or loose chips of concrete.
Immediately prior to placing the patching material, the location to be patched shall be cleaned of all loose material by vacuum or air blasting. The air used for sand and air blasting shall be free or oil or any other foreign substances that would contaminate the cleaned surfaces. Air compressors shall be equipped with moisture traps. Air blasting shall have a pressure sufficient to remove all loose debris. The Contractor is required, at all times while sand, water or air blasting to provide protection by means of approved screening to prevent damage to, or interference with traffic in adjacent lanes.

If patching material is not placed during the same working day as when the patch area is prepared, the area shall be resandblasted, followed by vacuum or air blasting before patching material placement.

Patches being repaired with Rapid Hardening Polymer Concrete shall be completely dry, and primed with a compatible primer before placement.

Patching material shall not be placed in wet weather. If, in the opinion of the Engineer, the patching material is damaged, it shall be removed and replaced.

Temperature limitations for placing the rapid Hardening concrete are as follows:

Ambient Temperature Range	Patching Material Type
50° - 85°F	701-09 R.H.C. (Normal Weather)
38° - 85°F	721-20 Rapid Hardening Polymer Concrete

The materials shall be mixed in a mortar-type mixer or mixer of such capacity that one batch will completely fill the location(s) to be repaired. Rapid Hardening Polymer Concrete may be mixed in manufacturer supplied plastic bags or a mortar type mixer. The mixer(s) shall be inspected and approved by the Engineer prior to use. If water is required it shall be the first material placed in the mixer. The moisture content of the aggregate used to extend the yield shall be determined and the quantity of water added shall be adjusted accordingly to compensate for the moisture content. The Contractor shall provide a device to accurately measure the quantity of water and aggregate. Aggregate used with Rapid Hardening Polymer Concrete shall be completely dry. The materials shall be mixed following the manufacturer's directions.

If patching material is to be placed at a joint or slab edge, the necessary forms or joint forming material as indicated on the plans or ordered by the Engineer shall be provided. Any forms or joint spacers shall be coated with a material that will not react with the patching material and will not adhere to it.

The patching material, except Rapid Hardening Polymer Concrete, shall be placed in one lift, starting at one edge of the repair area and working to the opposite edge. Rapid Hardening Polymer Concrete may be placed in lifts. Lifts shall be a minimum of 1 inch. All patches equal to or greater than 2 inches in depth shall be consolidated by internal vibration following Standard Specifications 555-3.04 B “Vibrating” to minimize the possibility of voids in the patch. The patching material shall be hand screeded and finished

ITEM 584.14000016 - RAPID HARDENING CONCRETE FOR BRIDGE AND APPROACH SLAB REPAIRS

to meet the adjacent elevation, cross slopes, and texture. Once placed, no curing procedure is required for any type of patching material; however, it shall be allowed to air dry at least one hour prior to allowing traffic to travel over the patched area.

METHOD OF MEASUREMENT. The work will be measured as the number of pounds of R.H.C. material actually incorporated into the work. Measurement will be taken in accordance with the following:

R.H.C. Material	Measurement
Container empty	Weight shown on container
Container open: more than one-half the material used	Weight shown on container
Container open: one-half, or less than one-half, the material used	One-half the weight shown on the container

No container shall be opened without prior authorization from the Engineer. No unopened container will be measured. Containers opened without prior Engineer's authorization will be deemed to be unopened.

BASIS OF PAYMENT. The unit price per pound shall include the cost of all labor, equipment and materials necessary, including disposal of the removed material, to complete the work. This shall include, but not be limited to, surface preparation, sand blasting, air blasting, vacuuming, priming of the surface if necessary, and the mixing and placing of the repair material. Any forms necessary for the completion of this work shall be included in the cost for this item.

ITEM 589.5003XX08 - REMOVE, STORE, AND REINSTALL EXISTING STRUCTURAL STEEL

DESCRIPTION:

The work shall consist of removal, storage, and reinstallation of existing structural steel where indicated on the Contract Documents, including the removal of existing rivets where necessary, and the installation of high strength bolts, nuts, and washers.

MATERIALS:

Fasteners shall meet the requirements of the following Subsection of 700 Materials:

High Strength Bolts, Nuts, and Washers	715-14

CONSTRUCTION DETAILS:

Prior to the beginning of disassembly work, the contractor shall document the condition of the existing steel. The Engineer shall verify and certify the accuracy of the contractor's documents. After the verification and certification, the Engineer shall be supplied with two certified copies of this documentation. All damaged, or otherwise unacceptable steel conditions, which are not so documented, shall be the contractor's sole responsibility to repair to the satisfaction of the Engineer at no additional cost to the State.

All existing steel designated for removal, storage, and reinstallation shall be carefully match marked prior to dismantling.

Disassembly work shall be performed in accordance with the requirements of Section 589-3, modified as follows:

> All steel shall be stored in accordance with the requirements of the New York State Steel Construction Manual, Subsection 1401.

