

ITEM 18502.3501 M - PORTLAND CEMENT TREATED PERMEABLE BASE

ITEM 18502.36RC M - PORTLAND CEMENT CONCRETE (PCC) PLACEMENT FOR FULL-DEPTH PAVEMENT REPAIRS

ITEM 18502.3701 M - TRANSVERSE JOINTS

ITEM 18502.3801 M - LONGITUDINAL JOINTS

DESCRIPTION. Place Class C, Class F, or High-Early-Strength (HES) PCC as indicated in the contract documents in a previously prepared full-depth repair area.

MATERIALS AND EQUIPMENT.

Portland Cement Concrete (Class C and Class F)	501
High-Early-Strength (HES) Concrete	502-2.02
Portland Cement Treated Permeable Base	502-2.03
Longitudinal Joint Ties	705-14
Transverse Joint Supports	705-15
Wire Fabric for Concrete Reinforcement	709-02
Epoxy-Coated Bar Reinforcement, Grade 420	709-04
Quilted Covers (for Curing)	711-02
Plastic Coated Fiber Blankets (for Curing)	711-03
Polyethylene Curing Covers (White Opaque)	711-04
Membrane Curing Compound	711-05
Form Insulating Materials for Winter Concreting	711-07
Water	712-01

HES concrete mix design and all details related to HES concrete production and discharge must be approved by the Regional Materials Engineer before placement.

Transit Mix HES Concrete. Accelerating admixtures may be batched into the concrete at the plant in accordance with §501-2.03F, Admixture Dispensing Systems, or added at the site depending on the amount of acceleration required and the haul time. When adding accelerating admixtures at the site, equip truck mixers with an air pressurized tank that:

- Contains the correct volume of admixture (for the volume of concrete in the truck) dispensed through the plant's Admixture Dispensing System.
- Discharges the required admixture quantity into the truck mixer drum in less than 1 minute.
- Has a clear plastic tank output hose that leads into the truck mixer drum.
- Has a properly working relief valve.

Twice daily, or more frequently if weather conditions change significantly as determined by the Engineer, determine the fine and coarse aggregate moisture contents. Compute the corresponding water added to the concrete in the truck from aggregate moisture. Subtract that quantity, as well as the water portion of the admixture in the tank and water added at the plant, from the design water for the truck. Submit these calculations to the NYSDOT plant inspector for approval. Upon approval, write the maximum volume of water to be added to the truck at the site on the delivery ticket. Upon arrival at the site, provide the delivery ticket to the Engineer.

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Discharge the accelerating admixture into the truck mixer drum during or after any water additions at the site. Do not add more water than the maximum volume indicated on the delivery ticket. Add all of the accelerating admixture in 1 uninterrupted operation in 1 minute or less. Apply a maximum of 200 total mixing revolutions before discharge.

Truck Mix HES Concrete. Add the accelerating admixture and water at the site. Equip trucks with an air pressurized tank for accelerating admixtures as described above in Transit Mix HES Concrete and an in-line water flow meter that:

- Resets easily to "0".
- Is mounted to allow easy reading.
- Withstands water temperatures up to 90°C.
- Is equipped with air strainers capable of removing entrapped air within the system.
- Has a batching delivery tolerance of 1% by weight or volume.
- Has a manufacturers certified flow rate capacity of 265 lpm.
- Has a minimum actual flow rate of 190 lpm.

The Regional Materials Engineer will measure the actual flow rate and inspect the flow meter prior to use. Do not place any concrete without the Regional Materials Engineer's approval.

Twice daily, or more frequently if weather conditions change significantly as determined by the Engineer, determine the fine and coarse aggregate moisture contents. Compute the corresponding water added to the concrete in the truck from aggregate moisture. Subtract that quantity, as well as the water portion of the admixture in the tank, from the design water for the truck. Submit these calculations to the NYSDOT plant inspector for approval. Upon approval, write the exact volume of water to be added to the truck at the site on the delivery ticket. Upon arrival at the site, provide the delivery ticket to the Engineer.

Before adding water into the truck mixer, execute twenty dry revolutions at 12 to 18 rpm and reset the flow meter to 0. Add water in 1 uninterrupted operation. No water is to be removed from the truck mixer for any purpose while water is being added to the drum. After the required water designated on the delivery ticket has been added to the concrete in the truck, add all the accelerating admixture in 1 uninterrupted operation in 1 minute or less. Apply a maximum of 200 mixing revolutions before discharge.

