Base Bid & Costs

Pursuant to and in compliance with your Advertisement and the Information for Bidders relating thereto, the undersigned hereby offers to furnish all plant, labor, materials, supplies, equipment and other facilities and things necessary for, or proper for, or incidental to the Rowan University - Resurfacing of North Campus Drive Project, as required by, and in strict accordance with the applicable provisions of plans and specifications and all addenda issued by Rowan University or its Engineer prior to the date of opening the bids whether received by the undersigned or not for the amount bid based on the following unit and/or lump sum prices:

NOTE: Extension of Unit Prices must be exact.

<table>
<thead>
<tr>
<th>Contract Time:</th>
<th>Thirty (30)</th>
<th>Calendar Days</th>
</tr>
</thead>
</table>

Schedule of Liquidated Damages:

| One (1) to Fifteen (15) Days: | $500.00 per calendar day |
| Sixteen (16) to Thirty (30) Days: | $1,000.00 per calendar day |
| Greater Than Thirty (30) Days: | $2,000.00 per calendar day |

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Units</th>
<th>Description</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE BID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>UN</td>
<td>BREAKAWAY BARRICADE</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>UN</td>
<td>DRUM</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>UN</td>
<td>TRAFFIC CONE</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>4</td>
<td>200</td>
<td>SF</td>
<td>CONSTRUCTION SIGNS</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>LS</td>
<td>CLEARING SITE</td>
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<td>$</td>
</tr>
<tr>
<td>6</td>
<td>350</td>
<td>SY</td>
<td>KEYWAY CONSTRUCTION</td>
<td>$</td>
<td>$</td>
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<tr>
<td>7</td>
<td>870</td>
<td>SY</td>
<td>BASE REPAIR (IF &amp; WHERE DIRECTED)</td>
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<td>$</td>
</tr>
<tr>
<td>8</td>
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<td>SY</td>
<td>HMA MILLING, 3&quot; OR LESS</td>
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<tr>
<td>9</td>
<td>1,920</td>
<td>SY</td>
<td>VARIABLE PROFILE MILLING, 0&quot; TO 3&quot; DEPTH</td>
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<td>10</td>
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<td>HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2&quot; THICK</td>
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<td>$</td>
</tr>
<tr>
<td>11</td>
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<td>TONS</td>
<td>HOT MIX ASPHALT 9.5M64 LEVELING COURSE, VARIABLE THICKNESS</td>
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<td>$</td>
</tr>
<tr>
<td>12</td>
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<td>GAL</td>
<td>TACK COAT (IF &amp; WHERE DIRECTED)</td>
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<td>$</td>
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<td>13</td>
<td>1</td>
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<td>SPEED HUMP</td>
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<td>$</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>UN</td>
<td>RESET EXISTING CASTING</td>
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<td>$</td>
</tr>
<tr>
<td>15</td>
<td>25</td>
<td>LF</td>
<td>8&quot; X 18&quot; CONCRETE VERTICAL CURB</td>
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<tr>
<td>16</td>
<td>3,400</td>
<td>LF</td>
<td>TRAFFIC STRIPES, LONG LIFE, EPOXY RESIN 4&quot;</td>
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<td>17</td>
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<td>TRAFFIC MARKINGS, SYMBOLS, LONG-LIFE, THERMOPLASTIC</td>
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<td>$</td>
</tr>
<tr>
<td>Item</td>
<td>Quantity</td>
<td>Units</td>
<td>Description</td>
<td>Unit Price</td>
<td>Amount</td>
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<td>-------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>18</td>
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<td>SY</td>
<td>TOPSOILING, 4&quot; THICK (IF &amp; WHERE DIRECTED)</td>
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<td>$</td>
</tr>
<tr>
<td>19</td>
<td>20</td>
<td>SY</td>
<td>FERTILIZING AND SEEDING, TYPE &quot;A-3&quot; (IF &amp; WHERE DIRECTED)</td>
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</tr>
<tr>
<td>20</td>
<td>1</td>
<td>LS</td>
<td>FUEL PRICE ADJUSTMENT</td>
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<td>$ 700.00</td>
</tr>
</tbody>
</table>

**Total Amount Bid Based on Estimated Quantities for BASE BID, Items #1 - #20, Inclusive**

$ 

**TOTAL AMOUNT BASE BID WRITTEN OUT**

**SIGNATURE**

**NAME & TITLE (TYPE OR PRINT)**

**BID DATE**

**COMPANY NAME**

In the event of a discrepancy between the unit price for any pay item and the extended price shown for that item, the unit price is to govern. Where a unit price is bid for an item, but no extended price is provided, the extended price shall be established by multiplying the unit price and the estimated quantity. Where the extended price is provided and the unit price is not provided, the unit price shall be established by dividing the extended price by the estimated quantity. Where no figure is provided for the unit price and extended price, the amount bid will be considered to be zero ($0.00).

Any or all Bids for this Project may be rejected if they are non-conforming, non-responsive or conditional. A Bid may be rejected for failure to comply with requirements of the Contract Documents.

The OWNER reserves the right to award this contract based on the lowest price bid for the items of work delineated under the Base Bid.
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## TECHNICAL SPECIFICATIONS

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<th>Section No.</th>
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<td>01000</td>
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<td>01010</td>
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<td>02227</td>
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<td>Temporary Soil Erosion and Sediment Control Measures</td>
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</tr>
<tr>
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</tr>
</tbody>
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SCOPE OF WORK

This project involves the resurfacing of North Campus Drive and partial resurfacing of Parking Lot M at Rowan University in the Borough of Glassboro as shown on the project plans. The roadway resurfacing involves a variable profile mill from a depth of zero inches (0”) to three inches (3”). After milling, areas requiring Base Repairs will be field determined by the Engineer and will be repaired with six inches (6”) of Dense Graded Aggregate and four inches (4”) of hot mix asphalt 19M64 Base Course. Select areas will receive a variable thickness of hot mix asphalt 9.5M64 leveling course to provide a roadway crown as designated on project plans. The milled areas will then receive a two inch (2”) hot mix asphalt 9.5M64 surface course overlay. Parking Lot M will be milled two inches (2”) and areas requiring Base Repairs will be field determined by the Engineer and repaired as delineated above. The milled area of Parking Lot M will be overlaid with two inches (2”) hot mix asphalt 9.5M64 surface course.

In addition to the resurfacing of the existing roadway, the project will include partial replacement of curb as required by a gutter line grade change. Manholes will be reset as designated on project plans. A speed hump will be removed and reinstalled in kind. Traffic striping and symbols will be replaced in kind at all disturbed areas. Topsoil, fertilizer and seed will be placed at all disturbed areas.

Maintenance and Protection of Traffic will not be based on a lump sum basis but will be paid based on unit costs of Breakaway Barricades, Drums, Traffic Cones, and Construction Signs listed in the Contract Documents. The Contractor may elect to utilize additional Traffic Control Devices in addition to those delineated in the Contract Documents, however, the additional Traffic Control Devices will not be measured for payment and will be provided at no expense to the Owner.

The Contractor shall be responsible to remove excess unwanted materials from the project site and dispose of all excess unwanted materials in an approved manner. Should Rowan University want any excess material, the material shall be delivered to the University’s site at no additional charge.

UNIFORMED LAW ENFORCEMENT OFFICERS ARE NOT REQUIRED DURING CONSTRUCTION ACTIVITIES. TRAFFIC CONTROL IS TO BE COORDINATED WITH LOCAL POLICE AUTHORITIES – POLICE TRAFFIC DIRECTORS WILL NOT BE REQUIRED ON THIS PROJECT.

The Contractor shall obtain all utility markouts, verify the locations of all utilities both horizontally and vertically prior to the start of construction and notify the engineer of any conflicts. A third party utility location service will be required since this roadway is on private property. The Contractor shall also be responsible for coordinating all utility relocation, which may be necessary. There will be no separate payment for this work.

Separate payment will not be made for construction layout, concrete encasements, trench bedding for pipe and/or inlets, dust control, coffer dams, dewatering, removal of any items noted on project plans, bypass pumping as required or elevation adjustments of water meter pits, cleanouts, gas valves, sprinkler heads or any other structures encountered associated with the installation of roadway. The price for this work shall be included in the various items of the proposal.

One (1) week prior to construction, the contractor will be required to submit cut sheets indicating the proposed roadway grades. If any section of roadway is determined to be improperly installed without approved cut sheets, the roadway shall be replaced at no additional cost to the Owner.

The roadway shall be maintained in a passable condition for emergency vehicles at all times.

The General Notes on Drawing Number C-2 are applicable for all work for this project including but not limited to the proposed work shown on the project plans and described in the project specifications.
The Contractor shall complete all work under the contract in the time frame set forth in the General Conditions. The Contractor shall ensure that adequate workmen and equipment are on site for this to be accomplished, also taking into account for adverse weather conditions and the availability of the materials necessary to perform the work.

**Rowan University** reserves the right to consider the bids for sixty (60) days after the receipt thereof, and further reserves the right to reject any or all bids, either in whole or in part and also to waive any informality in any and make such awards or take action as may be in its best interest.

The above Scope outlines the general items of work and shall not be construed as being all-inclusive.

The plans entitled “**Rowan University Resurfacing of North Campus Drive**” are appended hereto and are part of these specifications.

END OF SECTION
SECTION 01000

GENERAL REQUIREMENTS

1.1 GENERAL

A. Only major items of work are given in the Bid Form, but it is the intent of the specifications to secure a completely interconnected and functional system, and if any workmanship or materials be required which are obviously necessary to carry out the full intent and meaning of the plans and specifications or to be reasonably inferred therefrom, the cost of such workmanship or materials shall be included in the unit price bid for the major items of work.

B. Reproducible As-built plans must be furnished by the Contractor to the Engineer prior to final payment.

C. Where construction is being performed in traveled roadways, Contractor is to provide necessary traffic controls and devices in accordance with the Current Manual on Uniform Traffic Control Devices.

D. Contractor shall notify all utility companies prior to construction of utilities and paving:

Sanitary Sewer: Glassboro – Water and Sewer Department
1 South Main Street
Glassboro, NJ 08028

Utility Authority: Gloucester County Utility Authority
2 Paradise Road
West Deptford, NJ 08066

Water: Glassboro – Water and Sewer Department
1 South Main Street
Glassboro, NJ 08028

Gas: South Jersey Gas
142 S. Main Street
Glassboro, NJ 08028

Electric: Atlantic City Electric
428 Ellis Street
Glassboro, NJ 08028

Telephone: Verizon Communications
10 Tansboro Road
Berlin, NJ 08009

Telephone: AT & T (Buried Fiber Optic Cable)
50 Patricia Drive
Flanders, NJ 07836

Cable: Comcast Cable
1250 Haddonfield – Berlin Road
Cherry Hill, NJ 08034

State R.O.W.: NJ State Department of Transportation Planning Division
P.O. Box 600
Trenton, NJ 08625
E. Prior to any excavation, the Contractor shall have all utilities marked and shall excavate or otherwise determine the exact location and elevations of said utilities. The Contractor shall notify the Engineer of any conflicts. The Contractor shall arrange for any necessary utility relocations or plan changes and shall reschedule his operations appropriately.

F. The contractor, in the construction of any project, shall not stockpile materials or his equipment on any private property; except areas designated by the plans as directed by the Engineer. If so required, the Engineer may direct the contractor to have his equipment removed from any project during weekend hours.

G. All work of refilling sunken ditches, repaving over trenches and keeping streets and sidewalks in passable condition shall be done to the satisfaction of the Engineer during the construction of the above work as well as during the maintenance period. If any work is not done within five (5) days after written notice is given by the Engineer, the work may be done by the Owner and charged to the contractor.

H. Special care shall be taken to prevent contamination, siltation, or interfering in any way with the stream flows or ponds along the line of work. No waste matter of any kind will be allowed to discharge into the stream flows or impounded water of any ponds or other bodies of water.

I. The contractor is hereby advised that Public Law 1975, Chapter 251 as amended by P.L. 1979, Chapter 459 is applicable to this project.

J. It is the intent of Article SS 10.2 Soil Erosion and Sediment Control to insure that proper measures for erosion control are employed and provide for the early establishment of vegetation that will help avoid erosion problems during and after construction. It is expected that the contractor will anticipate possible problems and provide timely and adequate control to prevent or minimize adverse effect.

K. The contractor shall apply and pay for all permits that may be required for any of the work involved with this project.

L. Contractor is to notify residents by door-hangers at least forty-eight (48) hours in advance before starting construction work on streets.

M. All notes on plans shall be made a part of the specifications.

N. Contractor shall notify Engineer at least forty-eight (48) hours in advance of any work on Saturdays. There will be no work permitted on Sundays or holidays. This project will receive full-time inspection and the normal working hours for the Inspector are from 8:00 AM to 4:30 PM, Monday through Friday. Any overtime inspection costs, which are avoidable, will be reimbursed by the Contractor.

O. During the construction phase of the project, travel lanes shall remain open at all times.

P. Contractor shall take extreme care in the placement of the asphaltic tack coat so as not to make it visible on the concrete curb. It shall be the contractor's responsibility to keep the concrete curb clean of this oil.

1.2 PUBLIC UTILITIES

A. The contract drawings indicate the approximate location of existing overhead and subsurface utilities in the vicinity of the work. The bidder is advised to ascertain for himself all the facts concerning the location of these utilities.

B. The contractor shall cooperate with the utility owners in the adjustment of their facilities and shall notify the utility owners not less than ten (10) days in advance of the time he proposes to perform any work that will endanger or affect their facilities.
C. The contractor shall permit the owners of utilities, or their agents, access to the site of the work at all times in order to relocate, construct or protect their lines and he shall cooperate with them in performing this work.

D. Separate payments will not be made for the coordination and cooperation of the contractor with the utility companies, nor for the protection or replacement of utilities as specified hereinbefore and the bidder shall include all such costs in the prices bid for the various scheduled items in the Bid Form.

1.3 PHOTOGRAPHS & VIDEO TAPES

A. The Contractor shall VHS video tape the construction site prior to the commencement of construction. The videotape shall be kept by the Owner to resolve any disputes arising over the restoration of all curbs, sidewalks, driveways, fences, lawns, landscaped areas, or any other items that may be disturbed during construction.

1.4 MAINTENANCE & PROTECTION OF TRAFFIC

A. The contractor shall erect or place and maintain in good condition, barricades, warning signs, lights, flares, approved yellow-flashing light units, rubber traffic cones, and other warning and danger signals and devices, appropriate and adequate for the specific needs and subject to the Engineer's approval at working sites, closed roads, intersections, open excavations, locations of material storage, standing equipment and other obstructions, at points where the usable traffic width of the road is reduced, at points where traffic is deflected from its normal courses or lanes, and at other places of danger to vehicular or pedestrian traffic.

B. The contractor shall provide sufficient watchmen and traffic directors and shall take all other precautions, including any that may be ordered by the Engineer, which are necessary for the safety of the public and protection of the work.

C. The contractor shall obtain the approval of the Engineer and consent of all appropriate authorities having jurisdiction, for any detours, which may be required. The contractor shall make all necessary arrangements with such authorities regarding the establishment, maintenance and repair of such detours, the regulations and direction of traffic thereon, and the installation and maintenance of sign and traffic devices.

D. Before beginning work on any phase of the project, the contractor shall furnish and install all specified warning signals, barricades, wood traffic guides, lights, flares and other devices necessary, in the opinion of the Engineer, to protect the public during that phase of his operations.

E. If battery operated flashing warning lights are used, they shall conform to the specifications therefore on file at the office of the Department's Bureau of Safety, 1035 Parkway Avenue, Trenton, New Jersey. These specifications require, in part, that the flashing lights be weatherproof and reasonably tamper-proof and theft proof, be equipped with a seven inch (7") minimum diameter amber plastic lens; shall operate with a flash rate between 55 and 75 flashes per minute with a flash duration of not less than 18% of each flash cycle; and shall be inspected and cleaned daily so as to maintain the lights in proper working condition.

F. Road construction signs shall be placed at each end of the project along with every connecting intersection. At the end of each project, detour signs shall be placed.

SCHEDULE OF TRAFFIC CONTROL DEVICES
FOR EACH SEPARATE PROJECT LOCATION

<table>
<thead>
<tr>
<th>Type of Device*</th>
<th>Min./Max.</th>
</tr>
</thead>
</table>

Section 01000 - 3
Traffic Cones 20/80
Sign (Construction Ahead) 2/6
Sign G20-2 2/4
Traffic Director 1/4
Drums 20/50
Breakaway Barricades 10/40

*Devices in accordance with Part VI “MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS”.

G. During the work on this project, the contractor shall provide and/or be prepared to provide traffic protection devices in accordance with the above Schedule of Traffic Control Devices. The minimum numbers set forth in the Schedule shall be on hand at each separate project site prior to the commencement of any work (or phase of work) and shall be maintained available on the project site throughout the period of the project (or phase). Failure to provide and maintain the minimum number of devices specified shall be sufficient cause for the Engineer to order cessation of work. When lack of any required safety devices presents an immediate hazard, the engineer may order that such devices be provided by the Owner or by other contractors, deducting the cost thereof from any monies due or becoming due the contractor.

H. Additional devices up to the maximum number set forth in the Schedule shall be provided by the contractor as required or directed prior to the commencement of any operation or phase of an operation requiring such devices.