Reinstallation work shall performed in accordance with the requirements of Section 14 and Section 10 of the New York State Steel Construction Manual, with modifications to the various Subsection as noted below:

1401	Not applicable
1405	Certified copies of the test results are not required.

All assembly connections shall be made by means of high strength bolts, unless otherwise directed by the plans. Any necessary welding work shall be pre-approved by the DCES and shall meet the requirements of the New York State Steel Construction Manual.

METHOD OF MEASUREMENT:

Measurement will be taken as each unit of existing steel, stored, and reinstalled.

ITEM 589.5003XX08 - REMOVE, STORE, AND REINSTALL EXISTING STRUCTURAL STEEL

BASIS OF PAYMENT

The unit price bid per each unit shall include the cost of all labor, materials, and equipment necessary to complete the work.

Progress payments will be made according to the following schedule:

1. Disassembly and Storage - Sixty percent of the measured quantity will be paid for after the steel has been stored.

2. Reinstallation - The remainder of the measured quantity will be paid for after the steel has been reinstalled as required.

This is a serialized pay item. See Section 101-53.

ITEM 613.06000010 -- Environmental Monitor (Threatened/Endangered Species)

DESCRIPTION:
This work shall consist of the monitoring for and reporting threatened/endangered fauna and recommending work modifications as necessary to protect any observed nesting birds and/or other designated fauna within the project limits. Additionally the work shall consist of surveying the project limits for the presence of threatened/endangered flora and if discovered, recommending work modifications as necessary to protect the plant(s).

Specific species and related surveying, monitoring, scheduling and reporting requirements are described in the Special Note entitled "Environmental Monitor (Threatened/Endangered Species)".

QUALIFICATIONS OF SPECIALIST:
The Contractor shall retain the services of an "Environmental Monitor" – a competent, suitably trained and experienced field biologist with specific knowledge and experience in the biology of all species to be monitored. This includes the ability to identify the designated faunal species in immature and adult stages, to identify disturbance behavior and to recognize the size differences or other distinguishing characteristics differentiating female and male of the species. The biologist must also be able to field-identify the designated floral species and have knowledge of their habitat requirements.

Prior to performing this work, the Contractor shall submit a curriculum vitae or other summary of the candidate's education and experience to the Engineer-in-Charge (EIC) for review and approval by the New York State Department of Environmental Conservation (NYSDEC) as per the approved permit for the project or as otherwise described in the Special Note entitled "Environmental Monitor (Threatened/Endangered Species)".

MATERIALS:
The Contractor shall provide all necessary equipment and logistical support for the Environmental Monitor to have safe access to all required locations and to enable him/her to perform the required work. All work over water shall be consistent with OSHA standards Subpart 1926.106 – Working over or near Water. The Environmental Monitor must have a suitable spotting scope/tripod and binoculars available to them.

CONSTRUCTION DETAILS:
The work shall be performed in accordance with the requirements of the Special Note entitled "Environmental Monitor (Threatened/Endangered Species)"

All Projects:
If designated faunal species are observed, the Environmental Monitor shall determine whether the work activities and/or proximity to the nest or other sensitive locations are disturbing the birds' nesting efforts or sensitive movements and activities of other designated fauna. The Environmental Monitor shall then immediately inform the EIC who, after any necessary coordination will then order the Contractor to either suspend or modify activities to prevent further disturbance to the

ITEM 613.06000010 -- Environmental Monitor (Threatened/Endangered Species)

nesting birds or other fauna. If designated floral species are encountered, the Environmental Monitor shall inform the EIC who, after any necessary coordination, will then order the Contractor to either suspend or modify activities to prevent disturbing the plant.

The Environmental Monitor shall submit weekly electronic reports (by email) to the EIC describing the monitoring activities conducted within the project limits. The reports shall contain detailed maps and/or aerial photos of the inspection/survey areas indicating the precise locations of the birds, other fauna and/or plants along with details including dates/times, sex, approximate age of juveniles, distinguishing marks, behavior, etc. The reports shall be submitted by the Monday following each week of monitoring.

METHOD OF MEASUREMENT:

This work shall be measured by the number of days monitoring inspections/surveys are conducted on site, measured to the nearest half a day. No additional allowance will be made for overtime or travel time. If the EIC directs, based on project or permit requirements, more than one Environmental Monitor to be used on any given day, the work of each Monitor will be counted as one day for payment purposes. For instance: if three (3) locations each require an Environmental Monitor full-time on a given day and the EIC directs three Environmental Monitors to be present, the work that day will be measured as three (3) days.

BASIS OF PAYMENT:

The unit price bid per day shall include the cost of furnishing all labor and equipment required for an Environmental Monitor to perform the inspections, transect surveys, and any other field work and to prepare and submit weekly reports. Cost of travel for the Environmental Monitor(s) shall be part of the bid price.

ITEM 691.03000020 – TRAINING REQUIREMENTS

DESCRIPTION

This item of work shall consist of the meaningful and effective training of one or more apprentices/trainees leading to their qualification as journeyworkers in trades for the highway construction industry. The statutory authority for training requirements is described in §102-11 *Equal Employment Opportunity Requirements*. This specification establishes the specific requirements for a Contractor to provide training pursuant to 23 CFR 230.111 as part of Equal Employment Opportunity responsibilities. This specification, with referenced Standard Specifications, constitutes "Training Special Provisions" (TSP) pursuant to 23 CFR 230.111. The TSP supercedes any conflicting portions of Form FHWA 1273 *Required Contract Provisions, Federal Aid Construction Contracts* found in contract proposals.