Use equipment meeting:

Forms	§502-2.04B1
Paving Irregular Areas	§502-2.04B3
Vibrators	§502-2.04C
Permeable Base Paving Equipment	§502-2.04D
Saw Cutting Equipment	§502-2.04E
Curing Compound Applicators	§502-2.04F

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CONSTRUCTION DETAILS. Apply the following from Section 502, Portland Cement Concrete Pavement, as modified herein:

Weather Limitations §502-3.01

Portland Cement Treated Permeable Base §502-3.03
 Use permeable base if the pavement being repaired was constructed with permeable base or if shown in the contract documents. Place permeable base 100 mm thick. Apply fixed form paving requirements.

Fixed Form Paving §502-3.05
 Consider full-depth repairs to be irregular areas.

Joint Construction §502-3.06
 Apply a bond breaker, such as form oil, to untied longitudinal joints immediately before placing concrete.

Finishing §502-3.09
 Finish short repairs (those less than the length of the finishing equipment) transversely.

Texturing §502-3.10
 Do not texture the plastic concrete if it will be diamond ground. The Engineer may require longitudinal astroturf drag if that was the original pavement texture.

Curing §502-3.11

Pavement Protection §502-3.13

Damaged or Defective Concrete §502-3.14

Hardened Surface Test §502-3.15
 If the pavement is to be diamond ground, the maximum deviation is 10 mm in 3 m. If the pavement will not be diamond ground, the maximum deviation is 3 mm in 3 m.

Opening to Traffic §502-3.18
 When determining concrete strength for opening to traffic, apply the following rather than §502-3.18C, Project Strength Determination:

Project Strength Determination. Provide an ACI Certified Concrete Field Testing Technician, Grade I, or higher, to cast all cylinders. Unless otherwise noted in the contract documents, use an agency accredited by the AASHTO Accreditation Program (AAP) in the field of construction materials testing of portland cement concrete to perform compressive strength testing. Cast and test in the presence of the Engineer, or the Engineer’s representative. Provide acceptable proof of ACI Certification and AASHTO Accreditation to the Engineer before placing any concrete. The Engineer, or the Engineer’s representative, will complete the Concrete Cylinder Report as cylinders are cast and tested.

Cast a minimum of 3 cylinder pairs (6 total) from each scheduled placement operation in accordance with Materials Method 9.2, Field Inspection of Portland Cement Concrete. Cast each pair from different delivery trucks with 1 of the 3 pairs cast from the last truck of the operation. Develop an Engineer-approved marking system that allows a cylinder to be readily associated with the corresponding placement location and placement time. Mark the cylinders and place them adjacent

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to the pavement under similar curing conditions. Determine the concrete compressive strength in accordance with ASTM C39, Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens. Test all cylinder pairs at the same time relative to when they were cast. The testing time must be within the time frame needed to open the last concrete placed in the operation to traffic. The placement may be opened to traffic if all the following apply:

- Average compressive strength of all cylinder pairs exceed 17 MPa.
- Average compressive strength of each cylinder pair exceeds 14 MPa.
- Appropriate time frame has elapsed for the entire area to be opened.

If these conditions are not met, test 3 additional cylinder pairs at a later time, provided the appropriate number of additional cylinders were cast and the placement has not been opened to traffic. If the above conditions are not met after additional testing, or, if the required number of additional cylinders were not cast, open the placement to traffic after 5 days, or when directed by the Engineer, provided this time frame is not in conflict with the work zone closure time restrictions stipulated in the contract documents. If the placement is opened to traffic (in accordance with the work zone closure time restrictions stipulated in the contract documents) before it has achieved the required strength, the placement will be considered Damaged or Defective Concrete and will be replaced at no additional cost to the State.

Contract testing for 28 day compressive strength is not required. If subsequent trial batches are required, the Engineer may waive the 28 day compressive strength testing.

METHOD OF MEASUREMENT.

Portland Cement Treated Permeable Base. The work will be measured for payment as the number of cubic meters of permeable base satisfactorily placed, measured to the nearest 0.1 m³, based on the Engineer-approved repair area marked on the pavement prior to repair and the thickness of permeable base placed.