I. Uniform traffic directors (flagmen) shall be provided whenever alternate two-way traffic is maintained in a single lane, whenever contractor's operations require closing of a lane or portion of a lane on a multiple lane roadway, whenever the contractor's equipment or vehicles are entering or leaving active roadways at other than normal street intersections, whenever a contractor's operations will be contrary to or cause confusion regarding normal traffic control devices (traffic signals, signs, etc.) within a work area and whenever else, in the opinion of the Engineer, the contractor's operations cause such hazards as to require the use of Traffic Directors.

J. Traffic Directors shall be responsible and thoroughly familiar with their responsibilities, and, while serving as Traffic Directors, shall not be required to perform any other duties. Traffic Directors shall be provided with an orange or red flag, an orange or orange and white traffic safety vest and white or orange hard hat or other appropriate head gear. The contractor may, at his option, secure the services of uniformed policemen having jurisdiction in the locality within which the project is located. Provision of such uniformed policemen will be deemed sufficient in meeting the requirements of this specification.

K. Traffic must be maintained throughout each separate work area during construction. At least one 12’ lane must be maintained for traffic during all actual construction periods and at least two 10’ lanes must be maintained for traffic at all other times.

L. The contractor is advised that there is heavy commuter traffic during the morning from 7:30 AM to 9:00 AM and the afternoon from 4:00 PM to 5:30 PM. The contractor shall schedule his construction activity such that he does not interfere or restrict traffic during the above peak hours.

M. Any restriction of traffic at any time shall be subject to the approval of the Engineer and the Municipal Police Department. The contractor shall submit a schedule of staged construction for approval prior to any restriction of traffic.

N. If detours are proposed by the contractor, they are subject to the review and approval of the Engineer and the Municipal Police Department.

P. Temporary traffic stripes will be necessary to control and guide traffic through individual work areas. The contractor shall submit a scheme for approval by the Engineer of all temporary traffic stripes prior to removal of any existing traffic stripes.
Q. Construction of proposed utility pipe across existing roadways shall be so staged to maintain one lane in each direction. Trenches shall not remain open overnight.

R. The contractor shall provide adequate means of access for fire, police and emergency vehicles throughout the length of the project.

S. UNIFORMED LAW ENFORCEMENT OFFICERS ARE NOT REQUIRED DURING CONSTRUCTION ACTIVITIES. TRAFFIC CONTROL IS TO BE COORDINATED WITH LOCAL POLICE AUTHORITIES – POLICE TRAFFIC DIRECTORS WILL NOT BE REQUIRED ON MUNICIPAL STREETS.

T. The cost of all work as specified hereinbefore and all other work required to protect public safety and maintaining traffic flow shall be included in the unit price bid on the proposal for the items “Breakaway Barricades”, “Drum”, “Traffic Cone”, and “Construction Signs”.

1.5 TEMPORARY PAVING FOR ALL TRENCHES

A. Description - 2" thick temporary paving shall be in accordance with plans and specifications and to the prescribed lines and grades. Temporary paving replacement shall include necessary excavation.

B. Materials - Materials shall conform to New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction 2007 and/or as amended for non-Federal Aid Projects, Section 901.05 Aggregates for HMA.

C. Contractor shall submit to Engineer in triplicate, reports on materials used, attesting to the fact that said materials conform with these specifications by the State of New Jersey Department of Transportation and the Engineer.

D. Method of Construction - The trenches or other excavation, after backfilling, shall be covered with 2" thick temporary paving in passable condition suitable for normal use. The cost of such temporary paving and maintenance shall be included in the contract price for all items.

1.6 REFERENCE TO THE STANDARD SPECIFICATIONS

A. Portions of the work performed under this contract shall comply with the requirements of the 2007 State of New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, and all requirements modified, as amended or supplemented and whose specifications are made part of these specifications. The 2007 State of New Jersey Department of Transportation Standard Roadway – Traffic Control – Bridge Construction Details shall govern except insofar as same are modified, amended or changed in detail drawings prepared specifically for this particular project.

B. The Standard Specifications are made part of these specifications by this reference as if they were set forth in full. It is the responsibility of the prospective bidder to be familiar with these Standard Specifications. Copies may be examined in the Engineer's Office or may be purchased from the New Jersey Department of Transportation, 1035 Parkway Avenue, Trenton, New Jersey 08625.

END OF SECTION
SECTION 01010
AS-BUILT PLANS

1.01 GENERAL

The contractor shall provide a set of reproducible as-built plans prior to final payment.

2.1 MATERIALS

A. As-buils shall be a reproducible of the original contract plans including any additional sheets required. All deviations from the original contract plans shall be on the as-buils. The plans shall be legible, neat, and of a quality acceptable to the Engineer.

B. The Engineer shall provide a set of reproducibles at the beginning of the project.

3.1 EXECUTION

A. The contractor shall be responsible for keeping the as-built up to date as the project progresses.

B. Sewer services: Connections shall be indicated by distance from the previous upstream manhole and a right or left distance off of the main. Locate the end of the lateral with tie dimensions to two permanent features and indicate depth of burial.

C. Water Services: Services shall be indicated by means of triangulation off of the front of the building. If no building exists, then by two permanent features.

D. Sewer Mains: Actual distance installed from center of manhole, actual elevations of manholes and rims shall be indicated on the plans. Indicate slope, pipe size and type, and invert. Plans shall be complete enough for submission to the New Jersey Department of Environmental Protection & Energy.

E. Water Main and Force Mains: Actual distance installed, actual invert at each bend, and high and low points. At each fitting, bend and gate valve, tie dimensions shall be provided to three permanent features.

F. Storm Sewer: Any change in invert location, grate elevation, pipe size, class, or type, and any utility sleeves shall be indicated on the plans.

G. Building Construction: Actual installation with all items clearly identified shall be indicated. Location of installed items and any deviations from contract documents shall be shown with boxes around the as-built numbers or labels.

H. This section is intended to provide a minimum level of acceptance. Any section with more stringent requirements shall have precedence over this section.

4.01 PAYMENT

No separate payment will be made for work performed under this section.

END OF SECTION
SECTION 01300

SUBMITTALS

1.1 **Summary:** This section specifies requirements for handling submittals.

1.2 **General Procedures:** Coordinate submittal preparation with performance of construction activities, and with purchasing or fabrication, delivery, other submittals and related activities. Transmit in advance of performance of related activities to avoid delays.

Coordinate transmittal of different submittals for related elements so processing will not be delayed for coordination with other submittals. The Engineer reserves the right to withhold action on a submittal requiring coordination until related submittals are received.

**Processing:** Allow two weeks for review. Allow more time if processing must be delayed for coordination with other submittals. The Engineer will advise the Contractor when a submittal must be delayed for coordination. Allow two weeks for reprocessing each submittal.

No extension of time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to Permit processing.

**Submittal Preparation:** Place a label or title block on each submittal for identification. Provide a 4” x 5” space on the label or beside the title block on shop drawings to record Contractor’s review and approval markings and action taken. Include the following information on the label for processing and recording action taken:

- Project Name
- Date
- Name and address of Engineer
- Name and address of Subcontractor
- Name and address of Supplier
- Name of Manufacturer

1.3 **Submittal Transmittal:** Package submittals appropriately for transmittal and handling. Transmit with a transmittal form. Submittals received from other than the Contractor will be returned without action.

1.4 **Contractor’s Construction Schedule:** Submit a fully developed, bar-chart type construction schedule at the preconstruction conference. Provide a separate bar for each construction activity and a vertical line to identify the first working day of each week.

Coordinate the construction schedule with the list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

Indicate completion in advance of the date established for substantial completion. Indicate substantial completion on the schedule to allow time for the Engineer’s procedures necessary for certification of substantial completion.

1.5 **Distribution of Schedules:** Distribute approved copies of the construction schedules to the Engineer, Owner, Subcontractors, and other parties required to comply with scheduled dates. Post copies in the temporary field office. When revisions are made, distribute to the same parties and post in the same locations.

**Updating:** Revise each schedule after each meeting or activity, where revisions have been made. Issue the updated schedules concurrently with report of each meeting. The revised schedule must be approved by the engineer.
1.6 **Daily Construction Reports:** Prepare a daily construction report, recording information concerning events at the site. Submit duplicate copies to the Engineer at weekly intervals. Include the following information:

- List of subcontractors at the site.
- High and low temperatures, general weather conditions.
- Accidents, stoppages, delays, shortages, losses.
- Emergency procedures.
- Change orders received, implemented.
- Partial completions, occupancies.
- Substantial completions authorized.

1.7 **Shop Drawing:** Submit new information, drawn to accurate scale. Indicate deviations from contract documents. Do not reproduce contract documents or copy standard information as the basis of shop drawings. Include the following information:

- Dimensions
- Identification of products and materials included.
- Notation of coordination requirements.
- Notation of dimensions established by field measurement.

**Sheet Size:** Except for templates, patterns and similar full-size drawings, submit shop drawings on sheets at least 8 1/2” x 11” but no larger than 30” x 42”.

Do not use shop drawings without a final stamp indicating action taken indicating action taken in connection with construction.

1.8 **Product Data:** Collect product data into a single submittal for each element or system. Mark each copy to show applicable choices and options. Where product data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

- Manufacturer’s printed recommendations.
- Compliance with recognized trade association standards.
- Compliance with recognized testing agency standards.
- Application of testing agency labels and seals.
- Notation of dimensions verified by filed measurement.
- Notation of coordination requirements.

**Submittals:** Submit six (6) copies of each required submittal. The Engineer will retain four (4) copies and return the others marked with action taken and corrections or modifications required.

Unless noncompliance with contract document provisions is observed, the submittal may serve as the final submittal.

**Distribution:** Furnish copies of final submittal to installers, and other required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of product data is in the installer’s possession. Do not permit use of unmarked copies of product and data in connection with construction.

1.9 **Samples:** Submit full-size samples cured and finished as specified and identical to the product proposed. Mount, display or package samples to facilitate review. Prepare samples to match the Engineer’s sample. Include the following:

- Generic description
- Compliance with recognized standards
- Source
- Availability and delivery time
- Product name or name of manufacturer
Submit samples for review of kind, color, pattern and texture for a final check of these characteristics and a comparison of these characteristics between the final submittal and the component as delivered and installed. Where variations are inherent in the product, submit multiple units that show limits of the variations.

Refer to other sections for samples that illustrate details of assembly, fabrication techniques, workmanship, connections, operation and similar characteristics.

Refer to other sections for samples to be returned for incorporation in the work. Such samples must be undamaged at the time of use. On the transmittal indicate special requests regarding disposition of sample submittals.

**Submittals:** Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit three (3) sets; one will be returned marked with the action taken. Maintain sample sets at the project site for quality comparisons.

Unless noncompliance with contract document provisions is observed, the submittal may serve as the final submittal.

Sample sets may be used to obtain final acceptance of the construction associated with each set.

1.10 **Distribution:** Prepare additional sets for subcontractors, manufacturers, fabricators, installers, and others as required for performance. Show distribution on transmittal forms.

1.11 **Engineer’s Action:** Except for submittals for record, information or similar purposes, where action and return is required, the Engineer will review each submittal, mark to indicate action taken and return. Compliance with specified characteristics is the contractor’s responsibility.

**Action Stamp:** The Engineer will stamp each submittal with a self-explanatory action stamp. The stamp will be appropriately marked to indicate action taken.

1.12 **Quantity and Payment:** No separate payment will be made for submittals and all work performed under this section. The cost incurred shall be included in the various items in the proposal.
# LIST OF REQUIRED SUBMITTALS

North Campus Drive Resurfacing and Drainage Improvements

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
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<th>DATE APPROVED</th>
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<td>Construction Schedule</td>
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<td>Pre-Construction Video</td>
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<td>3</td>
<td>Proposed Grading Cut Sheets</td>
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<td>Dense Graded Aggregate Base Course</td>
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<td>11</td>
<td>Fertilizer and Seed</td>
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<td>Joint Sealer, Hot-Poured</td>
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END OF SECTION
SECTION 01710

CLEANING AND RESTORATIONS

1.1 DESCRIPTION

A. Contractor shall provide all equipment, labor and materials required to clean and restore the site to a condition equal to at least the existing condition.

B. Included under this item will be all restorations of pipe trenches unless otherwise noted on the plans or specified herein.

C. Maintain premises and public properties free from accumulations of waste, debris and rubbish caused by work operations.

D. The Contractor shall take care and caution to preserve and protect all existing pavements, curbs, grass areas, sidewalk, private and public property along and adjacent to the lines of the work. Any destruction to any of the above, beyond the limits of work, or caused by careless construction procedures shall be replaced at the Contractor’s expense.

E. Where indicated by the Engineer, Contractor shall photograph both on-site and off-site properties prior to construction to verify condition of existing condition.

1.2 MATERIALS

A. For restorations use the following materials. All materials shall comply with the following Articles of the New Jersey State Highway Department Standard Specifications latest revision.

B. Grass Restorations:

1. Topsoiling and seeding shall conform to Subsections 804 and 806, respectively. The Contractor shall topsoil and seed to a minimum of five (5) feet along the new edge of pavement or to the extent of construction disturbance, whichever is greater.

C. Pavement Restorations:

1. Concrete base course: Class “B” Concrete conforming to Section 903.

2. Surface Course: HMA 9.5M64 Surface Course conforming to Section 401.

3. Aggregate Subbase: Shall conform to Section 302.

4. Prime Coat; where specified, shall conform to the requirements set forth in Subsection 401.03.02 of the Standard Specifications for Cut-Back Asphalt, Grade MC-30 or MC-70.

5. Tack Coat, where specified, shall conform to the requirements set forth in Subsection 401.03.02. Where emulsified bituminous cutbacks are to be used, the Contractor shall insure that the type of emulsion either anionic or cationic shall be compatible with the aggregates and bitumen used in the bituminous concrete courses and soil aggregate base courses.

D. Restoration of Curbs and Other Concrete Structures:

Concrete shall be air-entrained and attain a compressive strength of 4,500 psi at 28 days. Concrete shall conform to Subsection 903.03.

E. All Other Materials: As approved by the Engineer or authorities having jurisdiction.
1.3 METHODS OF CONDUCTING WORK - CLEANING

A. Requirements of Regulatory Agencies:

All excess material shall be removed from the site and disposed by the contractor at his expense. Cost to be included in the unit price bid for all items. The disposal site shall be in permanently established licensed OSWA (Office of Solid Waste Administration, New Jersey Department of Environmental Protection) landfills.

B. Cleaning During Construction:

Provide periodic cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations.

Provide on-site containers for the collection of waste materials, debris and rubbish. Maintain containers as required.

C. Dust Control:

The Contractor will be required to maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust which would cause a hazard or nuisance to others. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust.

Sprinkling to be approved must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs. If any dust control is not done within twenty-four (24) hours after written notice is given by the Engineer, the work may be done by the Owner and charged to the Contractor.

D. Preconstruction Photographs:

The Contractor shall at no extra cost take color photographs or video recordings of the site prior to the commencement of construction. The photographs or video record shall accurately depict the existing preconstruction condition of all curbs, sidewalks, driveways, fences, lawns, landscaped areas, mailboxes, street signs, street furniture and all other appurtenances within or within a 25 foot radius of the limits of construction of the project. One set of prints of the photographs or video record shall be provided to both the Owner and the Engineer. The date of all photographs or video tapes as well as identification as to the location which the photograph depicts must be provided.

1.4 METHODS OF CONDUCTING WORK - RESTORATIONS

A. General: All existing structures, unpaved areas and paved areas disturbed or damaged during the work under this contract shall be restored or replaced to a condition at least equal to that existing prior to beginning work, or as otherwise specified. The methods of conducting this work shall, as a minimum, conform to the following Articles of the New Jersey State Highway Department Standard Specifications, latest revisions.

B. Grass Restorations: All areas not covered with concrete, bituminous paving or other structures shall be topsoiled and seeded. Where available topsoil that is stripped and stockpiled by the Contractor may be used if free of all objects not larger in any dimension than 2”. Compact by rolling. Seeded areas shall be maintained by Contractor until acceptance and any bare spots which appear within one year of acceptance shall be resodded. Should topsoil that is stripped and
stockpiled be of insufficient quantity to complete the work, then the Contractor shall secure additional topsoil at no expense to the Owner in order to complete the work.

C. **Pavement Restorations:** The methods of construction employed shall conform to the requirements set forth in Division 400 of the Standard Specifications as applicable to the type of material being utilized.

Restoration type and thickness shall be shown on the contract drawings.

D. **RESTORATIONS OF CURBS AND OTHER CONCRETE STRUCTURES:**

1. **Curbs:** Section 607.

2. **Other Concrete Structures:** Restore in accordance with applicable Articles of the Standard Specifications.

E. **All Other Restorations:** Restore in accordance with applicable Articles of the Standard Specifications, or as approved by the Engineer or authorities having jurisdiction. The restoration will be done in kind including sod grass and architectural stone areas and shall be restored to the condition existing prior to construction.

1.5 **QUANTITY AND PAYMENT**

All costs for cleaning and restorations shall be included in the various items of the proposal.

END OF SECTION
SECTION 02227

EXCAVATION AND BACKFILL

1.1 Description

A. Excavation and backfill shall include clearing, grubbing, and backfilling for all utilities, curb, and all appurtenances at the required locations, as shown on the plans and specifications for all materials of whatsoever nature encountered.