MATERIALS

None Specified.

CONSTRUCTION DETAILS

GENERAL. The objective of these training requirements is to provide training opportunities to minorities, women and disadvantaged persons for the following reasons:

1. To address the current under-representation of minorities and women in skilled trades, and;
2. To maintain a pool of qualified minorities, women and disadvantaged persons to compete for those journeyworker positions which are created as others leave the workforce.

Disadvantaged means a person who is either a) a member of a family that receives public assistance, or b) a member of a family whose income during the previous six (6) months, on an annualized basis, was such that the family qualified for public assistance, or whose income was at or below either the poverty level or 70% of the lower living standard income (LLSI) level for the person's county of residence.

The Contractor shall make every effort to recruit and hire minority, women and disadvantaged apprentices/trainees to the extent that such persons are available within a reasonable area of recruitment. Such training commitment is not intended to, and shall not be used to, discriminate against any applicant for training, whether a member of a minority group or not. Apprentices/trainees shall be employed and offered meaningful and effective training opportunities. Meaningful and effective training is defined as occurring when contract work provides a realistic and practical opportunity of reasonable duration for the apprentice/trainee to complete elements of the apprenticeship/OJT program in order to achieve journeyworker status.

TRAINING PROGRAMS. In accordance with §102-10D *Training*, an apprentice is defined as an individual who is enrolled in an apprenticeship training program that is registered with the NYS Department of Labor, and a trainee is defined as an individual who is enrolled in an On-the-Job Training (OJT) program that is approved by the Federal Highway Administration (FHWA). NYSDOT administers the trainee training programs.

Although the terms apprentices and trainees are generally used interchangeably in this specification, in Regions 1, 2, 3, 4, 5, 8, 10 and 11, the Department will only approve the use of apprentices and apprenticeship training programs, where available, in fulfillment of these requirements. In Regions 6, 7 and 9, the Department will approve the use of either apprenticeship or FHWA approved OJT trainee programs.

Prospective bidders can obtain additional information about apprentice programs from the Director of Apprenticeship Training Programs, NYS Department of Labor, State Office Building Campus, Building 12, Rm 436, Albany, NY 12240 ; (518) 457-6820; fax (518) 457-7154; atco@labor.state.ny.us.

ITEM 691.03000020 – TRAINING REQUIREMENTS

Approval to use a training program shall be obtained from the Department prior to commencing work involving the trade(s) covered by the program.

APPRENTICES/TRAINEES.

Recruitment. The Contractor shall decide who is hired as an apprentice/trainee. Such apprentice/trainee shall be enrolled in a registered apprenticeship or OJT program approved by the Department and satisfy the requirements under *Work History*.

Prior to engaging in the recruitment of new apprentice/trainees, the Contractor shall employ apprentices/trainees who are partially trained, if available, in order to facilitate completion of their apprenticeship/OJT program. Training and upgrading of minorities and women toward journeyworker status is a primary objective of the TSP requirements.

The Contractor shall make every effort to enroll minority and women apprentice/trainees (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women apprentice/trainees, such as the Department's OJT supportive services program) to the extent that such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that have been taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with the TSP requirements.

Work History. The Contractor shall not propose or use any person under this item if such person has successfully completed a training program providing journeyworker status in the same trade or work classification as will be used for training under this contract. The Contractor shall not use or propose a person who has been gainfully employed as a journeyworker in that trade by virtue of informal on-the-job training or otherwise. The Contractor shall ascertain, before training a person and before requesting payment therefore, whether the person qualifies. The Contractor shall include appropriate questions on employee application forms and shall check the personal references of an applicant for a position in order to ensure that the person is qualified for training. The Contractor shall maintain records of these findings and provide them to the Department upon request.

Termination. An apprentice/trainee may be terminated at any time during training for: excessive absenteeism; lack of punctuality; accident-proneness; lack of interest; poor attitude; and continued failure to behave in a business-like manner. However, termination will not occur without:

1. Documented counseling by the Contractor's Trainer about the reason(s) for termination; and
2. Documented efforts by the Contractor's Trainer to resolve the problem; and
3. Documented notification to the Engineer and Regional Compliance Specialist about the problem; and
4. Written notification of intent to terminate to the Engineer and the Regional Compliance Specialist stating the reason(s) therefore; and
5. An opportunity for Department representatives to discuss the impending termination with the Contractor in order to ensure compliance with Steps 1 through 4 above.

REQUIRED TRAINING EFFORT.