Portland Cement Concrete, Unreinforced, All Classes. The work will be measured for payment as the number of cubic meters of concrete satisfactorily placed, measured to nearest 0.1 m³, based on the Engineer-approved repair area marked on the pavement prior to repair and the thickness of concrete placed. Deductions, and separate payment, will be made for catch basins, manholes, or other similar pavement obstructions requiring either mesh reinforced or heavily reinforced placements.

Portland Cement Concrete, Mesh or Heavily Reinforced, All Classes. The work will be measured for payment as the number of cubic meters of concrete satisfactorily placed, measured to the nearest 0.1 m³, based on the Engineer-approved repair area marked on the pavement prior to repair and the thickness of concrete placed. No deductions will be made for drainage and utility structures or other similar pavement obstructions being isolated from the surrounding pavement.

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Transverse Joints. The work will be measured for payment as the number of meters of transverse joints satisfactorily constructed within the repair boundary, measured to the nearest 0.1 m. Separate measurement will be made for transverse joints that define the repair boundary and drilling and anchoring dowels into those joints.

Constructing Longitudinal Joints. The work will be measured for payment as the number of meters of longitudinal joints satisfactorily constructed within the repair boundary, measured to the nearest 0.1 m. Separate measurement will be made for longitudinal joints that define the repair boundary and drilling and anchoring longitudinal joint ties in those joints.

BASIS OF PAYMENT.

Portland Cement Treated Permeable Base. Include the cost of all labor, material, and equipment necessary to satisfactorily perform the work in the unit price bid for Portland Cement Treated Permeable Base. No additional payment will be made for extra work required to repair damage to the adjacent permeable base or pavement that occurred during any operation. Additional payment will be made if the original repair area did not completely extend into sound concrete.

Portland Cement Concrete, Unreinforced, All Classes. Include the cost of all labor, material, and equipment necessary to satisfactorily perform the work in the unit price bid for Portland Cement Concrete, Unreinforced, All Classes. No additional payment will be made for Contractor-requested HES concrete mixes or extra work required to repair damage to the adjacent pavement that occurred during any operation. Additional payment will be made if the original repair area did not completely extend into sound concrete.

Portland Cement Concrete, Mesh or Heavily Reinforced, All Classes. Include the cost of all labor, material, and equipment necessary to satisfactorily perform the work in the unit price bid for Portland Cement Concrete, Mesh or Heavily Reinforced, All Classes. No additional payment will be made for Contractor-requested HES concrete mixes or extra work required to repair damage to the adjacent pavement that occurred during any operation. Additional payment will be made if the original repair area did not completely extend into sound concrete.

Transverse Joints. Include the cost of all labor, material, equipment, and labor necessary to satisfactorily perform the work in the unit price bid for Transverse Joints. Separate payment will be made for constructing transverse joints that define the repair boundary and drilling and anchoring dowels into those joints. Separate payment will be made for joint sealing or joint filling.

Longitudinal Joints. Include the cost of all labor, material, and equipment necessary to satisfactorily perform the work in the unit price bid for Longitudinal Joints. Separate payment will be made for constructing longitudinal joints that define the repair boundary and drilling and anchoring ties into those joints. Separate payment will be made for joint sealing or joint filling.

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Payment Will Be Made Under:

Item No.	Item	Pay Unit								
18502.3501 M	Portland Cement Treated Permeable Base	Cubic Meter								
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	<table border="0" style="width: 100%;"> <tr> <td style="text-align: left;"><u>R - Reinforcement</u></td> <td style="text-align: left;"><u>C - Concrete Class</u></td> </tr> <tr> <td>0 - Unreinforced</td> <td>1 - Class C</td> </tr> <tr> <td>1 - Isolated, Mesh Reinforced</td> <td>2 - Class F</td> </tr> <tr> <td>2 - Isolated, Heavily Reinforced</td> <td>3 - HES</td> </tr> </table>	<u>R - Reinforcement</u>	<u>C - Concrete Class</u>	0 - Unreinforced	1 - Class C	1 - Isolated, Mesh Reinforced	2 - Class F	2 - Isolated, Heavily Reinforced	3 - HES	
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