1.2 Materials

A. The Contractor shall, at his expense, make such test pits and borings along the line and site of the work to satisfy himself regarding the character of the various strata of sub-surface materials and the amount of ground water that may be encountered in the course of construction and shall bid accordingly and the unit lump sum prices bid for the various pipes or structures requiring excavation shall include the difficulties to be encountered in excavation. Excavation shall include all materials excavated, encountered, including but not limited to rock, earth, shale, quicksand, gravel, sand, cinders, broken stone, concrete, paving, filled material, etc., and all miscellaneous excavation not herein specified and classified.

B. Backfill material from on-site excavation:

All on-site backfill materials shall be subject to the approval of the Engineer, and to the following requirements.

1. Free from deleterious substances, stumps, brush, weeds, roots, sod, rubbish, garbage and matter that may decay.

2. Backfill to a height of two (2) feet above the top of the pipes, culverts and other structures with material free from stones or rock fragments larger than two inches (2") in greatest dimension, or as directed by Engineer.

3. Free of large rocks or lumps that, in the opinion of the Engineer, may create voids or prevent proper compaction.

C. Stone for trench stabilization and bedding:

Trench stabilization material for bedding under pipes and structures shall be broken stone conforming to Section 909.01 of the Standard Specifications, and meeting the gradation specified in Table 909.01-1 for Class “C” bedding.

D. Select backfill (if and where directed) for pipes shall be designated as I-13 and meet all the requirements of Section 901.11 of the Standard Specifications and meeting the gradation specified in Table 901.11-1.

1.3 Method of Construction

A. **General Excavation** - Excavation of all materials of whatsoever nature encountered shall be made to the lines and grades shown on the drawings, or as may be necessary to fully carry out the intent of the drawings, and of these specifications, where no grades are indicated or described. Surfaces of excavations in earth, exposed in the finished work, both level and sloped, shall be excavated in planes four inches lower than the finished surfaces, measured perpendicularly to the plans, and shall be brought up to the finished surfaces with 4” top soil as specified elsewhere. Finished surfaces shall be true to line and grade and shall be dressed to even planes. Unless otherwise shown or stated on the drawings, all exposed slopes excavated in earth shall be one vertical to two horizontal.
Slopes shall be kept true to line and grade during the progress of the work, and should any slope be scoured by storm water, or disturbed or should any excavation be scoured or disturbed before final payment is made, the Contractor shall promptly restore the slope or excavation so scoured, gullied or otherwise disturbed to line and grade before final payment is made. No additional compensation will be paid the Contractor by reason of the encountering of any unusual or unexpected subsoil conditions.

Where required, the Contractor shall provide sheathing and shoring to maintain the stability of side slopes or limit the width of excavation so not to disturb adjacent structures paving or utilities at no additional cost to the Owner.

B. Excavating Trenches, etc. - In excavating for all pipes, inlets and manholes, the trenches between the lines of sheathing, if sheathing is used, must be of sufficient width to permit the work to be constructed in the manner and of the size specified. All excavating shall be confined within the narrowest possible limit and made as nearly as possible in a vertical line, and any sheathing, shoring, bracing or timbering which is necessary to obtain this result shall be done as hereinafter specified. Sloped banks will not be permitted except where directed by the Engineer.

The maximum width of trench at top of pipe measured to undisturbed earth shall be:

<table>
<thead>
<tr>
<th>I.D. of Pipe</th>
<th>Width</th>
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<tbody>
<tr>
<td>8”</td>
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<td>42”</td>
<td>5'-6&quot;</td>
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<tr>
<td>48”</td>
<td>6'-0&quot;</td>
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</table>

Should sloped banks be permitted, contractor shall, at no extra charge to Owner, provide temporary surface over width of disturbed area of street to provide for the unrestricted use of traffic immediately upon completion of backfill. Such temporary surfacing shall be stone, gravel or as required to permit traffic immediately.

All trenches shall be excavated on the lines designated by the Engineer and to the grades and depths necessary for the laying of pipes at the grades given by him. The lines and grades given by the Engineer shall, in general, consist of a benchmark for elevation control and a baseline and from this point on, contractor shall lay out his own work and build. Where, in the opinion of the Engineer, the original depth is sufficiently compact and solid for the foundation of the work, the bottom of the trench shall be excavated to conform to the external form of the pipe and under each bell or joint, unless the pipe is laid on a plank foundation, the trench shall be so hollowed out as to allow the body of the pipe to have a bearing throughout on the trench bottom and to provide ample room for the making of joint. In case a trench is excavated at any place below given grade excepting at pipe joints, it shall be refilled to the proper grades in the manner hereinafter specified. Unless otherwise specified, all excavation shall be performed by the open cut method.

C. Unauthorized Excavation - Special care shall be taken to prevent the movement of disturbances of earth under the foundation of the pipelines, manholes and other structures by providing adequate sheathing and bracing. Where the excavation is carried beyond or below the lines and grades given by the Engineer, or wherever the Engineer shall determine that any material has been loosened or disturbed sufficiently to reduce its supporting power, remove all such loosened material and refill all such excavated space to grade with sand or loam thoroughly rammed, in such manner as may be
directed by the Engineer in order to ensure the adequate support and stability of the pipeline and other structures.

All excavation and any other operation shall be confined to the width of the right-of-ways available.

D. **Additional Excavation** - If material satisfactory for foundations is not found at the elevation of grade, or in case it is found undesirable or necessary to excavate to additional depth, the excavation shall be carried to such additional depth as the Engineer may direct, and refill with compacted sand, washed stone or washed gravel, by the Contractor at no extra cost to the Owner.

E. **Tunneling** - No tunneling will be allowed except by permit from the Engineer. When tunneling, excavate the materials to cross sections as may be designated by the Engineer.

F. **Amount of Trench to be Opened** - The Engineer shall have the right to limit the amount of trench which shall be opened in advance of the completed pipeline and also the amount of trench left unfilled. Unless otherwise specified, not more than three hundred feet of trench shall be opened or partly opened at any one time in one operation. Adequate provisions shall be made for the use of cross walks and driveways. Provide and maintain all necessary barricades and lights.

G. **Materials Excavated** - The materials shall be laid compactly on the side of the trench or excavation and kept trimmed as to be of as little inconvenience as possible to traveling public and to adjoining tenants. Where the streets are paved, the paving materials shall be kept separate from the other materials excavated. All streets shall be kept open for travel unless otherwise directed by the Engineer.

H. **Removal of Excavated Materials** - The Contractor shall not, without permission from the Engineer, remove from the line of the work any excavated materials which may be suitable for filling the trench or excavation until the same has been refilled. All excess excavation shall remain the property of the Owner and shall be disposed of at the location so designated by the Owner within the limits of the site at the Contractor's expense. However, if the Owner has no real need for this excess excavation, or if the material is unsuitable, it shall be the Contractor's responsibility to dispose of said material at no expense to the Owner. The disposal site shall be one approved by the NJDEP.

I. **Shoring and Sheathing** - All faces of excavation shall be properly sheathed, timbered and braced where necessary to furnish suitable dry and safe working conditions acceptable to the Engineer, to preserve the load carrying capacity of the soil, to keep the excavation within the narrowest possible limit to protect any structure or paving adjacent to or close to the trenches, or work of excavation from damages. Bracing shall be so arranged as and placed to avoid any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide the necessary strength as determined by the Engineer.

Any damage to the pipelines or structures occurring through settlement, water or earth pressure, slides, caves or other causes shall be repaired by the Contractor at no cost to the Owner.

The Contractor shall include in the unit prices bid for the various items the cost involved in the shoring, sheathing, bracing and timbering and the maintenance, etc. of the trenches and other excavation during construction. The Contractor shall be held responsible for the protection of all subsurface and above-ground utilities, adjacent structures, buildings, curbs, sidewalks and street pavement from any settlement, destruction, or damage and for the maintenance of same during construction and for any repair, replacement or restoration of same without cost to the Owner, resulting from the installation of the water mains or other structures under this contract from the time of completion for a period of one year thereafter to the satisfaction of the Owner.

The Contractor shall be held responsible for the protection of the foregoing described adjacent structures and he alone shall decide upon the advisability of removing any of the sheathing, shoring, bracing or timbering. The Contractor shall, however, notify the Engineer of the removal of any of the sheathing, shoring, bracing or timbering, but such notification is not to be construed as relieving the
Contractor of his obligation and responsibility to adequately safeguard said adjacent structure, nor shall it relieve the Contractor of the liability for claims for damage incidental thereto.

All sheathing and shoring left permanently in the excavation shall be cut out at a point 18” below the ground. There shall be no payment for sheathing or shoring left in place, but the cost of same shall be included in the unit price bid for the various sewer lines.

J. **Removal of Water** - Maintain and provide at all times during construction ample means and device which shall promptly remove and properly dispose of all water or sewage entering the excavation and structures, until all work to be built therein is completed.

Dispose of the water from the trenches and excavation in a suitable manner, without damage to adjacent property and in no case unless by special permission of the Engineer, shall water be allowed to run through the new pipes. Furnish all necessary machinery, power and labor to pump, bail or otherwise remove any water which may be found or shall accumulate in the trenches or other excavation and shall perform all work necessary to keep them clear of water while the work is under construction.

If the ground water and subsoil conditions along the line of the work are such that the Contractor cannot successfully handle the ditch water and provide a stable, hard trench bottom by ordinary trench pumping and bailing, the Contractor shall furnish and provide the necessary equipment, power and labor to employ the well point method of trench dewatering without additional compensation. All pipe, joint and concrete must be installed under absolutely dry conditions.

K. **Backfilling** - The backfilling of the trench will be filled by using properly compacted, common earth material. If sufficient earth cannot be obtained to completely fill the trenches, small pieces of rock may be used under the condition that the space between the walls of the trench and the outside of the pipe to a height one foot above the top of the pipe, be filled with loose, fine earth, free from stone and hand-tamped, and placed in separate layers of not more than one foot in depth and each layer covered with from six to ten inches of earth.

Should excavated material be clay that will not consolidate by ordinary methods of backfilling, it shall be removed from site and replaced with granular material capable of quick compaction.

L. **Borrow Fill Material** - Should there be insufficient material (only if and where directed by the Engineer) to provide suitable material for backfilling and embankment, the Contractor, if and where directed by the Engineer, shall obtain such material elsewhere, transport it to the work site and deposit it therein as described in these specifications and shown on the drawings. Borrow materials shall be subject to approval of the Engineer. Borrow shall be free of organic inclusions and shall be gravelly sand or sandy gravel, fairly well graded, and shall be designation I-14 conforming to Subsection 901.11 of the Standard Specifications, except as modified by the supplemental requirements below:

1. Containing no rocks or lumps over six inches in greatest dimension.
2. Composed of soil aggregate, or soil aggregate and rock. The portion passing the four inch sieve shall contain not more than fifteen percent (15%) by weight of material passing the number 200 sieve. When composed of soil aggregate and rock, the proportion of soil aggregate shall not be less than that required to fill all the rock voids.

During the backfill procedure, the soil compaction shall conform to not less than the following percentage of the maximum dry density:

1. Structures & Building Areas - 95%
2. Lawns & Unpaved Areas - 90%
3. Pavement, driveways & walkway area - 95%

M. **Temporary Trench Finish** - In completing work of backfilling the trench, the material shall be carefully placed to conform to the adjacent street surfaces, allowing, however, a slight crown over the trench area to allow for settlement but not sufficient to prevent the use of the street across the trench.
area by traffic. As settlement occurs, refill and regrade the temporary trench finish with suitable hard material and continue to maintain the surface until such time as the permanent repaving shall be allowed by the Engineer.

Allowance repaving by Engineer shall not relieve Contractor of his responsibility for settlement. The maintenance of trenches shall be continuous by Contractor in such a manner as to keep all streets passable for both pedestrians and vehicular traffic. Cleanup shall be continuous as work progresses. Contractor shall control any dirt or dust by calcium chloride, etc. as necessary and required at Contractor's expense.

N. **Foundations** - Use every precaution in the excavation for the pipelines, manholes and other structures to protect the natural foundations upon which the work is to be built. Special care must be taken so as not to disturb the finished grade any more than is absolutely necessary. If and where required and directed by the Engineer, support the pipelines by concrete cradle in accordance with the general design and dimensions to be furnished by the Engineer or upon plank foundation.

O. **Interference with Existing Structure or Utilities** - In excavating or backfilling, care must be taken not to injure any gas, water, sewer, electric or telephone conduits or other pipes, conduits or structures. The locations will be made by the Engineer and in locating, he shall avoid interference with existing utilities as far as possible. Contractor shall, at his expense, sling, shore-up and secure and maintain a continuous flow in utilities and shall repair any damage done to them and shall keep them in repair until final acceptance of completed work, leaving them in as good a condition as when uncovered. Where it is either necessary or advisable to locate existing substructures in advance of or during actual construction of the work, the Contractor shall cooperate with the Engineer and furnish without cost to the Owner such labor and equipment as may be required to locate any existing subsurface utilities or structures. No payment will be made for delays to Contractors due to interference with utilities. The Contractor shall, in advance of construction, obtain all available information as to location of existing underground utilities, service, etc. and will be held responsible for damage done by him to underground structures injured in construction.

P. **Protection of Street Surfaces** - The Contractor shall carefully plank, or otherwise protect all street surfaces, gutters, curbs, and sidewalks before moving any heavy equipment, machinery, tractor or truck over the same. He will be held fully responsible for all damage of every kind which may be incurred by the various surfaces and the Contractor shall repair or rebuild the surfaces as specified for the various surfaces elsewhere herein the specifications except that no payment will be made by the Owner to the Contractor for repair or rebuilding of the surfaces outside the trench areas. The surfaces repaired shall be equal to or superior to the surfaces damaged.

Q. **Restoration of Rights-of-Ways, etc.** - Where pipelines are constructed along the rights-of-ways, etc., the same shall be restored to their original condition. Sod, topsoil, flowers and shrubbery, if any, shall be carefully removed and replaced or, if damaged, shall be carefully removed and replaced. Trees shall be protected and suffer no damage. Utility poles shall be adequately braced in accordance with the utilities regulations.

R. **Detours, etc.** - Contractor shall, where necessary, provide and erect all detour signs and maintain necessary barricades and lights. He shall confer with the local police chief and fire chief before blocking any street.

Contractor shall construct temporary bridges in order to provide access to driveways, etc. when required.

S. **State Highways** - Contractor shall fully comply with all regulations of the New Jersey Department of Transportation covering street openings when any work within right-of-way lines of any State Highway right-of-ways or property. Permit shall be secured by the Owner.

T. **County Roads** - Contractor shall investigate and conform with all regulations of County Department having jurisdiction over street opening when performing any work in County roads. Permits for road
opening shall be secured by Contractor and any inspection services required by County shall be paid for by Contractor.

U. **Railroad Crossings** - Contractor shall fully comply with all regulations of the Railroad Company when performing any work within Railroad right-of-ways. Permits shall be secured by Owner.

V. **As-Built** - Contractor shall furnish Engineer three (3) copies of location, size length of structures and mains; location of fittings; location of length of house connection. Prior to commencing work, Contractor shall submit for approval to Engineer method to be used for maintaining and indicating the information.

1.4 **Quantity and Payment**

A. No separate payment will be made for excavation and/or backfill but the cost shall be included in the various items of the proposal.

END OF SECTION
SECTION 02270

TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES

1.1 GENERAL

A. This work shall consist of temporary control measures ordered by the Engineer during the life of the contract and as shown on drawings, to control erosion and sediment through use of berms, dikes, dams, sediment basins, inlet filters, fiber mats, netting, gravel, mulches, grasses and other erosion control devices or methods.

B. The primary objective of this specification is to control soil erosion to the maximum extent practicable commensurate with reasonable and economical construction practices.

C. The temporary control provisions contained herein shall be coordinated with the permanent erosion control features (grass, pavement and other restorations) specified elsewhere in the contract to the extent practical to assure economical, effective and continuous erosion control throughout the construction and post-construction period.

D. The erosion control measures described herein shall be continued until the construction is complete and final restorations installed.

E. Wherever construction exposes work which is subject to erosion, the extent of such exposure in advance of the subsequent construction shall be subject to the approval of the Engineer. Erosion control features or other work to be completed within such areas shall follow as soon after exposure as practicable.

F. All materials and methods of construction shall be in accordance with the New Jersey State Standards for Soil Erosion and Sediment Control.

2.1 MATERIALS

A. Mulches may be hay, straw, fiber mats, netting, wood cellulose, corn or tobacco stalks, bark, corn cobs, wood chips, or other suitable material acceptable to the Engineer and shall be reasonably clean and free of noxious weeds and deleterious materials.

B. Grass shall be a quick growing species (such as rye grass, Italian rye grass, or cereal grasses) suitable to the area providing a temporary cover.

C. Fertilizer and soil conditioners shall be a standard commercial grade acceptable to the Engineer.

D. Requirements for silt fence:

1. Fence posts shall be spaced 8 feet center-to-center or closer. They shall extend at least 2 feet into the ground. They shall extend 2 feet above ground.

2. A filter fabric, recommended for such use by the manufacturer, shall be buried at least 6 inches deep in the ground and then shall extend 6" parallel to grade. The filter fabric shall extend at least 2 feet above the ground. Filter fabric may be fastened in place by stake or other accepted means as specified by the district office.