CHART A
NUMBER OF APPRENTICE/TRAINEE FTEs REQUIRED

Contract Bid Amount	AA Component	RGN Component	Total (AA + RGN)
< $15M	1	1	2
$15M to < $30M	2	2	4
≥ $30M	3	3	6

Full-Time Equivalents (FTEs). The number of apprentice/trainee full-time equivalents (FTEs) the Contractor is required to train is identified in Chart A. For the purposes of this specification, FTEs are used to designate the desired and expected level of training effort, in terms of full-time workers employed for the duration of the contract. Although the value of one FTE is not fixed, a general estimation of expected effort is approximately 1,000+ hours of work per construction season for upstate Regions and 2,000+ hours of work per construction season for downstate Regions. One FTE could be achieved with one individual working for the contract duration or with multiple individuals working full-time on a daily basis for portions of the contract duration so long as they are collectively employed for the equivalent amount of time as one full-time employee working for the entire duration of the contract. Accordingly, the Contractor may propose a different number of trainees/apprentices and a different duration of their training activities to achieve the required number of FTEs, but the proposal is subject to the approval of the Department.

Affirmative Action (AA) Component. The affirmative action (AA) component identifies locations and trades with programmatic under-representation of minorities and/or females as journeyworkers. The Contractor shall provide the appropriate number of apprentices/trainees FTEs to fulfill the affirmative action (AA) requirements of this specification in the specified trade(s) and classification(s) (minority or female). The number of AA apprentice/trainee FTEs required are identified in *Chart A* and the required trade/classification targets for each NYSDOT Region are identified in *Chart B.*

CHART B
AFFIRMATIVE ACTION TARGETS

TRADE	NYSDOT REGION										
1	1	2	3	4	5	6	7	8	9	10	11
Laborer (Female)										●	
Laborer (Minority)				●							●
Equip. Operator (Female)	●	●	●	●		●		●	●		
Equip. Operator (Minority)		●	●	●	●			●		●	●
Iron Worker (Female)	●				●			●		●	●
Iron Worker (Minority)			●					●		●	●
Carpenter (Female)	●		●				●				●
Carpenter (Minority)	●		●	●				●		●	●
Mason (Female)	●				●						
Mason (Minority)					●						
Painter (Female)			●						●	●	●
Painter (Minority)											●
Electrician (Female)									●		
Electrician (Minority)			●	●				●			●

Race/Gender Neutral (RGN) Component. The Contractor shall also provide the appropriate number of apprentices/trainees FTEs to fulfill the race/gender neutral (RGN) requirements in accordance with *Chart* A. The RGN component allows the Contractor to hire apprentices without imposed race, gender or specific trade requirements. Training shall be provided to anyone (minorities/non-minorities, males/females, and disadvantaged/non-disadvantaged persons) at the Contractor's discretion.

Although trades are not designated for the RGN apprentices/trainees, training should be provided in the construction trades rather than in clerical/administrative positions. Training is permissible, by Department authorized exception only, in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. On a voluntary basis, the Contractor has the option to help address areas with programmatic under-representations, by hiring the RGN apprentices/trainees to the designated areas outlined in *Chart B – Affirmative Action Targets*.

Implementation and Distribution. The number of apprentices/trainees FTEs shall be distributed among the trades based upon the AA component requirements, maximum opportunity for work, required journeyworker/apprentice ratios outlined in the prevailing wage rate schedule, distribution of multiple persons among multiple trades, the Contractor's needs and the availability of apprentices/trainees within a reasonable area of recruitment.

When multiple apprentices/trainees are required, effort shall be made to hire apprentices/trainees whom are at a variety of different stages in their training programs (first year, third year, etc.) Where feasible, 25 percent of apprentices/trainees shall be in their first year of apprenticeship or training.
The Contractor may allow apprentices/trainees to be trained by a subcontractor. However, the Contractor retains the primary responsibility to meet the TSP requirements and compensation is the same.

Compliance. A Contractor will have fulfilled the primary responsibilities under this Training Special Provision if acceptable training is provided to the number of apprentice/trainee FTEs specified or good faith efforts to attempt to provide the required training is demonstrated consistently throughout the duration of the contract.

Training Coordinator. The Contractor shall designate one individual who will function as the training coordinator and act as the contact person for training related concerns. The training coordinator should be someone that has regular dealings and familiarity with the actual training direction and guidance being provided. As conditions and apprentices/trainees may change throughout the duration of the contract, notify the Department if at any point a new training coordinator is designated.

TSP PROCESS.
Prior to Letting. Bidders are advised that there are a number of procedural steps in the approval of a training (apprenticeship or OJT) program, including preparation of an application, review, and resolution of questions and comments. Approval of a training program is not guaranteed, and may take 30 to 60 days. It is highly recommended to have an approved apprenticeship or OJT trainee program prior to bidding.

Within 7 Days After Letting. As a requirement of the contract award process, the apparent low bidder shall submit a TSP Letter to the Department within 7 work days after letting, signed and dated by an authorized company officer. A recommended form, which includes the mailing address, for the TSP Letter is available from the Department's website at:
https://www.nysdot.gov/main/business-center/contractors/construction-division/forms-manuals-computer-applications-general-information/civil-rights

The minimum content requirements for the TSP Letter include:

- A statement acknowledging the TSP requirements and a pledge to make every effort to meet them
- Recognition of the number of apprentices required under the AA component, under the RGN component, and the total
- Recognition of the Region–specific affirmative action apprentice/trainee targets by trade and

candidate classification (ex., female equipment operators, minority electricians, etc.)
- Identification of how the TSP requirements will be met (ex., union-sponsored apprentice program, contractor-sponsored apprentice program or OJT program)
- Status of program/application (if pending, attach a copy of the letter from NYSDOL verifying receipt of the application, for Department verification and consultation with NYSDOL.)
- Contact information: contact person, telephone number, E-mail address and mailing address.