3. The barrier shall be constructed so water cannot bypass the barrier around the ends.

4. Inspection shall be frequent and repair or replacement shall be made promptly as needed.

5. The barrier shall be removed when it has served its usefulness so as not to block or impede storm flow or drainage.

E. Other as specified by the Engineer.
3.1 **METHODS OF CONSTRUCTION**

A. Preconstruction Conference:

At the preconstruction conference or prior to the start of the applicable construction, the Contractor shall submit for acceptance his schedules for accomplishment of temporary and permanent erosion control work, as are applicable for excavation work, and any other elements of the project which may contribute to ground erosion of siltation. No work shall be started until the erosion control schedules and methods of operations have been accepted by the Engineer.

B. Construction Requirements:

1. The Engineer has the authority to limit the surface area of erodible earth material exposed by excavation and grading operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams, water courses, or bodies of water. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion. Cut slopes shall be temporarily seeded and mulched as the excavation proceeds to the extent considered desirable and practicable.

2. The Contractor will be required to incorporate all permanent erosion control features to include the required pavement and grass restorations into the project at the earliest practicable times as outlined in his accepted schedule. Temporary control measures will be used to correct conditions that develop during construction that were not foreseen during the design stages that are needed prior to installation or permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

3. Where erosion is likely to be a problem, excavation and grading operations shall be so scheduled and performed that permanent erosion control features can follow immediately; otherwise temporary erosion control measures may be required between successive construction stages.

4. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal or state or location agencies, the more restrictive laws, rules or regulations shall apply.

5. The Contractor will be responsible for maintaining all soil erosion and sediment control measures in an acceptable manner. All temporary measures shall be removed by the Contractor as directed by the Engineer.

4.1 **METHOD OF MEASUREMENT**

The various measures installed for soil erosion and sediment control will not be measured for payment.

4.2 **BASIS OF PAYMENT**

No payment will be made for the various measures installed for soil erosion and sediment control but the cost to perform this work shall be included in the various items of the proposal.

END OF SECTION
SUPPLEMENTARY SPECIFICATIONS
SPECIAL PROVISIONS FOR STATE AID PROJECTS

NORTH CAMPUS DRIVE RESURFACING AND DRAINAGE
IMPROVEMENTS

IN THE BOROUGH OF GLASSBORO, COUNTY OF GLOUCESTER

AUTHORIZATION OF CONTRACT

The contract for this project is authorized by the provisions of local public contracts law, NJSA 40A: 11-1 et seq.

SPECIFICATIONS TO BE USED

The 2007 Standard Specifications for Road and Bridge Construction, of the New Jersey Department of Transportation and as amended herein, shall govern the construction of this project.

WAGE RATES

The contractor shall pay the minimum wage rates determined by the New Jersey Department of Labor.

State wage rates may be obtained from the New Jersey Department of Labor (Telephone: 609-292-2259) or by accessing the Department of Labor’s web site at http://lwd.dol.state.nj.us/labor/wagehour/wagehour_index.html. The State wage rates in effect at the time of award will be made a part of this Contract, pursuant to Chapter 150, Laws of 1963 (NJSA 34:11-56.25, et seq.).

In the event it is found that any employee of the contractor or any subcontractor covered by the contract, has been paid a rate of wages less than the minimum wage required to be paid by the contract, the contracting agency may terminate the contractor's or subcontractor's right to proceed with the work, or such part of the work, as to which there has been a failure to pay required wages and to prosecute the work to completion or otherwise. The contractor and his sureties shall be liable to the contracting agency for any excess costs occasioned thereby.

GENERAL

No construction shall start before approval of said award by the New Jersey Department of Transportation. Prior to the start of construction the contractor must submit a Material Questionnaire (SA-11) listing all sources of materials. Any materials used on the project from a non-approved New Jersey Department of Transportation source will be considered non-participating. The contractor is also notified that the District Office, Division of Local Aid and Economic Development must be notified of the construction commencement date at least three (3) calendar days prior to the start of construction.
Award of contract and subletting will not be permitted to, materials will not be permitted from, and use of equipment will not be permitted that is owned and/or operated by, firms and individuals included in the report of suspensions, debarments and disqualifications of firms and individuals as maintained by the Department of the Treasury, General Services Administration, CN-039, Trenton NJ 08625 (609-633-3990).

Payment for a pay item in the proposal includes all the compensation that will be made for the work of that item as described in the contract documents unless the "measurement and payment" clause provides that certain work essential to that item will be paid for under another pay item.

Whenever any section, subsection, subpart or subheading is amended by such terms as changed to, deleted or added it is construed to mean that it amends that section, subsection, subpart or subheading of the 2007 NJDOT Standard Specifications for Road and Bridge Construction unless otherwise noted.

Whenever reference to page number is made, it is construed to refer to the 2007 NJDOT Standard Specifications for Road and Bridge Construction unless otherwise noted.

Henceforth in this supplementary specification whenever reference to the State, Commissioner, Department, Engineer or Inspector is made, it is construed to mean the particular university executing this contract.

Whenever reference to Title 27 is made, it is construed to mean Title 40.
DIVISION 100 - GENERAL PROVISIONS

THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS ARE DELETED:

SECTION 101 – GENERAL INFORMATION
SECTION 102 – BIDDING REQUIREMENTS AND CONDITIONS
SECTION 103 – AWARD AND EXECUTION OF CONTRACT
SECTION 104 – SCOPE OF WORK
SECTION 105 – CONTROL OF WORK
SECTION 106 – CONTROL OF MATERIAL
SECTION 107 – LEGAL RELATIONS
SECTION 108 – PROSECUTION AND COMPLETION
SECTION 109 – MEASUREMENT AND PAYMENT

THESE SECTIONS OF THE STANDARD SPECIFICATIONS ARE CHANGED TO THE REQUIREMENTS OF THE CONTRACTING AGENCY.

DIVISION 150 – CONTRACT REQUIREMENTS

THE FOLLOWING SECTIONS OF THE STANDARD SPECIFICATIONS ARE DELETED:

SECTION 151 – PERFORMANCE BOND AND PAYMENT BOND
SECTION 152 – INSURANCE

THESE SECTIONS OF THE STANDARD SPECIFICATIONS ARE CHANGED TO THE REQUIREMENTS OF THE CONTRACTING AGENCY.
SECTION 158 – SOIL EROSION AND SEDIMENT CONTROL
AND WATER QUALITY CONTROL

158.04 Measurement and Payment.

This subsection is changed as follows:

Various temporary soil erosion and sediment control devices will not be measured for payment.

Separate payment will not be made for temporary soil erosion and sediment control devices and dust control but the cost will be included in the various items in the proposal.
SECTION 159 - TRAFFIC CONTROL

159.2 Materials.

Materials shall conform to the following Subsections:
- Removable Wet Weather Pavement Marking Tape and Removable Black Line Masking Tape... 912.04.02
- Temporary Pavement Markers ................................................................. 912.04.03

159.3 Procedure.

159.03.02 Traffic Control Devices.

Traffic Control devices shall be NCHRP-350 crash test compliant by the NJDOT implementation dates stated in the table below and shall be duly certified, if necessary.

<table>
<thead>
<tr>
<th>Traffic Control Device Category</th>
<th>Commonly used NJDOT Traffic Control Devices</th>
<th>AASHTO/FHWA implementation date for newly purchased Devices</th>
<th>NJDOT implementation date for newly purchased Devices</th>
<th>NJDOT deadline By which devices must be NCHRP-350 compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Vertical panel, portable sign supports, and type III barricades</td>
<td>10/1/2000</td>
<td>1/1/2003</td>
<td>8/15/2003</td>
</tr>
<tr>
<td>3</td>
<td>Truck mounted attenuators and traffic barriers-impact attenuators (crash cushions), barrier terminals, and longitudinal barriers</td>
<td>10/01/1998</td>
<td>10/01/2002</td>
<td>3/15/2005</td>
</tr>
<tr>
<td>4</td>
<td>Portable, usually trailer-mounted, devices such as lighting supports, flashing arrows panels, temporary traffic signals, and changeable message signs used in or adjacent to the traveled way</td>
<td>to be announced</td>
<td>6/15/2005</td>
<td>6/15/2007</td>
</tr>
</tbody>
</table>

Note: Resident Engineer’s approval shall be obtained to use traffic control devices that are certified NCHRP 350 compliant, but not listed in the table.

Newly purchased devices shall be NCHRP-350 compliant. A list of NCHRP 350 compliant and FHWA approved devices can be found at: [http://www.fhwa.dot.gov/safety/fourthlevel/pro_res_road_nchrp350.htm](http://www.fhwa.dot.gov/safety/fourthlevel/pro_res_road_nchrp350.htm)

NCHRP-350 non-compliant, yet adequately serviceable category 3 traffic control devices, such as truck-mounted attenuators (TMA) purchased prior to 10/01/1998, will be allowed to be used until March 15th 2005 upon submitting new-purchase documentation to the Resident Engineer.
1. **Illuminated Flashing Arrows.** The solar powered arrow boards approved for use are:
   a. Work Area Protection – Arrowmaster Model WAAW-15-SB
   b. Solar Technology Inc. – Silent Sentinel
   c. Trafcon Industries Inc. – Model TC1-15S
   d. Protect-O-Flash Inc. – Model No. M-90 (LED bulbs only)
   e. TRACOM (Trailer Component Mfg., Inc.)

**159.03.08 Traffic Direction.**

**B. Police.**

Vehicular and pedestrian traffic is to be maintained over the roadway within the scope of the project at all times. **UNIFORMED LAW ENFORCEMENT OFFICERS ARE NOT REQUIRED DURING CONSTRUCTION ACTIVITIES ON LOCAL ROADS, TRAFFIC CONTROL IS TO BE COORDINATED WITH LOCAL POLICE AUTHORITIES AT THE COUNTY ROW AND STATE ROW. SEE THE “ROWAN UNIVERSITY UNIFORMED LAW ENFORCEMENT OFFICERS REQUIREMENT” IN THE GENERAL REQUIREMENTS SECTION 01000 - 5.**

**THE FOLLOWING NEW SUBPART IS ADDED:**

**159.3.10 General.**

The contractor, shall backfill all excavated areas within the roadway to a grade compatible with the existing traveled way at such times as he is not actively working. This shall include nights, weekends and periods of shut downs.

The contractor, shall obtain written approval from the Engineer for any closings of streets, intersections, sidewalks, parking area and any other publicly used portions of the project that may be required by construction of the work. Property owners affected by such closings shall receive written notice of such closings at least forty-eight (48) hours prior to the closing. Copies of such notices shall be provided to the Engineer.

**THE FOLLOWING NEW SUBPART IS ADDED:**

**159.3.11 Traffic Control Plan.**

If the Engineer deems the traffic control devices and measures undertaken by the Contractor for the maintenance and protection of traffic to be inadequate, he may order the Contractor to provide additional control devices to ensure the safety of the traveling public. Should the Contractor neglect or refuse to provide or maintain the required traffic control devices as required by the plans and these specifications, or as directed by the Engineer, the Engineer or the Owner may immediately, and without notice to the Contractor, furnish, install and maintain the necessary traffic control devices. All expenses incurred by the Engineer or the Owner to provide and maintain adequate maintenance and protection of traffic in lieu of the Contractor’s responsibility in this regard shall be deducted from the payments due or coming due to the Contractor.

**THE FOLLOWING NEW SUBPART IS ADDED:**

**159.3.12 Removable Wet Weather Pavement Marking Tape.**

Removable wet weather pavement marking tape shall be installed at designated locations and according to the Manufacturer’s recommendations. The tape shall be white or yellow and shall be installed in single or double lines, as designated.

The surface upon which the tape is to be installed shall be prepared according to Subsection 610.03.01.B. Removable wet weather pavement marking tape shall be installed on dry surfaces, when the surface temperature is between 50 °F and 150 °F and when the ambient temperature is 50 °F and rising, and when the weather is otherwise favorable as determined by the Engineer. The tape shall not be overlapped, and only butt splices shall be used.

To ensure maximum adhesion, the tape shall be tamped and a truck shall be driven slowly over the tape several times. The tape shall be removed when no longer required for traffic control.

Removable tape that has become damaged and is no longer serviceable shall be replaced immediately and will not be measured for payment. Tape that is damaged by construction operations shall also be replaced without additional compensation.

**159.04 Measurement and Payment.**

THE FIRST PARAGRAPH AFTER THE LIST OF PAY ITEMS IS CHANGED TO:

**SUPPLEMENTARY SPECIFICATIONS PAGE 6**
Payment for Breakaway Barricades, Drums, Traffic Cones, and Construction Signs will be made at 50 percent of the contract bid price upon delivery, placement and approval with the balance prorated over the duration of the contract.
SECTION 160 – PRICE ADJUSTMENTS

160.01 Description.
THE FOLLOWING IS ADDED:

Asphalt price adjustment is only applicable for projects with final quantities of hot mix asphalt exceeding 1,000 tons per NJSA 40A:11-16(d).

160.3 Procedure.
THE FOLLOWING IS ADDED:

Asphalt price adjustment and fuel price adjustment shall be in accordance with NJSA 40A:11-16(d), (e), and (f).

160.4 Measurement and Payment.
THE FOLLOWING IS ADDED:

Asphalt price adjustment is only applicable to projects with final quantities of Hot Mix Asphalt exceeding 1,000 tons.

PAYMENT WILL BE MADE UNDER:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUEL PRICE ADJUSTMENT</td>
<td>LUMP SUM</td>
</tr>
</tbody>
</table>
DIVISION 200 – EARTHWORK

SECTION 201 – CLEARING SITE

201.1 Description
THE FOLLOWING IS ADDED TO THIS SUBSECTION:

Clearing Site shall also include removal and/or resetting of lawn decorations, minor yard structures, or similar obstructions at the site of work. If there should be no separate item provided for in the proposal, Clearing Site shall also include removal and/or resetting and/or replacement of any fences, decorative shrubs, hedges or trees at the work site. Clearing Site shall also include the removal of tree stumps, underbrush, clearing of wooded areas as shown on the Drawings or any unsuitable or undesirable obstructions in the area of any of the scheduled items or work.

Clearing Site shall also include resetting of monuments, meters, boxes, and any other work not actually listed in the schedule of items in the proposal which is required for the completion of work as described by the Drawings and the contract documents.

Clearing Site shall also include resetting roof drains at curb locations if the proposed roadway gutterline grade is higher than the roof drain invert elevation.

Responsibility for resetting gas valves and boxes shall lie with the respective utility company, however it shall be the Contractor’s responsibility to coordinate this work.

Clearing Site shall also include the removal and resetting of all obstructions, either standing or felled, within the limits of construction and for which payment is not otherwise provided in the contract but which is described for removal and resetting on the Drawings by the Engineer during construction.

Clearing Site shall also include Relocation of Sewer Vent/Lateral and Relocation of Water Meter. Relocation of Sewer Vent/Lateral and Relocation of Water Meter shall not apply to resetting vertical grade, but when lateral relocation is required due to road widening.

All references to the removal of buildings by the Contractor in this Section of the Standard Specifications are deleted.

201.2 Materials
ARTICLE 201.02 OF THE STANDARD SPECIFICATIONS IS AMENDED AS FOLLOWS:

Should any materials be required for the work included under Clearing Site, they shall comply with the applicable provisions of the previously cited Standard Specifications.

201.03.01 Clearing Site
B. Clearing and Grubbing
THE FIRST PARAGRAPHS OF THE STANDARD SPECIFICATIONS SHALL BE REPLACED WITH THE FOLLOWING:

All tree stumps within the graded right-of-way and/or site area shall be grubbed out.

In cut sections, all tree stumps shall be grubbed out within the limits of the total cut area.

In fill sections, tree stumps may remain extending not more than one foot above original ground surface in those areas where the proposed subgrade, or proposed finished grade in non-pavement sections, is greater than 3 1/2 feet above original ground surface. All tree stumps that lie within 5 feet horizontally or vertically from any proposed structure, pipe, or duct shall be grubbed out.
THE FOLLOWING IS ADDED TO THIS ARTICLE:

When or where any direct or indirect damage or injury is done to public or private property by, or on account of, any act, omission, neglect or misconduct on the part of the Contractor in the execution of the work, such property shall be restored by the Contractor, at his expense, to a condition equal to that existing before such damage or injury was done or he shall make good such damage or injury in such other manner as may be acceptable to the Engineer.

If a separate item is not provided for the removal and/or relocation of hedges fences, and privately owned signs, the Contractor shall be responsible to contact the owner of said hedge, shrub, fence or sign to determine if the owner desires to reclaim it. If the owner should desire to reclaim the item, the Contractor shall then use reasonable care and relocate and reset the item beyond the work limits.

Should any construction methods that are required for the work included under Clearing Site not specifically described, they shall comply with the applicable provisions of the previously cited Standard Specifications.

All materials accumulated during the clearing of the site described above, or any excess materials, shall be disposed of by the Contractor at a New Jersey Department of Environmental Protection approved landfill site, to be provided by the Contractor.

Burning of debris at the project site, or in the vicinity thereof, will not be allowed.

201.04 Measurement and Payment

ARTICLE 201.04 OF THE STANDARD SPECIFICATIONS IS AMENDED AS FOLLOWS:

Clearing Site will not be measured.

THIS SUBSECTION IS CHANGED TO:

Payment for Clearing Site on a lump sum basis will be made at 50 percent of the contract bid price upon delivery, placement and approval with the balance prorated over the duration of the contract.