At the Pre-Construction Meeting. The Contractor shall submit a conceptual plan for how they will fulfill the training requirements on the contract. They shall identify anticipated contract work suitable for apprentices/trainees, any timeline/scheduling issues, anticipated sources for apprentices/trainees, steps taken to date to comply with the training requirements, and how they will address the development of a training plan for each apprentice/trainee.

Within 90 Days of Award. The Contractor shall submit a formalized training plan for each of the apprentices/trainees. All coordination with the Engineer and the Regional Compliance Specialist (RCS) regarding the training plan should be completed at this point. The training plan may be adjusted throughout the duration of the contract as necessary. Written requests to submit the plan, or portions of the plan, at a specified latter date will be considered depending on the reason for the request. The cost estimate shall be submitted within 90 calendar days of the contract award date regardless of whether or not the training plan is allowed to be submitted at a latter date.

The minimum content requirements for the training plan(s) include:
- Name of the apprentice/trainee, trade, starting level (i.e., year of apprenticeship) and which TSP requirement (AA or RGN) the candidate is fulfilling.
- Apprentice/trainee projected start date, projected end date and the reason for ending the training (e.g., training program completed, no remaining training opportunities, contract completion, etc.).
- An outline of the training program requirements the candidate has already completed and the requirements which the candidate still has left to complete. Provide the associated number of hours for each requirement. List classroom and on-site training requirements separately.
- Total number of on-site (non-classroom) hours left to complete the training program.
- Projection of the hours and components of the remaining training program requirements which the candidate will be able to accomplish on the contract.
- A cost estimate for compensation which shows how the amount was calculated.
- Any known outside factors that might affect the training plan, such as if the apprentice/trainee will be working on other contracts or there may be time constraints of the apprentice (ex., planned future reassignment, leave to attending school, moving/relocating, etc.).
- Copies of the NYSDOL Form AT 14 (blue book), or acceptable equivalent, for each apprentice shall be made available.
- A copy of NYSDOL form AT 401 – *Apprenticeship Agreement/Documentation Form*.

Monthly Training Progress Report. The Contractor shall submit Form AAP 26 - *Monthly Training Progress Report* whenever an apprentice/trainee employed pursuant to this item begins work on a contract and monthly thereafter. In addition to each Monthly Training Progress Report, the Contractor shall provide the Engineer a summary of hours required to complete the various work elements of the training program, hours completed this period, and hours completed to date. This summary shall be provided in sufficient detail to allow the Engineer to determine whether the hours in the previous period are qualified hours under this pay item.

Periodic Auditing / End of Service. Periodically copies of the training program and the NYSDOL Form AT 14 (blue book) may be required for auditing purposes and verification of the training. Whenever an apprentice/trainee ceases to be employed on a contract, a copy of their NYSDOL Form AT 14 (blue book) shall be provided.

WAIVER REQUEST. A request for a waiver of all or a portion of the TSP requirements may be submitted based on unusual circumstances which make the TSP requirements impractical or unduly burdensome to complete. The TSP requirements may be reduced or completely waived if the Contractor can clearly present a case for the TSP waiver (ex., no reasonable training opportunities will exist, lack of available apprentices/trainees, lack of available work for apprentices/trainees based on apprentice-to-journeyworker ratio restrictions). A TSP waiver request may be submitted at any point in the process after the contract letting date.

TSP waiver requests made within 7 work days after contract letting may be submitted in lieu of the TSP Letter. The TSP waiver request should provide a detailed explanation for the request, steps taken to try to comply, and contact person information (name, telephone number, E-mail address).

If the TSP waiver request is for elimination of all apprentice/trainee requirements and the TSP waiver is approved, no further TSP submissions are required. If the TSP waiver request is for a reduction or an alteration to the requirements and it is approved the Contractor shall submit a TSP Letter with the authorized revisions within 3 work days of notification of the TSP waiver request being approved.
In the event that a TSP waiver request is not approved, the Contractor shall submit a TSP Letter within 3 work days of notification of the TSP waiver request being declined.

The pre-award review of the TSP waiver request will focus on the apparent low bidder's good faith efforts to comply with these requirements, and will not eliminate the detailed review process of the contractor's workforce planning efforts and TSP compliance efforts after contract award.

TSP waivers are not necessarily permanent, particularly if based on available workforce reasons. Throughout the contract duration, the Contractor shall continue to try to meet the original requirements under this pay item. Whenever there are changes in the construction schedule, scope of work, availability of apprentices/trainees, or any other factor that might affect the ability to hire apprentices/trainees to reasonable training opportunities, any TSP waivers shall be reevaluated. The Contractor is required to bring any such factors to the attention of the Department in a timely manner.

TRAINING DURATION.
Start-Up. An apprentice/trainee shall begin training as soon as feasible in trade related work and remain on the contract as long as training opportunities exist in the trade, until completion of the training program or until completion of the contract.