Separate payment will not be made for the removal and relocation of mailboxes. Mailboxes shall be reset in accordance with United States Postal Service guidelines. All costs thereof shall be included in the various items of the proposal.

PAYMENT WILL BE MADE UNDER:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEARING SITE</td>
<td>LUMP SUM</td>
</tr>
</tbody>
</table>
SECTION 202 – EXCAVATION

202.01 Description

THIS SUBSECTION IS REPLACED BY THE FOLLOWING:

This work shall consist of stripping, excavation and removal of all earth, rock, boulders, brick, stone and concrete masonry, small structures and other materials encountered of whatever nature, required for the construction of roadways and their appurtenances, exclusive of these materials provided for payment under other items scheduled in the proposal; the transportation of the excavate materials; the construction of embankment with materials excavated; the disposal of unsuitable and surplus materials; and other work as herein described.

Roadway excavation other then wet excavation may be provided for in the contract as Excavation Unclassified, or on a classified basis as Roadway Excavation, Earth or Roadway Excavation, Rock.

Excavation, unclassified, shall also include removal of bituminous concrete pavement overlay, bituminous concrete pavement base and surface courses, and reinforce and non-reinforced concrete base courses.

Excavation, unclassified, shall also include power sawcutting in the existing pavement. This shall be at a distance of one foot from the edge of the existing pavement that is to remain in place to form a proper bond between the new pavement and the existing pavement.

Excavation, unclassified, shall also include as required, the temporary stockpiling of suitable earth materials from roadway excavation and the rehandling of the stockpiled materials for the construction of the embankments, as specified under Section 203.

Excavation, unclassified, shall also include the construction of escape ramps.

Million of bituminous concrete shall consist of the removal of bituminous concrete surface and base course to the prescribed depth, profile and cross slope.

Base Repair

The work shall also include the excavation of the existing pavement structure at locations directed by the Engineer for a depth of 10”, and the installation of Dense Graded Aggregate (DGA) Base Course, 6” thick, and Hot Mix-Asphalt 19M64 Base Course, 4” thick, for Base Repairs. Material for Base Repair shall be as specified in Sections 302 and 401. Edges of the repair areas shall be neatly cut with a sharp tool at straight lines. The material shall be placed and compacted in accordance with the applicable requirements of Sections 302 and 401. No prime or tack coat will be required for base repair areas which shall be overlaid with a bituminous surface course as part of the same project.

Where base repairs are to be made in areas which shall also be milled, the Contractor shall perform the milling prior to the base repairs, unless specifically authorized by the Engineer.

Keyway Construction

The work shall consist of the milling of existing HMA and subsequent overlay with 2” Hot Mix-Asphalt 9.5M64 Surface Course in accordance with the details on the plans. The existing edge of pavement to remain shall be neatly cut with a sharp tool at straight lines.

202.3 Construction

202.3.3 Excavating Unclassified Material

A. Excavating

THE FOLLOWING IS ADDED:

The Engineer may waive the taking of cross-sections.

Excavation cuts that are irregular, wavy, and not cut in a neat workmanlike manner shall be recut at an appropriate distance from the first cut as directed by the Engineer; the resulting additional excavation, additional subbase and/or base material and any other quantity increases due to non-acceptance of the cuts will not be paid for by the Owner, and all cost associated therewith shall be borne by the Contractor.

The Contractor shall make his own arrangements for storing suitable excavated material. If any such materials are to be stored on private property, the Contractor shall obtain and deliver written releases from the owners of the property being used for storage to the Engineer. The Contractor shall be responsible for phasing his operation in order to use suitable excavated materials in the embankment areas.
The Contractor shall take special precautions necessary to prevent damaging any existing utilities. He shall be held liable for repairs of any damage done to these utilities. All unstable material shall be disposed of in accordance with Subsection 202.03.08. Roadway excavation shall be carried out to the elevations shown on the plans.

202.4 Measurement and Payment
THE FOLLOWING IS ADDED:

Keyway Construction will be measured by the square yard.

Base Repair (If & Where Directed) will be measured by the square yard.

THE FOLLOWING PAY ITEMS ARE ADDED:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEYWAY CONSTRUCTION</td>
<td>SQUARE YARD</td>
</tr>
<tr>
<td>BASE REPAIR (IF &amp; WHERE DIRECTED)</td>
<td>SQUARE YARD</td>
</tr>
</tbody>
</table>

No separate payment will be made for removal of excess material. Excess material is not to be removed from the site unless approved by the Engineer. Include all costs for this work in the respective prices bid in the proposal.

No separate payment will be made for Excavation, DGA, and HMA Base Course for Base Repairs. Cost for these items shall be included in the unit cost of “Base Repair (If & Where Directed)”.
SECTION 203 – EMBANKMENT

203.01 Description
THE FOLLOWING IS ADDED TO THIS SUBSECTION:

This work also includes backfilling as noted on the plans

203.03.02 Placing and Compacting Methods.
A. Control Fill Method.
   1. Control Strip.
      Density of the control strip will be determined according to AASHTO T 191 or AASHTO T 310 (Direct Transmission Method) except that only one method will be used throughout the Project.

   2. Embankment.
      The density of such inaccessible areas will be determined from the average of five randomly located measurements according to AASHTO T 191 or AASHTO T 310 (Direct Transmission Method) except that only one method will be used throughout the Project.

D. Density Control Method

   The compacted density of embankments will be determined by taking the average of a minimum of five randomly located measurements for each 1,000 cubic yards placed according to AASHTO T 191 or AASHTO T 310 (Direct Transmission Method) except that only one method will be used throughout the Project.
DIVISION 300 – SUBBASE AND BASE COURSES

SECTION 301 - SUBBASE

301.03 Construction.
   301.03.01 Subbase.
      C. Compacting

      The in-place dry density of each compacted layer will be determined according to AASHTO T 191 or T 310 (Direct Transmission Method) except that only one method will be used throughout the Project.
SECTION 302 - AGGREGATE BASE COURSE

302.01 Description.
THE FOLLOWING IS ADDED:

THE WORK SHALL ALSO CONSIST OF:

Dense Graded Aggregate, 6” Thick shall be furnished, placed, and compacted prior to the placement of Hot Mix-Asphalt 19M64 Base Course, 3.5” thick.

Pulverized Soil Aggregate Base Course (road mixed), shall consist of pulverizing and scarifying the existing roadbed and shoulders, excavation of pulverized/scarified material and existing sub-grade material as necessary to reach the required grades for the proposed roadway, and construction (mixing, dispersing, grading, shaping, finishing and compacting) of a mixed in place sub-base course, 6” thick. Vegetation and other obstacles shall be removed from the proposed roadway area.

302.02.02 Materials.
THE FOLLOWING IS ADDED:

Materials shall conform to the following Subsections:

Course Aggregate........901.03
Soil Aggregate (I-5).......901.11

302.3 Construction.
302.03.01 Aggregate Base Course.
E. Compaction Acceptance Testing.

One density determination will be made at each of the selected locations using AASHTO T 191 or T 310 (Direct Transmission Method) except that only one method will be used throughout the Project.

THE FOLLOWING IS ADDED:

F. Mixing.

The soil aggregate shall be mixed thoroughly to the required depth by means of a traveling plant with a rotary mixer. Mixing shall be continued until the mixture is uniform in appearance.

302.4 Measurement and Payment.
THE FOLLOWING IS ADDED:

No separate payment will be made for excavation and DGA in areas depicted on the plans or as directed by the Engineer for Base Repairs. Cost for these items shall be included in the unit cost of ‘Base Repair (If & Where Directed).’
DIVISION 400 - PAVEMENTS

SECTION 401 – HOT MIX ASPHALT (HMA) COURSES

401.01 Description

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

This section also includes the installation of Speed Humps as shown on the project plans.

401.3 Construction.

401.03.03 HMA Courses.

H. Air Void Requirements.

THIS SUBSECTION IS REPLACED BY THE FOLLOWING:

Pavement lots are defined as approximately 15,000 square yards of pavement in Surface area. If pavement lot area is less than 5000 square yards, the Regional District Local Aid Office may waive the air voids requirements.

The RE will designate an independent testing agency (Laboratory) to perform the quality assurance sampling, testing and analysis. The Laboratory is required to be accredited by the AASHTO Accreditation Program (www.amrl.net). The Laboratory’s accreditation must include AASHTO T 166 and AASHTO T 209.

The Laboratory Technician who performs the quality assurance sampling shall be certified by the Society of Asphalt Technologists of New Jersey as an Asphalt Plant Technologist, Level 1.

The Laboratory will determine air voids from 5 (Five) 6 inch diameter cores taken from each lot in random locations within the traveled way and at least one core in each travel lane. The Laboratory will determine air voids of cores from the values for the maximum specific gravity of the mix and the bulk specific gravity of the core. The Laboratory will determine the maximum specific gravity of the mix according to NIDOT B-3 and AASHTO T 209, except that minimum sample size may be waived in order to use a 6-inch diameter core sample. The Laboratory will determine the bulk specific gravity of the compacted mixture by testing each core according to AASHTO T 166.

The Laboratory will calculate the in-place air voids of each completed lot outside the acceptable range of 2 percent air voids to 8 percent air voids.

The RE will assess a reduction in lot due to nonconformance to air voids according to the Table 401.03.03-3.

<table>
<thead>
<tr>
<th>Lot Average Air Void Value</th>
<th>Reduction Per Lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Five Samples)</td>
<td>(Percent of Lot)</td>
</tr>
<tr>
<td>0.0 to 1.9</td>
<td>10</td>
</tr>
<tr>
<td>2.0 to 8.0</td>
<td>0</td>
</tr>
<tr>
<td>8.1 to 9.0</td>
<td>5</td>
</tr>
<tr>
<td>9.1 to 10.0</td>
<td>15</td>
</tr>
<tr>
<td>10.1 to 12.0</td>
<td>30</td>
</tr>
<tr>
<td>Over 12.0</td>
<td>Remove &amp; Replace</td>
</tr>
</tbody>
</table>

If the average air voids for the lot is greater than 12.0 percent, remove and replace the lot. The replacement work is subject to the same requirements as the initial work.

I. Thickness Requirements

THIS SUBSECTION IS REPLACED BY THE FOLLOWING:

SUPPLEMENTARY SPECIFICATIONS PAGE 16
Thickness requirements will apply when full-depth, uniform-thickness HMA pavement construction is shown.

Pavement lots are defined as approximately 15,000 square yards of pavement area. The Engineer will not include areas consisting of different HMA mixtures or thicknesses in the same lot. If thickness lot area is less than 5000 square yards, the Regional District Local Aid Office may waive the thickness requirements.

The RE will designate an independent testing agency (Laboratory) to perform the quality assurance sampling, testing and analysis. The Laboratory is required to be accredited by the AASHTO Accreditation Program (www.amrl.net). The Laboratory’s accreditation must include AASHTO T 166 and AASHTO T 209.

The Laboratory Technician who performs the quality assurance sampling shall be certified by the Society of Asphalt Technologists of New Jersey as an Asphalt Plant Technologist, Level 1.

The Laboratory will test for thickness using the full-depth cores taken for surface course air voids, evaluated according to NIDOT B-4. The Laboratory will base acceptance on total thickness and thickness of the surface course.

1. **Total Thickness.** The Laboratory will calculate the percent defective (PD) as the percentage of the lot that is less than the design thickness. The Department will base total thickness acceptance on the percentage of the lot estimated to fall below the specified thickness as follows:

   a. **Sample Mean (X) and Standard Deviation (S) of the N Test Results (X₁, X₂,..., Xₙ).**

   \[
   \bar{X} = \frac{(X_1 + X_2 + ... + X_N)}{N}
   \]

   \[
   S = \sqrt{\frac{(X_1 - \bar{X})^2 + (X_2 - \bar{X})^2 + ... + (X_N - \bar{X})^2}{N - 1}}
   \]

   b. **Quality Index (Q₁).**

   \[Q₁ = (\bar{X} - T_{des})/S, \text{ and } T_{des} \text{ is the design thickness.}\]

   c. **Percent Defective (PD).** Using NIDOT ST for the appropriate sample size, determine the percentage of material (PD) falling below the design thickness associated with Q₁ (lower limit).

   d. **Reduction in Payment.** The Department will determine the reduction in payment based on the quantity of the surface course multiplied by the percent reduction in payment from Table 401.03.03-5.

   ![Table 401.03.03-5 Reduction in Payment for Nonconformance to Requirements for Total Thickness](image)

   e. **Removal and Replacement.** If the lot PD ≥ 45, remove and replace, or mill and overlay, the lot. The replacement work is subject to the same requirements as the initial work.

2. **Surface Course Thickness.** The Laboratory will evaluate the surface course solely to determine whether a remove-and-replace or an overlay condition exists, not for pay adjustment. The Laboratory will calculate the percent defective (PD) as the percentage of the lot that is less than the allowable thickness for the nominal maximum aggregate used in the surface course. The Laboratory will accept pavement lots with PD ≤ 25 and will reject pavement lots with PD > 25.

The Laboratory will base surface thickness acceptance on the percentage of the lot estimated to fall below the allowable thickness as follows:
a. **Sample Mean** (\( \bar{X} \)) and **Standard Deviation** (\( S \)) of the N Test Results \( (X_1, X_2, \ldots, X_N) \). Calculate using the formula as specified in 401.03.03.1.1.

b. **Quality Index** (\( Q \)).

\[ Q_L = (\bar{X} - T_{all})/S, \]

where \( T_{all} \) is the minimum allowable thickness from Table 401.03.03-6.

<table>
<thead>
<tr>
<th>HMA Mix Design Size Designation</th>
<th>Minimum Allowable Compacted Lift Thickness ( (T_{all}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.75 MM</td>
<td>0.75 inch</td>
</tr>
<tr>
<td>9.5 MM</td>
<td>1.00 inch</td>
</tr>
<tr>
<td>12.5 MM</td>
<td>1.25 inches</td>
</tr>
<tr>
<td>19 MM</td>
<td>2.00 inches</td>
</tr>
</tbody>
</table>

c. **Percent Defective.** Using NJDOT ST for the appropriate sample size, determine the percentage of material (PD) falling below the allowable thickness associated with \( Q_L \) (lower limit).

d. **Removal and Replacement.** If the surface course fails to meet the acceptance requirement with a PD ≤ 25, the Department will require removal and replacement of the lot. The replacement work is subject to the same requirements as the initial work.

**J. Ride Quality Requirements.**

THIS SUBSECTION IS REPLACED BY THE FOLLOWING:

The Department may evaluate the HMA surface course placed in travel lanes using the International Roughness Index (IRI) according to ASTM E 1926. Other areas will be tested with a ten foot straight edge. The Department will use the measured IRI and straight edge to compute pay adjustment (PA). The PA will be negative for defective work.

The RE will designate an independent testing agency to perform the ride quality testing and analysis. The testing agency is required to comply with certification requirements according to NJDOT R-1.

The Department will calculate the Pay Adjustment (PA) as specified in Table 401.03.03-7 and will base PA on lots of 0.01 mile length for each travel lane.

1. **Smoothness Measurement.**

   The testing agency will test the longitudinal profile of the HMA surface course for ride quality with a Class 1 Inertial Profiling System according to AASHTO MP 11 approved according to AASHTO PP 49.

   The testing agency will test the full extent of the pavement in the direction of travel in each wheel path. The single IRI value reported for each 0.01-mile lot of pavement is the average of 3 runs.

2. **Other Areas.**

   In addition to the above, a 10-foot straightedge shall be used for the following areas: transverse profile of the finished riding surface, longitudinal and transverse profile of shoulders and ramps, utility hardware, drainage inlets and manholes, and any other areas so designated in the Special Provisions. Any areas that have more than a 1/4-inch deviation between any two contact points of the straightedge shall be corrected by the Contractor using infrared heating to rework the material in a manner approved by the Engineer. Following correction, the area will be retested to verify compliance, each individual non-complying location will be assessed $250 negative PA.

3. **Control Testing.**

   Perform control testing during HMA placement to ensure compliance with the ride quality requirements specified in Table 401.03.03-7.
4. Preparation for IRI Testing.

Provide the necessary traffic control when the testing agency performs IRI testing. Perform required mechanical sweeping of the surface course before IRI testing. To facilitate auto triggering on laser profilers, place a single line of preformed traffic marking tape perpendicular to the roadway baseline 300 feet before the beginning of each lane to be tested.

5. Acceptance.

The Engineer will determine acceptance and make payment adjustments based on the following:

i. Pay Adjustment.

The pay equations in Table 401.03.03-7 express the pay adjustment in dollars per lot of 0.01 mile. For lots of any other length, the Engineer will scale the pay adjustment up or down in proportion to the actual length of the lot. IRI numbers are in inches per mile.

### Table 401.03.03-7 Pay Equations for IRI Ride Quality for 0.01 Mile

<table>
<thead>
<tr>
<th>Local Roadways with Posted Speed ≥ 45 MPH</th>
<th>IRI ≤ 100</th>
<th>PA = $0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100 &lt; IRI ≤ 170</td>
<td>PA = (IRI - 100) × (-$1.43)</td>
</tr>
<tr>
<td></td>
<td>IRI &gt; 170</td>
<td>Remove &amp; Replace</td>
</tr>
<tr>
<td>Local Roadways with Posted Speed &lt; 45 MPH</td>
<td>IRI ≤ 120</td>
<td>PA = $0</td>
</tr>
<tr>
<td></td>
<td>120 &lt; IRI ≤ 220</td>
<td>PA = (IRI - 120) × (-$1.00)</td>
</tr>
<tr>
<td></td>
<td>IRI &gt; 220</td>
<td>Remove &amp; Replace</td>
</tr>
</tbody>
</table>

ii. Retest provision.

After testing, if the IRI exceeds the Remove and Replace value (RRV) in Table 401.03.03-7, the testing agency will retest the lot. The testing agency will average the IRI values from the initial test and the retest to determine the final result.

iii. Removal and Replacement.

If the average IRI is greater than the RRV after a retest is performed, remove and replace the lot. Any replacement work is subject to the same requirements as the initial work. If only a small percentage (less than 8 percent) of paving lots falls under the RRV, the RE may allow the Contractor to submit a plan for corrective action. If the Contractor’s plan for corrective action is not approved, the RE may require removal and replacement, or may allow the lot to remain in place and the lot will be subject to the pay adjustment as computed in Table 401.03.03-7. If the Contractor’s plan for corrective action is approved and the lot is reworked, the testing agency will test and evaluate it as a new lot that must meet the same requirements as the initial work.

### 401.4 Measurement and Payment.

THE FOLLOWING IS ADDED:

Separate payment will not be made for test strips and quality control for compaction, including comparison cores, and nuclear density testing. All costs thereof shall be included in the prices bid for Hot Mix Asphalt 9.5M64 Surface and 19M64 Base courses.

HMA Milling, 3” or Less, will be measured by the square yard.

Variable Profile Milling, 0” to 3” Depth will be measured by the square yard.

Hot Mix Asphalt 9.5M64 Surface Course, 2” Thick, will be measured by the square yard.
Hot Mix Asphalt 9.5M64 Leveling Course, Variable Thickness, will be measured by the ton.

Tack Coat (If & Where Directed), will be measured by the gallon.

Speed Hump will be measured by the unit.

PAYMENT WILL BE MADE UNDER:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMA MILLING, 3” OR LESS</td>
<td>SQUARE YARD</td>
</tr>
<tr>
<td>VARIABLE PROFILE MILLING, 0” TO 3” DEPTH</td>
<td>SQUARE YARD</td>
</tr>
<tr>
<td>HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2” THICK</td>
<td>SQUARE YARD</td>
</tr>
<tr>
<td>HOT MIX ASPHALT 9.5M64 LEVELING COURSE, VARIABLE THICKNESS</td>
<td>TONS</td>
</tr>
<tr>
<td>TACK COAT (IF &amp; WHERE DIRECTED)</td>
<td>GALLON</td>
</tr>
<tr>
<td>SPEED HUMP</td>
<td>UNIT</td>
</tr>
</tbody>
</table>

Payment for Hot Mix Asphalt 19M64 Base Course constructed for base repairs will not be made but the costs will be included in the various bid items set forth in the proposal.
DIVISION 600 – MISCELLANEOUS CONSTRUCTION

SECTION 602 – DRAINAGE STRUCTURES

602.3 Construction.

602.03.03 Setting Castings, Resetting Castings, and Reconstructing Inlets and Manholes.

THE FOLLOWING IS ADDED:

For a single course resurfacing, a 36” minimum circular ramp of hot mix bituminous concrete will be placed about the periphery of the manhole leaving 1/2” of the head exposed. In the case where cold mix bituminous concrete is used for convenience by the contractor, it will be removed prior to placing the hot mix bituminous concrete surface course. For a multi-course resurfacing, the base and/or bottom course should be placed before the head is raised. For a 3” resurfacing, when 1 1/2” of the existing surface course is to be milled off, after milling, the 36” bituminous concrete ramp will be placed as specified for the single course resurfacing.

602.4 Measurement and Payment.

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

Reset Existing Casting shall be measured by the unit.

THE FOLLOWING PAY ITEM IS ADDED:

Payment will be made under:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESET EXISTING CASTING</td>
<td>UNIT</td>
</tr>
</tbody>
</table>
SECTION 607 – CURBS

General - the contractor is hereby notified that all concrete curbs shall be cured in accordance with subsection 607.03.01 and 405.03.02. All section lengths shall conform to subsection 607.03.01 and 607.03.02.

607.4 Measurement and Payment.

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

Payment for the removal and disposal of any existing curb and all adjacent site and pavement restoration, unless payment is otherwise provided for under other pay items, will be included in the unit price bid for 8”x18” concrete vertical curb.

Separate payment will not be made for resetting roof drains or sump pump drains in existing curbs of various kinds, but the cost shall be included in the various items of the proposal.

Separate payment will not be made for road restoration adjacent to new curb.

8” x 18” Concrete Vertical Curb shall be measured by the linear foot.

THE FOLLOWING PAY ITEMS ARE ADDED:

PAYMENT WILL BE MADE UNDER:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>8” X 18” CONCRETE VERTICAL CURB</td>
<td>LINEAR FOOT</td>
</tr>
</tbody>
</table>

Causes for Rejection of Curb

Concrete curb shall be rejected and ordered replaced by the Engineer if any, or all, of the following should occur, or exist:

a. Staining or discoloration of curb.

b. Curb is out of horizontal alignment more than 0.20’.

c. Curb is out of vertical alignment more then 0.10’.

d. Expansion joints are not perpendicular to roadway.

e. Joints and surfaces are improperly finished.

f. Expansion joints protrude from curb.

g. Cracks, chips, or other damage occur in construction of maintenance period.

h. Settlement of curb.

i. Inspection of form work not asked for by Contractor prior to pouring of curb.

j. Improper vibration of concrete.

k. Vandalism during initial setup of concrete.
SECTION 610 - TRAFFIC STRIPES, TRAFFIC MARKINGS, AND RUMBLE STRIPS

610.1 Description.

Removal of pavement reflectors and castings consists of the removal and disposal of existing raised pavement markers, including the lens when still intact.

Removal and replacement of pavement reflector lenses consists of the removal of existing pavement reflector lenses and installing new mono–directional or bi–directional pavement reflector lenses.

610.2 Materials.

610.02.02 Equipment.

The epoxy resin striping and liquid system striping equipment shall be so designed, equipped, maintained, and operated that the material is properly applied in variable widths at a consistent temperature. The striping equipment shall include a tachometer and a pressure gauge and a calibrated holding vessel for each component. The holding vessels for all pigments and hardeners shall have thermometers for measuring the temperature of the vessel contents. The striping equipment shall be equipped with a separate power unit for the pumps used in the mixing and distribution of the components. The following shall be furnished with each striping equipment:

1. A calibration sheet that shows the number of the truck body, the capacity thereof, and an outage table in increments of not over ½ inch. This calibration sheet must be certified by the manufacturer or testing agency.
2. A metal rod for each holding vessel, with accurate divisions marked and consecutively numbered starting at the bottom. The rod shall not be less than 1 foot longer than the depth of the vessel.
3. Slip-proof steps with handrail to reach ground level.
4. Slip-proof catwalk with handrail, running along the top of the vessel.
5. Fire extinguisher in working order.

The equipment for applying thermoplastic material shall be capable of providing continuous mixing and agitation of the material. The parts of the equipment conveying the material between the main reservoir and the shaping die shall be so constructed to prevent accumulation and clogging. The mixing and conveying parts and the shaping dies or spray gun shall be capable of maintaining the material at optimum plastic temperature. The equipment shall be so constructed to ensure continuous uniformity in the dimensions of the entire stripe or marking. The kettle provided for the melting and heating of the thermoplastic material shall be equipped with an automatic thermostat control device and heated by a controlled heat-transfer liquid rather than by a direct flame. The heating kettle and applicator shall be equipped and arranged to meet the National Board of Fire Underwriters and State and Federal regulations. The parts of the equipment that come in contact with the material shall be easily accessible for cleaning and maintenance.

All equipment for applying traffic stripes or traffic markings shall be equipped with glass bead dispensers of a type that will mechanically and automatically dispense beads uniformly on wet stripes or markings at the rates specified.

Equipment for removing the various types of traffic stripes or traffic markings shall be designed with a vacuum system to remove all millings from the pavement surface and prevent airborne residue from escaping into the atmosphere.

All equipment including traffic marking tape applicator and retrometer shall be duly calibrated and shall conform to manufacturer’s requirements.

610.3 Construction

610.3.1 Long-Life Traffic Stripes.

A. Striping Plan

THE ENTIRE SUBSECTION TEXT IS CHANGED TO:

The Contractor shall furnish for approval, 20 calendar days before placement, a complete schedule of operations for applying pavement markings, including the number and types of equipment, and procedures for the Project.

When long-life traffic stripes are required on the Project, the Contractor shall furnish the manufacturer’s written instructions for proper use of the materials, including but not limited to, mixing ratios and application temperatures.

The Contractor shall arrange for and have each long-life material manufacturer’s representative on the site for the first full day of applying either long-life traffic stripes or traffic markings to provide technical assistance.

The Contractor shall furnish a LTL-2000 Retrometer for the Engineer’s use in determining the retroreflectance values of the various traffic stripes or traffic markings. This equipment is for the sole use of the Engineer and will become the property of the Contractor after Acceptance.

Before starting long-life traffic striping operations, the Contractor shall construct one or more test strips. Each test strip shall consist of approximately 500 linear feet of pavement with white and yellow striping (lane and edge lines) or markings similar to that required for the Project. The test strips shall demonstrate the capability of the proposed
materials, equipment, and procedures to produce long-life traffic stripes that comply with the Specifications, including dimensions, appearance (stripes with uniform color and crisp, well defined edges), wet film thickness, drying time, adhesion, and glass beads application and retention. A test strip will be required for each applicator equipment used. Additional test strips may be required when major equipment repairs or adjustments are made or when the traffic stripes fail to comply with the Specifications. Permission to proceed with the striping operations will be given when the test strips are in compliance. Each test strip may remain in place and become part of the finished stripes subject to the requirements of Subsections 610.03.01.E and 610.03.02.D.

B. Surface Preparation.

The Contractor shall apply a primer-sealer conforming to NJDEP volatile organic content (VOC) requirements to the areas of HMA and portland cement concrete surfaces as required, in accordance with the striping manufacturer’s recommendations.

D. Applying Striping.

THE SUBSECTION TEXT IS CHANGED TO:

The Contractor shall mix epoxy resin material with an automatic proportioning and mixing machine and hot-spray the compound at a temperature between 100 and 130 °F onto thoroughly dry surfaces. The material shall only be placed during anticipated dry weather when the ambient temperature is a minimum of 45 °F and the surface temperature is a minimum of 50 °F. The temperature of the sprayed mixture shall be adjusted as required for prevailing conditions, including the air and pavement surface temperatures, to achieve a no-track drying time of 30 minutes or less. The epoxy resin mixture shall be applied in a wet film thickness of 20 ± 1 mil.

Immediately after, or in conjunction with the epoxy resin application, the Contractor shall apply large glass beads and small glass beads to the wet compound. Each type of bead shall be applied in a uniform pattern and each at a rate of 12 pounds per gallon of epoxy resin material.

The Contractor shall remove all epoxy resin material that has been tracked or spilled in areas outside of the intended placement areas.

Alternate liquid striping materials shall be selected from the approved product list maintained by the Bureau of Materials.

610.3.2 Thermoplastic Traffic Markings.

610.3.2 Long-Life Thermoplastic and Preformed Tape Traffic Markings.

A. Marking Plan

THE ENTIRE SUBSECTION TEXT IS CHANGED TO:

The Contractor shall furnish for approval, 20 calendar days before placement, a complete schedule of operations for applying pavement markings, including the number and types of equipment, and procedures for the Project.

When long-life traffic stripes are required on the Project, the Contractor shall furnish the manufacturer’s written instructions for proper use of the materials, including but not limited to, mixing ratios and application temperatures.

The Contractor shall arrange for and have each long-life material manufacturer’s representative on the site for the first full day of applying either long-life traffic stripes or traffic markings to provide technical assistance.

The Contractor shall furnish a LTL-2000 Retrometer for the Engineer’s use in determining the retroreflectance values of the various traffic stripes or traffic markings. This equipment is for the sole use of the Engineer and will become the property of the Contractor after Acceptance.

Before starting long-life traffic striping operations, the Contractor shall construct one or more test strips. Each test strip shall consist of approximately 500 linear feet of pavement with white and yellow striping (lane and edge lines) or markings similar to that required for the Project. The test strips shall demonstrate the capability of the proposed materials, equipment, and procedures to produce long-life traffic stripes that comply with the Specifications, including dimensions, appearance (stripes with uniform color and crisp, well defined edges), wet film thickness, drying time, adhesion, and glass beads application and retention. A test strip will be required for each applicator equipment used. Additional test strips may be required when major equipment repairs or adjustments are made or when the traffic stripes fail to comply with the Specifications. Permission to proceed with the striping operations will be given when the test strips are in compliance. Each test strip may remain in place and become part of the finished stripes subject to the requirements of Subsections 610.03.01.E and 610.03.02.D.
B. Surface Preparation.

The Contractor shall apply a primer-sealer conforming to NJDEP volatile organic content (VOC) requirements to the areas of HMA and portland cement concrete surfaces as required, in accordance with the striping manufacturer’s recommendations.

C. Applying Long-Life Traffic Markings.

THE ENTIRE SUBSECTION TEXT IS CHANGED TO:

The Contractor shall apply preformed thermoplastic or hot extruded thermoplastic or preformed tape traffic markings, using equipment and procedures that produce markings that are straight and have sharp edges; that are the specified color, width, and thickness; that have uniform retroreflectivity; and that are properly bonded to the pavement. The thermoplastic material shall be applied as follows:

1. **Preformed Thermoplastic.** The Contractor shall place preformed thermoplastic traffic marking tape on thoroughly dry surfaces and during anticipated dry weather. The preformed thermoplastic tape shall be melted using the flame from a propane-type torch, according to the manufacturer’s recommendations, to bond the traffic markings permanently in position.

   If required, the Contractor shall apply additional glass beads to the hot-wet material in a uniform pattern, to attain the minimum initial retroreflectance value specified in Subsections 610.03.01.E and 610.03.02.D for thermoplastic tape.

2. **Hot Extruded Thermoplastic.** The Contractor shall heat the thermoplastic material uniformly and apply the melted material at a temperature between 400 and 425 °F, to thoroughly dry surfaces and during anticipated dry weather, when the ambient and surface temperatures are a minimum of 50 °F. The thermoplastic traffic markings shall be extruded on the HMA or portland cement concrete pavement in a thickness of 90 ± 5 mils.

   Immediately after, or in conjunction with the thermoplastic application, the Contractor shall apply, by mechanical means, glass beads to the wet material in a uniform pattern and at a minimum rate of 10 pounds per 100 square feet of markings. Hand throwing of the beads will not be allowed.

3. **Preformed tape.** Preformed traffic tape shall be applied according to the tape manufacturer’s installation instructions. The use of primers or other adhesion promoting agents shall be used according to the recommendations of the tape and primer/agent manufacturers. Applied stripes and markings shall be free from snaking, air bubbles, loose edges or any other condition that may cause early failure as determined by the engineer.

   Tape shall be applied at least 3 inches away from longitudinal joints. In areas where it is not possible to avoid a joint beneath the tape, such as transverse construction joints, short lengths of longitudinal joints or other pavement depressions and irregularities directly beneath the tape, the tape shall be cut or treated according to the tape or marking manufacturer’s recommendations. In no case shall more than two continuous feet of striping tape be placed over a longitudinal joint.

D. Defective Markings.

The Contractor shall replace long-life traffic stripes or traffic markings determined to be in nonconformance with the Specifications, or not placed at the locations or in the dimensions specified. The defective stripes or markings shall be removed according to Subsection 610.03.08.

The Contractor shall replace defective long-life traffic stripes based on the following:

1. The entire 10 foot broken line if the line to be replaced is determined to have a deficiency.
2. The entire length of epoxy resin striping determined to have a wet film thickness of less than 19 mils shall be restriped with 20 mils of new epoxy resin, based upon the calculated and measured yields.
3. The entire length of striping shall be replaced where improper curing or discoloration has occurred. Discoloration is defined as localized areas or patches of brown or grayish colored epoxy resin material. When improper curing or discoloration occurs intermittently in intervals of 100 feet or less throughout the striping, the entire length of striping shall be replaced from where it first occurs until where it no longer exists plus 5 feet on each end.
4. The entire length of striping that has failed to bond or adhere to the pavement, or has chipped or cracked, shall be replaced from where it first occurs to where it no longer exists. When more than 25 spots (combined or individual) of chipping, cracking or poor bonding/adhesion has occurred within a 1,000 linear foot distance, the entire 1,000 linear feet shall be replaced.
5. The entire length of 1 mile of striping shall be replaced where the initial retroreflectance value of two of four readings for that 1 mile of 4-inch wide striping is not in compliance with the following:

As measured with a LTL-2000 Retrometer
6. The entire area of striping shall be replaced where the glass bead coverage or retention is deficient, based on yield determinations made during application and on visual comparisons of the production traffic stripes with those of the test strips.

The Contractor shall replace defective long-life thermoplastic traffic markings based on the following:

1. The entire area of marking determined to be less than the required thickness, to have an incorrect color or width, to have failed to bond to the pavement, or to have chipped or cracked shall be replaced. The minimum replacement area is an individual word or symbol, or entire length of longitudinal line from where the deficiency first occurs to where it no longer exists.