After approval of an apprentice/trainee, the individual shall be employed in the designated trade in accordance with the currently approved Form AAP 35 *Workforce Participation Plan* to the extent that training opportunities exist in the contract work. At the time an apprentice/trainee reports to the Contractor for training under this item, the Training Coordinator shall notify the Engineer to ensure that appropriate records are kept.

Throughout Contract Duration. The Contractor is expected to provide maximum opportunity to the apprentice/trainee for completion of their apprenticeship/OJT program. The Contractor shall monitor the apprentice/trainee's progress, paying particular attention to completion of work elements within the training program. When a work element of the training program is completed, the Contractor shall rotate the apprentice/trainee to other work processes to the extent that training opportunities exist. Should no such training opportunities exist, the apprentice/trainee may continue to work as long as there is work. However any work not in the training program or beyond the number of hours indicated in the training program for each work element will not qualify for payment under this pay item. This continued work will not make the apprentice/trainee ineligible for continued future training in the trade.

Retention. The Contractor is expected to retain, as a journeyworker, an apprentice/trainee that completes their training program and attains journeyworker status prior to contract completion, provided there is contract work remaining. Continued work by a journeyworker will not qualify for payment under this item.

Maintaining Compliance with the FTE Requirement. The Contactor is responsible for maintaining compliance with the required number of apprentice/trainee FTEs for the duration of the contract. If the number of employed TSP apprentice/trainee FTEs falls below the required number (e.g., apprentice/trainee attains journeyworker status, leave the contract, etc.) and there are substantial training opportunities remaining, the Contractor is required to make every effort to recruit and hire additional apprentices/trainees. Although, consideration to waive the remaining training requirements will be given when there is limited contract work remaining or when, due to the retention of TSP apprentices/trainees who have reached journeyworker status, available employment opportunities are limited.

If at any point during the contract the amount of training being accomplished is significantly below the projected amount stated in the training plan(s), the Contractor is required to adjust their training efforts such that the approved number of hours of training in the training plan(s) is achieved by contract completion.

COMPENSATION. This specification provides for partial compensation to the contractor towards the cost of managing and operating the training program(s). Compensation is not intended as reimbursement towards the apprentices' wages, but rather as general compensation for administrating the training program along with the loss of productivity on the behalf of the journeyworker(s) providing the training, guidance and supervision.

A combined negotiated amount for partial compensation of all the TSP apprenticeship/OJT programs will be added to the contract by order-on-contract. During the contract duration, revisions to the training plan(s) can be submitted. If a revised training plan, including the cost estimate, is approved then the previously negotiated amount can be adjusted by order-on-contract.

The Contractor shall attach to each Form AAP 26 *Monthly Training Progress Report*, a monthly summary of hours of qualifying training for each apprentice/trainee that shows the number of hours trained each day of the progress period by training program work element.

Only training hours verified and approved of by the Engineer or his designee will be considered as qualifying training. Any hours of work performed which are not in the training program or are beyond the number of hours indicated for each work element in the training program will not qualify for payment under this pay item. Off-site training or training performed at other work sites does not qualify for compensation. Classroom training hours do not qualify for compensation.

ITEM 691.03000020 – TRAINING REQUIREMENTS

The total verified hours of training provided during the month will be used to determine the monthly payment due. Regardless of the amount approved for the pay item, payments will be made only for the number qualifying hours of training accomplished.

Payment for training under the affirmative action component of this specification is contingent upon the Contractor fulfilling or demonstrating satisfactory good faith efforts to fulfill the corresponding equal employment opportunity (EEO) goals in accordance with §102-11 *Equal Employment Opportunity Requirements.* [*Example Situation #1* - For contracts with a minority EEO goal and a female EEO goal: If achieve the minority EEO goal but not the female EEO goal, then compensation may still be allowed for a minority TSP AA apprentice/trainee but not for a female TSP AA apprentice/trainee. *Example Situation #2*
- For contracts with trade specific minority/female EEO goals (i.e., applicable in New York City): If achieve the minority equipment operator EEO goal but not the minority iron worker EEO goal, then compensation may still be allowed for a minority equipment operator TSP AA apprentice/trainee but not for a minority iron worker TSP AA apprentice/trainee.]

Any apprentices/trainees hired towards attempting to attain fulfillment of the EEO goals do not qualify for payment under this specification nor are they considered as TSP apprentices/trainees (i.e., still required to hire additional apprentices/trainees under this specification's requirements).

Payment for training under the race/gender neutral component of this specification is contingent upon the Contractor fulfilling or demonstrating satisfactory good faith efforts to fulfill all of the equal employment opportunity (EEO) goals in accordance with §102-11 *Equal Employment Opportunity Requirements* and fulfilling or demonstrating satisfactory good faith efforts to fulfill the affirmative action component.

METHOD OF MEASUREMENT

This work will be measured on a Dollars-Cents basis. The amount shown in the proposal is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded, and the original price will be used to determine the total amount bid.

BASIS OF PAYMENT

Compensation towards the training program for each apprentice/trainee will be made as such:

= (0.35) x (Base Journeyworker Prevailing Wage Rate) x (Hours of Qualifying Training Accomplished)

No adjustments to the base rate shall be allowed, such as for: fringes/supplemental benefits, premium rates (overtime, holiday, etc.), worker's compensation insurance, FICA, state or federal unemployment insurance, commercial general liability (CGL) insurance, etc. When determining compensation, use the prevailing wage rate that was current at the time the training was provided.

Qualified training time will include only verified training properly completed and accounted for, including only those hours the apprentice/trainee is actually receiving on-site training in the work elements included in his/her approved apprenticeship/OJT program. Off-site or related classroom training will not be considered as qualifying training time under this item.

PREVAILING WAGE RATES

NOTE: This form was developed for repetitive use throughout all contract proposals and may identify items not applicable to this specific project.

D262172
SPECIAL NOTE
STATE PREVAILING WAGE RATES

The New York State Department of Labor (NYSDOL) has issued a project-specific prevailing wage rate schedule for this Contract. The New York State Labor Law requires the Contractor and all subcontractors to ensure that all workers employed in the performance of a public work contract are paid not less than the prevailing wage rate and supplemental (fringe) benefits in the locality where the work is performed.

The project-specific prevailing wage rate schedule, together with all updates and amendments, is incorporated by reference in this Contract, and made a part hereof, as though fully set forth herein. The schedule may be accessed by visiting the NYSDOL website, navigating to the appropriate web page for prevailing wages, and entering the Prevailing Rate Case Number (PRC#). The PRC# is found on NYSDOL Form PW-200, the following page in this Contract Proposal. The project-specific prevailing wage rate schedule and all wage rate amendments are annexed electronically through the following link:

www.labor.ny.gov

It is the obligation of the Contractor and all subcontractors to obtain all updated prevailing wage rate schedules and to pay all workers in accordance with the periodic wage rate schedule updates issued by the NYSDOL. Any changes or clarifications of labor classifications, and information on the applicability of particular prevailing wage rates, must be obtained from the Office of the Director of the Bureau of Public Work at the New York State Department of Labor.

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D262172

Andrew M. Cuomo, Governor

Peter M. Rivera, Commissioner

NYS DOT

Anthony Chiffolo, CE2
NYSDOT
POD 23
50 Wolf Road
Albany NY 12232

Schedule Year	2012 through 2013
Date Requested	11/15/2012
PRC#	2012009534

Location	SH RMC 66-1
Project ID#	D262172
Project Type	Bridge Rehabilitation. PIN 0017.65

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2012 through June 2013. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.state.ny.us. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12240

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission: a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract MUST obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule MUST be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion online.

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

There are very few exceptions to this rule. Complete information regarding these exceptions is available on the "4 Day / 10 Hour Work Schedule" form (PW 30R).

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule form the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12240; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.state.ny.us.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is REQUIRED to provide complete copies to all prime contractors who in turn MUST, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.state.ny.us.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.state.ny.us.

Payrolls and Payroll Records

Every contractor and subcontractor MUST keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. Payrolls must be maintained for at least three (3) years from the project's date of completion. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, by are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed $100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds $25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The "Public Work Project" notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers. compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers. Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12240 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of $50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is for each hour worked, some classifications require the payment or provision of supplements for each hour paid (including paid holidays on which no work is performed) and/or may require supplements to be paid or provided at a premium rate for premium hours worked.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.state.ny.us) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2

Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12240

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-775-3568	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4904
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

ESTIMATE OF QUANTITIES

NOTE: This form was developed for repetitive use throughout all contract proposals and may identify items not applicable to this specific project.

488 QUANTITY SHEET SUMMARY FOR PROPOSAL **D262172**

CONTRACT ID: D262172 PROJECT(S): 001765

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	209.140201	SEDIMENT TRAP, SAND BAG - TEMPORARY	EACH	122.000
0001	402.25020018	SAWING AND SEALING JOINTS IN NEW HOT MIX ASPHALT OVER	LF	400.000
0001	402.90710210	F1 WATERPROOFING BRIDGE DECK HOT MIX ASPHALT (HMA) OV	TON	733.000
0001	407.0102	DILUTED TACK COAT	GAL	1954.000
0001	490.17010010	PRODUCTION COLD MICRO MILLING	SY	13022.000
0001	520.09000010	SAW CUTTING ASPHALT CONCRETE	LF	1300.000
0001	564.510001	STRUCTURAL STEEL	LB	28600.000
0001	564.510002	STRUCTURAL STEEL	LB	4400.000
0001	564.510003	STRUCTURAL STEEL	LB	21000.000
0001	564.510004	STRUCTURAL STEEL	LB	25300.000
0001	564.510005	STRUCTURAL STEEL	LB	6800.000
0001	564.510006	STRUCTURAL STEEL	LB	400.000
0001	564.510007	STRUCTURAL STEEL	LB	250.000
0001	564.510008	STRUCTURAL STEEL	LB	200.000
0001	564.510009	STRUCTURAL STEEL	LB	700.000
0001	564.510010	STRUCTURAL STEEL	LB	2500.000
0001	564.510011	STRUCTURAL STEEL	LB	14700.000
0001	564.510012	STRUCTURAL STEEL	LB	16300.000
0001	564.510013	STRUCTURAL STEEL	LB	1400.000
0001	564.510014	STRUCTURAL STEEL	LB	4300.000
0001	564.510015	STRUCTURAL STEEL	LB	1100.000