2. The entire area of marking shall be replaced where the initial retroreflectance value is less than 375 millicandels per square foot per footcandle for white or 250 millicandels per square foot per footcandle for yellow. Initial retroreflectance will be determined as follows:

   Step 1: Visual night inspections will be made to identify traffic markings that appear to be below the specified minimum value.
   Step 2: All retroreflectance measurements taken with an LTL-2000 retrometer will be made on a clean, dry surface.
   Step 3: a. For word markings, three random retroreflectance measurements will be made on each letter.  
            b. For symbols, nine random retroreflectance measurements will be made over the symbol.
   Step 4: All retroreflectance measurements within an area will be averaged to determine if the minimum retroreflectance requirements are met.

At no Additional Compensation to the State, the Contractor shall remove all traffic paint where the striping or markings will not be directly under long-life material, replace long-life traffic stripes or traffic markings damaged due to any sawing or sealing of joints in the HMA overlay, and replace all existing pavement reflectors that have been marred by striping or marking material as a result of improperly located traffic stripes or traffic markings.

610.03.08 Removal of Traffic Stripes or Traffic Markings.

610.3.8 Removal and Replacement of Traffic Delineation Devices.

A. Removal of Traffic Stripes, Markings, or Reflectors and Castings. The Contractor shall remove all types of traffic stripes or traffic markings by methods that do not damage the integrity of the underlying pavement or adjacent pavement areas, and that do not cause gouging, or create ridges or grooves in the pavement that may result in compromising vehicular control. Obliterating stripes or markings by painting over them shall not be permitted.

Before starting removal operations, the Contractor shall demonstrate the proposed method to accomplish the complete removal of the reflectors and castings and the removal of approximately 95 percent of the stripe or marking without the removal of more than 1/16 inch of pavement thickness. Area of removal includes the area of the stripe or marking plus 1 inch on all sides. Removal operations shall not be permitted until the method of removal has been approved.

Debris from the removal of traffic stripes and markings shall be disposed of according to Subsection 201.03.09.

Disposal of pavement reflectors and castings shall be in conformance with Subsection 201.03.09.

B. Removal and Replacement of Pavement Reflector Lenses. The Contractor shall remove existing pavement reflector lenses and install new mono–directional or bi–directional pavement reflector lenses within the limits of construction or as directed by the Engineer. The reflector adhesive used in the bonding of the reflector lenses to the casting shall be in conformance with Subsection 912.04.

The Contractor shall remove and replace pavement reflector lenses by methods that do not damage the underlying castings.

Disposal of pavement reflectors lenses shall be in conformance with Subsection 201.03.09.

610.04 Measurement and Payment.

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

Installation of traffic stripes, long life, epoxy resin, 4” will be measured by the linear foot.
Installation of traffic markings, symbols, long life, thermoplastic will be measured by the square foot.

THE FOLLOWING PAY ITEM IS ADDED:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAFFIC STRIPES, LONG LIFE, EPOXY RESIN, 4”</td>
<td>LINEAR FOOT</td>
</tr>
<tr>
<td>TRAFFIC MARKINGS, SYMBOLS, LONG LIFE, THERMOPLASTIC</td>
<td>SQUARE FOOT</td>
</tr>
</tbody>
</table>
DIVISION 650 - UTILITIES

SECTION 651 - WATER

651.3 Construction.

651.03.07 Reset Water Valve Box.

THE FOLLOWING IS ADDED:

Methods of construction shall be such that when reset, the vent/valve/cleanout boxes shall conform to the grade of the resurfaced or re-graded area.

Care shall be exercised in resetting the vent/valve/cleanout boxes. After resetting, the vent/valve/cleanout boxes shall be protected until the final resurfacing course has been laid. Castings which are damaged because of construction operations or vehicular traffic shall be replaced in kind and in a manner satisfactory to the utility company concerned without additional compensation.

651.4 Measurement and Payment.

THE FOLLOWING IS ADDED:

Reset water valve box and vent will not be measured.

Payment for reset water valve box and vent will not be made but the costs will be included in the various bid items set forth in the proposal.
SECTION 652 - SANITARY SEwers

652.01 Description.

THE FOLLOWING IS ADDED:

This work shall include the resetting of sanitary sewer vents and sanitary sewer cleanouts; storm sewer cleanouts; and under-drain cleanouts.

652.3 Construction.

652.03.07 Reset Sanitary Sewer Manhole.

THE FOLLOWING IS ADDED:

Methods of construction shall be such that when reset, the vent/valve/cleanout boxes shall conform to the grade of the resurfaced or re-graded area.

Care shall be exercised in resetting the vent/valve/cleanout boxes. After resetting, the vent/valve/cleanout boxes shall be protected until the final resurfacing course has been laid. Castings which are damaged because of construction operations or vehicular traffic shall be replaced in kind and in a manner satisfactory to the utility company concerned without additional compensation.

652.4 Measurement and Payment.

THE FOLLOWING IS ADDED:

Reset vent/valve boxes, sanitary sewer vents, sanitary sewer cleanouts, storm sewer cleanouts, and under-drain cleanouts will not be measured.

Payment for reset vent/valve boxes, sanitary sewer vents, sanitary sewer cleanouts, storm sewer cleanouts, and under-drain cleanouts will not be made but the costs will be included in the various bid items set forth in the proposal.

Reset Existing Casting will be measured by the unit. Separate payment will not be made for grade rings or the installation thereof. All costs thereof shall be included in the various items of the proposal.

THE FOLLOWING PAY ITEMS ARE ADDED:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESET EXISTING CASTING</td>
<td>UNIT</td>
</tr>
</tbody>
</table>
SECTION 653 - GAS

653.3 Construction.
653.03.04 Gas Valve Boxes.

THE FOLLOWING IS ADDED:

Methods of construction shall be such that when reset, the vent/valve/cleanout boxes shall conform to the grade of the resurfaced or re-graded area.

Care shall be exercised in resetting the vent/valve/cleanout boxes. After resetting, the vent/valve/cleanout boxes shall be protected until the final resurfacing course has been laid. Castings which are damaged because of construction operations or vehicular traffic shall be replaced in kind and in a manner satisfactory to the utility company concerned without additional compensation.

653.4 Measurement and Payment.

THE FOLLOWING IS ADDED:

Reset gas valve box and vent will not be measured.

Payment for reset gas valve box and vent will not be made but the costs will be included in the various bid items set forth in the proposal.
DIVISION 800 – LANDSCAPING

SECTION 804 – TOPSOILING

804.04 Measurement and Payment.

THE FOLLOWING IS ADDED:

Topsoiling of the various thicknesses shall be measured on a square yard basis and shall include the cost of importing borrow topsoil.

PAYMENT WILL BE MADE UNDER:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPSOILING, 4” THICK (IF AND WHERE DIRECTED)</td>
<td>SQUARE YARD</td>
</tr>
</tbody>
</table>
SECTION 806 - FERTILIZING AND SEEDING

806.04 Measurement and Payment.

Payment will not be made for areas of fertilizing and seeding disturbed by Construction Operations, beyond the prescribed grading limits in islands and medians, and between prescribed grading limits and the right-of-way line, except as follows:

a 10-foot work strip from the toe of slope and a 15-foot strip from the top of slope or adjacent to drainage ditches constructed under this Contract.

all areas within the right-of-way limits approved for storage of topsoil.

all areas designated for preparation of existing soil as specified under Section 805.

THE FOLLOWING IS ADDED:

Fertilizing and Seeding, Type “A-3”, shall be measured on a square yard basis.

PAYMENT WILL BE MADE UNDER:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FERTILIZING AND SEEDING, TYPE “A-3” (IF AND WHERE DIRECTED)</td>
<td>SQUARE YARD</td>
</tr>
</tbody>
</table>
DIVISION 900 - MATERIALS

SECTION 901 – AGGREGATES

901.10 Dense-Graded Aggregate.

When AASHTO T 310 (Direct Transmission Method, nuclear gauge method for measuring density and moisture content) is used to perform Compaction Acceptance Testing (Subsection 302.03.01.E), a representative sample of five tests for each 5,000 square yards lot will be taken.
SECTION 902 - ASPHALT

902.2 Hot Mix Asphalt (HMA).

902.2.3 Mix Design.

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH:

Unless otherwise approved by the engineer, only one source of supply for HMA surface course may be used on the project.

902.2.4 Sampling and testing.

(b) Drum mix plants

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH:

When a lot is necessarily less than 350 tons no samples shall be taken. When a lot is greater than 350 tons a minimum of 2 samples shall be taken.

(c) Fully automated batch plants

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH:

When a lot is necessarily less than 350 tons no samples shall be taken. When a lot is greater than 350 tons a minimum of 2 samples shall be taken.

THE FOLLOWING IS ADDED TO THIS SECTION:

ALTERNATE SECTION 902 - HOT MIX ASPHALT

902.02.04 Sampling and testing (alternate)

THE SECOND PARAGRAPH IS CHANGED TO:

The producer’s quality control technician shall be present during periods of mix production for the sole purpose of performing quality control and acceptance testing. The quality control technician shall be certified as an asphalt plant technician, level 2 by the society of asphalt technicians of New Jersey. The quality control technician will perform all required volumetric acceptance testing and quality control composition testing. The test results will be submitted to the engineer on a daily basis along with a certification of compliance.

THE FOLLOWING IS ADDED TO 902.02.04:

F. Requirements for laboratory performing quality assurance testing

Any independent testing agency and/or laboratory performing the services necessary for quality assurance sampling, testing and/or analysis shall be accredited by the AASHTO accreditation program.

Along with the test results submitted to the engineer, the laboratory shall also submit the testing worksheets showing the test methods used, including the calculations. All results will be compared to the quality control test results for the project.

The technician who performs the quality assurance testing for the testing agency and/or laboratory shall be certified by the society asphalt technologists of New Jersey, Inc. As an asphalt plant technologist, level 2.

All testing agencies and/or laboratories must be in possession of a certificate of accreditation from the AASHTO accreditation program in order to provide the required services. The certificate of accreditation (on www.nist.gov/amrl) shall be for, at least, the following test methods:

AASHTO T30 - mechanical analysis of extracted aggregate.

AASHTO T164 - quantitative extraction of bitumen from bituminous paving mixtures or AASHTO T308 - determining the asphalt binder content of hot mix asphalt (HMA) by the ignition method.
G. Quality assurance sampling and testing
For quality assurance purposes the agency may take 8-inch diameter cores from the roadway for confirmation of the quality control composition results. The testing will be performed by an independent testing agency and/or laboratory.

Confirmation of the quality control composition results shall be determined on the basis of the average of five 8-inch diameter drilled cores taken from random locations in a lot. A lot should be a maximum of 10,000 square yards in area and will apply to all projects whether the project payment quantities for hot mix asphalt surface course, hot mix asphalt intermediate course or hot mix asphalt base course are measured on a square yard or ton basis.

When a drill fails to procure a whole core, the drill shall be moved a distance of not more than 5 feet and an alternate core obtained. When a project involves the improvement of several individual streets, or several sections of the same street, the lot shall be determined by the area of each street and if less than the required lot area, the next street or section paved shall be added to complete the approximate area of the lot. All lots shall be approximately equal in size. The number of lots for the project shall be based on the next higher whole number derived by dividing the total pavement square yardage by 10,000.

The average of the test results for the five samples of a lot shall be compared to the average of the quality control test results representative of the lot. The average quality assurance test results shall be within the applicable tolerances of Table 902.02.04-2 as compared to the quality control test results. Payment for any lot, which does not comply, with these requirements shall be reduced in accordance with Table 902.02.04-3. The engineer may order removal of any lot subject to the maximum reduction.

**TABLE 902.02.04-2 TOLERANCE FROM QUALITY CONTROL TEST RESULTS FOR AVERAGE OF FIVE SAMPLES**

<table>
<thead>
<tr>
<th>SIEVE SIZE</th>
<th>TOLERANCE PERCENTAGE (Plus or Minus)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL PLANTS</td>
<td></td>
</tr>
<tr>
<td>No. 8</td>
<td>5.5</td>
</tr>
<tr>
<td>No. 200</td>
<td>1.6</td>
</tr>
<tr>
<td>Asphalt</td>
<td>0.55</td>
</tr>
</tbody>
</table>

**TABLE 902.02.04-3 REDUCTION PER LOT DUE TO NONCONFORMANCE OF QUALITY ASSURANCE TESTING AS COMPARED TO THE QUALITY CONTROL TESTING**

<table>
<thead>
<tr>
<th>DEVIATION OF AVERAGE OF FIVE QUALITY ASSURANCE SAMPLES AS COMPARED TO THE REPRESENTATIVE QUALITY CONTROL SAMPLES BEYOND APPLICABLE TOLERANCES IN TABLE 902.02.04-2 (PERCENT OF TOLERANCE ABOVE)</th>
<th>REDUCTION PER LOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TO 50</td>
<td>2%</td>
</tr>
<tr>
<td>51 TO 100</td>
<td>5%</td>
</tr>
<tr>
<td>OVER 100</td>
<td>10%</td>
</tr>
</tbody>
</table>

H. Acceptance of HMA.
The Department may accept the HMA as specified in 902.02.04.A through 902-02.04.E by employing staff or an independent testing agency at the HMA plant during production. The inspector who performs the quality assurance sampling shall be certified by the Society of Asphalt Technologists of New Jersey as an Asphalt Plant Technologist, Level 2.

Alternatively, the Department may accept the HMA by Certification of Compliance according to 106.07.
SECTION 903 - CONCRETE

903.1 Cement.
THE FOLLOWING IS ADDED:

Portland cement concrete shall be composed of portland cement or blended hydraulic cement, coarse aggregate, fine aggregate, admixtures, and water. Portland cement concrete except white concrete may include fly ash, Ground Granulated Blast Furnace Slag or Silica Fume. Materials shall conform to the following Subsections:

| Aggregates ........................................................................................................ | 901.06 |
| Admixtures: | ........................................................................................................ | |
| Air-Entraining .................................................................................................. | 903.02.01 |
| Chemical ........................................................................................................... | 903.02.02 |
| Mineral | ........................................................................................................ | |
| Fly Ash ............................................................................................................. | 903.02.03(A) |
| Ground Granulated Blast Furnace Slag ................................................................ | 903.02.03(B) |
| Silica Fume ..................................................................................................... | 903.02.03(C) |
| Portland Cement ............................................................................................... | 903.01 |
| Water ............................................................................................................... | 919.08 |

903.2 Concrete Admixtures

903.2.2 Chemical Admixtures.

Corrosion inhibitor products that are to be used in the fabrication of concrete items shall be as follows:

Calcium Nitrite Based as produced by
W.R. Grace & Company
2133 85th Street
North Bergen, NJ 07047
Telephone: 201-869-5220

Calcium Nitrite Based as produced by
The Euclid Chemical Company
5 Joanna Court
East Brunswick, NJ 08816
Telephone: 732-390-9770

Calcium Nitrite Based as produced by
Master Builders Inc.
798 Welsh Road
Huntingdon Valley, PA 19006
Telephone: 215-938-7501

Calcium Nitrite Based as produced by
SIKA Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Telephone: 800 - 933 - SIKA (7452)

Calcium Nitrite Based as produced by
Great Eastern Technologies, LLC
“Chem Strong CI”
515 Route 528
P. O. Box 3015
Lakewood, NJ 08701
Telephone: 888 - 452 – 9348

903.2.3 Mineral Admixtures

SUPPLEMENTARY SPECIFICATIONS PAGE 36
A. Fly Ash

THE ENTIRE TEXT IS CHANGED TO:

Fly ash for portland cement concrete shall conform to ASTM C 618, Class C or Class F except that the loss on ignition shall not be more than three percent. Fly ash used to control alkali-silica reactivity shall be Class F. Before each source of fly ash is approved, certified results of tests conducted by a testing agency shall be submitted to and verified by the Department. Accompanying the certification shall be a statement from the supplier listing the source and type of coal, the methods used to burn, collect, and store the fly ash, and the quality control measures employed.

903.3 Concrete.

903.3.2 Mix Design and Verification.

THE FOLLOWING IS ADDED TO THE END OF THE FIRST PARAGRAPH:

Classes A and B concrete may be designed to achieve early strength requirements by increasing the Cement content.

THE SIXTH SENTENCE OF THE THIRD PARAGRAPH IS CHANGED TO:

At least six 4 by 8 inch test cylinders shall be prepared from each batch and cured according to AASHTO T 23 or AASHTO T 126.

903.3.5 Control and Acceptance Testing Requirements.

C. Acceptance Testing Procedures for Slump and Air Entrainment.

THE FOURTH SENTENCE OF THE FOURTH PARAGRAPH IS CHANGED TO:

Following any permitted additions, the drum shall be rotated at the recommended mixing speed for a minimum of 30 revolutions without exceeding 300 total revolutions, the original test results shall be disregarded, and a single test for both slump and air entrainment performed.

D. General Acceptance Testing Requirements for Strength.

Concrete test specimens which are to be used for determination of early strengths for form removal, opening to traffic, or otherwise placing the concrete into service shall be cured according to the field curing provisions in AASHTO T-23.