QUANTITY SHEET SUMMARY FOR PROPOSAL D262172

CONTRACT ID: D262172 PROJECT(S): 001765

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	564.510016	STRUCTURAL STEEL	LB	350.000
0001	564.510017	STRUCTURAL STEEL	LB	800.000
0001	564.510018	STRUCTURAL STEEL	LB	350.000
0001	570.01	LEAD EXPOSURE CONTROL PLAN	LS	1.000
0001	570.02	MEDICAL TESTING	DC	2500.000
0001	570.03	PERSONAL EXPOSURE MONITORING SAMPLE ANALYSIS	DC	1000.000
0001	570.04	DECONTAMINATION FACILITIES	CW	52.000
0001	570.150001	CLASS A CONTAINMENT FOR PAINT REMOVAL	LS	1.000
0001	570.150002	CLASS A CONTAINMENT FOR PAINT REMOVAL	LS	1.000
0001	571.03	DISPOSAL OF HAZARDOUS PAINT WASTE CONTAINING LEAD	LB	206400.000
0001	573.010001	STRUCTURAL STEEL PAINTING FIELD APPLIED, TOTAL REMOVA	LS	1.000
0001	573.010002	STRUCTURAL STEEL PAINTING FIELD APPLIED, TOTAL REMOVA	LS	1.000
0001	584.07090011	SURFACE PREPARATION FOR RAPID SETTING CONCRETE BRIDGE	SF	500.000
0001	584.14000016	RAPID HARDENING CONCRETE FOR BRIDGE AND APPROACH SLAB	LB	17188.000
0001	586.05	REMOVAL OF RIVETS - REPLACEMENT WITH HIGH STRENGTH BO	EACH	3400.000
0001	586.10	FIELD DRILL HOLES IN EXISTING STRUCTURAL STEEL	EACH	9426.000
0001	589.50030008	REMOVE, STORE AND REINSTALL EXISTING STRUCTURAL STEEL	EACH	7.000
0001	589.520001	REMOVAL OF EXISTING STEEL	EACH	52.000
0001	589.520002	REMOVAL OF EXISTING STEEL	EACH	42.000
0001	589.520003	REMOVAL OF EXISTING STEEL	EACH	9.000
0001	589.520004	REMOVAL OF EXISTING STEEL	EACH	1.000

490 QUANTITY SHEET SUMMARY FOR PROPOSAL **D262172**

CONTRACT ID: D262172 PROJECT(S): 001765

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	589.520005	REMOVAL OF EXISTING STEEL	EACH	3.000
0001	589.520006	REMOVAL OF EXISTING STEEL	EACH	1.000
0001	589.520007	REMOVAL OF EXISTING STEEL	EACH	13.000
0001	589.520008	REMOVAL OF EXISTING STEEL	EACH	4.000
0001	589.520009	REMOVAL OF EXISTING STEEL	EACH	1.000
0001	589.520010	REMOVAL OF EXISTING STEEL	EACH	1.000
0001	613.06000010	ENVIRONMENTAL MONITOR (THREATENED/ENDANGERED SPECIES)	DAY	168.000
0001	619.01	BASIC WORK ZONE TRAFFIC CONTROL	LS	1.000
0001	619.110202	PORTABLE, VARIABLE MESSAGE SIGN (PVMS) (LED)(CELLULAR	EACH	2.000
0001	619.26	PAVEMENT PATCHING, WINTER	CY	10.000
0001	633.11	CLEANING EXISTING PAVEMENT AND/OR SHOULDERS	SY	18689.000
0001	633.13	CLEANING, SEALING AND/OR FILLING JOINTS	LF	400.000
0001	637.13	ENGINEER'S FIELD OFFICE - TYPE 3	MNTH	32.000
0001	637.34	OFFICE TECHNOLOGY AND SUPPLIES	DC	4000.000
0001	637.35	PARTNERING WORKSHOP	DC	5000.000
0001	637.36	CONSTRUCTION TESTING SUPPLIES - CONSUMABLES	DC	100.000
0001	685.01	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 15 MILS	LF	8500.000
0001	685.02	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES-15 MILS	LF	8500.000
0001	691.03000020	TRAINING REQUIREMENTS	DC	267000.000
0001	697.03	FIELD CHANGE PAYMENT	DC	810000.000
0001	698.04	ASPHALT PRICE ADJUSTMENT	DC	5100.000

QUANTITY SHEET SUMMARY FOR PROPOSAL D262172 491

CONTRACT ID: D262172 PROJECT(S): 001765

CONTRACTOR :_____

SEC NUM	ITEM NUMBER	DESCRIPTION	UNIT	QUANTITY
0001	698.05	FUEL PRICE ADJUSTMENT	DC	420.000
0001	698.06	STEEL/IRON PRICE ADJUSTMENT	DC	100.000
0001	699.040001	MOBILIZATION	LS	1.000