E. Acceptance Testing for Strength for Pay-Adjustment Items.

THE FIRST AND SECOND PARAGRAPHS ARE CHANGED TO:

The list of concrete Pay Items, if any, which are subject to pay-adjustment and their base prices may be found in the Special Provisions.

The amount of pay-adjustment in dollars is the product of the Pay Item base price times the lot quantity times the percent pay-adjustment (expressed as a decimal) given by Equation 1 or Equation 2.

F. Acceptance Testing for Strength for Non-Pay-Adjustment Items.

THE ENTIRE TEXT OF THIS SUBPART IS CHANGED TO:

All concrete items not specifically designated as pay-adjustment items as described in Subsection 903.03.05.E, are considered to be non-pay-adjustment items, but may be accepted by pay-adjustment under certain circumstances. Such an item is eligible for 100 percent payment (PA = 0) provided the retest limit of Subsection 903.03.06, Table 903.03.064-4 is met. If this requirement is not met, the item will be treated as a pay-adjustment item according to Subsection 903.03.05.E, and all pay-adjustment provisions shall apply except that the item bid price will be used instead of an item base price in the computation of the pay-adjustment.

When a pay-adjustment is computed for any of the following items, which are only partially composed of concrete, the amount of pay-adjustment, if any, will be multiplied by the Estimated Percentage of Concrete (expressed as a decimal) as indicated below:

<table>
<thead>
<tr>
<th>Estimated Percentage</th>
<th></th>
<th></th>
</tr>
</thead>
</table>

SUPPLEMENTARY SPECIFICATIONS PAGE 37
Pay Item of Concrete
INLETS, TYPE ___ 30
INLETS, TYPE ___, USING EXISTING CASTING 30
INLETS, TYPE B ___ 40
INLETS, TYPE B ___, USING EXISTING CASTING 40
INLETS, TYPE ___MODIFIED 40
INLETS, TYPE ___MODIFIED, USING EXISTING CASTING 40
INLETS, TYPE ES 50
INLET CASTINGS, TYPE ES 40
MANHOLES ___ 30
MANHOLES, ___' DIAMETER 30
MANHOLES, USING EXISTING CASTING 30
MANHOLES, SANITARY SEWER 30
MANHOLES, SANITARY SEWER, USING EXISTING CASTING 30
GRANITE CURB 25
RESET GRANITE CURB 25
BEAM GUIDE RAIL ANCHORAGES 25
CHAIN-LINK FENCE, ___' HIGH 25
CHAIN-LINK FENCE, ALUMINUM-COATED STEEL, ___' HIGH 25
CHAIN-LINK FENCE, PVC-COATED STEEL, ___' HIGH 25
CHAIN-LINK FARM-TYPE FENCE 25
GATES, CHAIN-LINK FENCE, ___' WIDE 25
GATES, CHAIN-LINK FENCE, ALUMINUM-COATED STEEL, ___' WIDE 25
GATES, CHAIN-LINK FENCE, PVC-COATED STEEL, ___' WIDE 25
RESET FENCE 25
TEMPORARY CHAIN-LINK FENCE, ___' HIGH 25
GUIDE SIGNS, TYPE GA, BREAKAWAY SUPPORTS 20
GUIDE SIGNS, TYPE GA, NON-BREAKAWAY SUPPORTS 20

The amount of pay-adjustment for pay items not listed above is the product of the unit bid price times the lot quantity times the percent pay-adjustment given by Equation 1.

903.3.6 Tables
TABLES 903.03.06-1, 903.03.06-3, AND 903.03.06-4 ARE CHANGED TO:

Table 903.03.06-1 Requirements for Roadway Concrete Items

<table>
<thead>
<tr>
<th>Concrete Class</th>
<th>Slump (inch)</th>
<th>Percent Air Entrainment for Coarse Aggregate Size Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>357</td>
<td>467</td>
</tr>
<tr>
<td>Cast-in-Place Items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Course, Bridge Approach Slabs, Bridge Approach Transition Slabs</td>
<td>B</td>
<td>2±1</td>
</tr>
<tr>
<td>Base Course</td>
<td>B</td>
<td>2±1</td>
</tr>
<tr>
<td>Inlet and Manhole Walls, Headwalls, Miscellaneous Concrete</td>
<td>B</td>
<td>3±1</td>
</tr>
<tr>
<td>Cast-in-Place Items (continued)</td>
<td>Concrete Class</td>
<td>Slump (inch)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Inlet and Manhole Top Slabs, Sidewalks, Driveways, Islands</td>
<td>B 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Slope Gutters, Vertical Curb, Sloping Curb, Barrier Curb and Base</td>
<td>B 4±1</td>
<td>----</td>
</tr>
<tr>
<td>Concrete and White Concrete Vertical, Sloping and Barrier Curb, Concrete and White Concrete Islands</td>
<td>B 4±1</td>
<td>----</td>
</tr>
<tr>
<td>Foundations for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlets and Manholes</td>
<td>B 3±1</td>
<td>6.5 max</td>
</tr>
<tr>
<td>Electrical Items</td>
<td>B 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Signs</td>
<td>B 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Junction Boxes</td>
<td>B 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Footings for Fence Posts, Guide Rail End Treatment</td>
<td>B 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Culverts</td>
<td>A 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Monuments</td>
<td>A 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Slope Protection</td>
<td>B 2±1</td>
<td>----</td>
</tr>
<tr>
<td>Precast Items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culverts</td>
<td>A 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Inlets and Manholes, Junction Boxes, Headwalls, Reinforced Concrete End Sections (See note 2)</td>
<td>B 3±1</td>
<td>----</td>
</tr>
<tr>
<td>Concrete and White Concrete Barrier Curb</td>
<td>B 3±1</td>
<td>----</td>
</tr>
</tbody>
</table>

Note 1: According to Subsection 903.02.02, a Type F water-reducing, high range admixture will be permitted according to Subsection 903.02.02, 903.03.02, and 903.03.05, Subpart C. When a Type F admixture is used, the table Slump and Air Content values for the given concrete item shall be changed as follows:

Slump: 6 ± 2 inches
Air Content: Increase both the target value and tolerance percentages by 0.5.

Note 2: For the items in this category, the slump may be reduced to zero (dry cast) provided that adequate consolidation, acceptable to the Engineer, is achieved.
Table 903.03.06-3 Mix Design Requirements

<table>
<thead>
<tr>
<th>Class of Concrete</th>
<th>A</th>
<th>B</th>
<th>S</th>
<th>P</th>
<th>P-1</th>
<th>P-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Design Strength (28 days, psi Note 3)</td>
<td>4600</td>
<td>3700</td>
<td>2000</td>
<td>5500</td>
<td>6000</td>
<td>6500</td>
</tr>
<tr>
<td>Verification Strength (28 days, psi Note 3)</td>
<td>5400</td>
<td>4500</td>
<td>--</td>
<td>6000</td>
<td>6500</td>
<td>7000</td>
</tr>
</tbody>
</table>

Maximum Water/Cement Ratio (Note 2)

<table>
<thead>
<tr>
<th>lb/lb</th>
<th>gals/bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.443</td>
<td>5.0</td>
</tr>
<tr>
<td>0.488</td>
<td>5.5</td>
</tr>
<tr>
<td>0.577</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Minimum Cement Content

<table>
<thead>
<tr>
<th>lb/cy</th>
<th>Bags/cy</th>
</tr>
</thead>
<tbody>
<tr>
<td>611</td>
<td>6.5</td>
</tr>
<tr>
<td>564</td>
<td>6.0</td>
</tr>
<tr>
<td>658</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Note 1: According to PCI Manual, except as indicated in Note 2.

Note 2: The maximum water/cement ratio for all classes of concrete except for Classes P, P-1 and P-2, when a Type F water-reducing, high range admixture is used according to Tables 903.03.06-1 and 903.03.06-2, shall be reduced by 0.043 lb/lb (4.5 gals/bag).

Note 3: All concrete test results shall be recorded to the nearest 10 psi.

Note 4: To successfully meet the requirements of this specification, the target production strength must be higher than the Class Design Strength by an amount proportional to the Producer’s within-lot standard deviation.

Table 903.03.06-4 Lot Sizes, Sampling Rates and Retest Limits

<table>
<thead>
<tr>
<th>Class of Concrete</th>
<th>A</th>
<th>B</th>
<th>S</th>
<th>P</th>
<th>P-1</th>
<th>P-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot Size (maximum)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pay-Adjustment Items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Sampling Rate</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>--</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>5/Lot</td>
</tr>
<tr>
<td>Retest Sampling Rate (minimum)</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>--</td>
<td>5/Unit or Load Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Pay-Adjustment Items</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Sampling Rate</td>
<td>3/Lot</td>
<td>2/Lot</td>
<td>1/Lot</td>
<td>3/Lot</td>
<td>3/Lot</td>
<td>3/Lot</td>
</tr>
<tr>
<td>Retest Limit (psi)</td>
<td>4400</td>
<td>3600</td>
<td>2000</td>
<td>5400</td>
<td>5900</td>
<td>6400</td>
</tr>
<tr>
<td>Retest Sampling Rate</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>5/Lot</td>
<td>5/Lot</td>
</tr>
</tbody>
</table>

Note 1: The lot sizes are maximums and, at the option of the Engineer, any lot may be subdivided into two or more smaller lots. When such a subdivision is made, the specified sampling rate applies to each of the smaller lots.
Note 2: An initial strength test result is defined as the average strength of two 4 inch by 8 inch compression test cylinders, cured for 28 days, and tested in the Department Laboratory except for Classes P, P-1, and P-2 cylinders which may be tested at the fabricator's plant under the supervision of the Engineer.

Note 3: A retest result is defined as the strength of an individual test result obtained by coring or other suitable means. If retest is performed by coring, each retest result is defined as the corresponding nominal core strength divided by 0.85.

Note 4: The specified sampling rates shall apply except that no more than one test per truckload or batch of concrete will be required (except for air and slump tests when retempering). It is expected that each structural component will have a representative sample taken. At the option of the Engineer, nonstructural concrete lots consisting of 20 cubic yards or less may be accepted without strength tests.

Note 5: No lot shall include more than one class of concrete nor include concrete of the same class having different specified levels of slump or air entrainment.

Note 6: For prestressed concrete, if more than one bed is used or if more than 80 cubic yards of concrete are used, the production shall be subdivided as equally as possible into two or more lots.

Note 7: Retest limit for non-pay-adjustment roadway and structural items requiring the use of Class B, white concrete, shall be 3000 psi.

903.11 Detectable Warning Surfaces.

Materials for Detectable Warning Surfaces shall be safety red and appear uniform in color after curing. The surface coating material shall be an abrasion, UV and chemical resistant and shall be capable of adhering to existing or new portland cement concrete surfaces. The minimum final dry coat thickness shall be 40 mils.

The cured coating shall exhibit the following minimum coefficients of friction when tested according to ASTM D 1894.

<table>
<thead>
<tr>
<th>Static coefficient of friction</th>
<th>Dynamic coefficient of friction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry 0.95 – 0.99</td>
<td>Dry 0.91 – 0.95</td>
</tr>
<tr>
<td>Wet 1.39 – 1.42</td>
<td>Wet 1.27 – 1.36</td>
</tr>
</tbody>
</table>

The Detectable Warning Surfaces shall be installed according to the manufacturer’s recommendations.
SECTION 912 - PAINTS, COATINGS, TRAFFIC STRIPES, AND TRAFFIC MARKINGS

912.3 Permanent Traffic Stripes and Markings

912.3.2 Thermoplastic Traffic Markings

THE FOLLOWING IS ADDED:

Thermoplastic for long-life traffic markings shall be of either preformed or hot extruded material. The thermoplastic shall conform to the requirements of AASHTO M 249, except as follows:

1. Preformed material shall be 90 mils thick and conform to only those portions of AASHTO M 249 not associated with material in a liquid state.
2. For white, the composition of the mixture shall be as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin/Binder</td>
<td>.......22-26</td>
</tr>
<tr>
<td>Glass Beads (pre-mix)</td>
<td>30</td>
</tr>
<tr>
<td>White Pigment</td>
<td>10</td>
</tr>
<tr>
<td>Calcium Carbonate and Inert Fillers</td>
<td>34-38</td>
</tr>
<tr>
<td>(shall not contain silica other than as glass beads)</td>
<td></td>
</tr>
</tbody>
</table>

3. Only yellow non-lead formulas shall be used, the composition of the mixture shall be as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin/Binder</td>
<td>22-26</td>
</tr>
<tr>
<td>Glass Beads (pre-mix)</td>
<td>30</td>
</tr>
<tr>
<td>White Pigment</td>
<td>2</td>
</tr>
<tr>
<td>Calcium Carbonate and Inert Fillers</td>
<td>42-46</td>
</tr>
<tr>
<td>(shall not contain silica other than as glass beads)</td>
<td></td>
</tr>
</tbody>
</table>

The yellow material’s combined totals of lead, cadmium, mercury, and hexavalent chromium shall not exceed 100 parts per million.

The thermoplastic manufacturer shall certify, according to Subsection 106.07, that the material will meet the requirements specified.

Preformed traffic tape for permanent and temporary applications shall be from the NJDOT approved products list maintained by the Bureau of Materials Engineering and Testing.

912.4 Temporary Traffic Stripes and Markings

912.4.2 Removable Pavement Marking Tape

THE SUBSECTION HEADING AND SUBPART A IS CHANGED TO:

912.4.2 Removable Wet Weather Pavement Marking Tape and Removable Black Line Masking Tape.

A. Removable Wet Weather Pavement Marking Tape. The removable wet weather pavement marking tape shall consist of polymeric, conformable backing materials with a retroreflective surface designed to provide retroreflectivity in wet conditions. The underside of the tape shall be precoated with a pressure sensitive adhesive which bonds the tape to the roadway surface so as to be able to withstand traffic immediately after installation. Primers shall be used to promote tape adhesion to the pavement only in accordance with the tape manufacturers recommendations.

Daylight color of the white tape shall be no darker than color No. 37778 of FED-STD-595B. Daylight color of the yellow tape shall conform to the FHWA color tolerance chart for highway yellow.

When measured with a LTL-2000 Retrometer, the tape shall have initial, minimum retroreflectance values conforming to:
**Dry Condition – ASTM E 1710**  
Entrance Angle = 88.76°

<table>
<thead>
<tr>
<th>Observation Angle (Degrees)</th>
<th>Specific Luminance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White (Millicandels per square foot per footcandle)</td>
<td>Yellow (Millicandels per square foot per footcandle)</td>
</tr>
<tr>
<td>1.05</td>
<td>750</td>
<td>450</td>
</tr>
</tbody>
</table>

*Note:* The angular aperture of both the photoreceptor and the light projector shall be six minutes of arc. The reference axis shall be taken perpendicular to the test sample.

**Continuous Wet Condition – ASTM E 2176**  
Entrance Angle = 88.76°

<table>
<thead>
<tr>
<th>Observation Angle (Degrees)</th>
<th>Specific Luminance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White (Millicandels per square foot per footcandle)</td>
<td>Yellow (Millicandels per square foot per footcandle)</td>
</tr>
<tr>
<td>1.05</td>
<td>750</td>
<td>350</td>
</tr>
</tbody>
</table>

*Note:* Specific luminance is measured in millicandels per square foot per foot-candles.

Provide tape that has a minimum skid resistance of 35 British petroleum number (BPN) when tested according to ASTM E 303. Do not use lead based pigment in traffic tape. Provide tape that conforms to the requirements specified in Table 912.04.02-1.

---

### Table 912.04.02-1 Requirements for Temporary Pavement Tape

<table>
<thead>
<tr>
<th>Property</th>
<th>White</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Specific Luminance (mcld/sq foot/foot-candles) ASTM D 4061</td>
<td>500</td>
<td>Minimum Tensile Stress (psi) ASTM D 638</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>FED-STD-595B Color Chip No.</td>
<td>37778</td>
<td>33538</td>
</tr>
</tbody>
</table>

1. Use an entrance angle of 88.76° and an observation angle of 1.05°.
2. Perform tensile stress testing with a testing speed of 6 inches per minute.

The removable tape shall be capable of being removed manually, intact or in large pieces, at temperatures above 40 °F without the use of solvents, burning, grinding, or blasting. Only tape that has previously received the approval of the Department Bureau of Materials shall be used. Certification of Compliance shall be furnished according to Subsection 106.07.

**THE FOLLOWING SUBSECTION IS ADDED:**

### 912.4.4 Inorganic Zinc Coating System.

A complete coating system of an inorganic zinc-rich primer, a high-build epoxy intermediate coat, and a urethane finish coat shall be selected from one of the approved coating systems listed below. All products for the complete system, including thinners and solvents, shall be from the same manufacturer and shall be as follows, or from the current Bureau of Materials Qualified Paints List (QPL):
Drying time between coats shall be per the manufacturer’s recommendations.

The following information shall be submitted for the system selected at least one month before painting is anticipated:

1. A 1-gallon sample for each coat of paint in the system.
2. Infrared curves (0.1 to 0.6 mils) for each coat. Curves for the dry film of the vehicle (binder) of each component and for the mixed paint shall be included.
3. Weight per gallon, at 77 °F, for each coat. Variance shall be within plus or minus 1.8 ounces of the normal weight per gallon of the sample that was approved and placed on the QPL.
4. Viscosity in Krebs Units, at 77 °F, for each coat. Variance shall be within plus or minus 5 Krebs Units, or equivalent units of another viscometer, of the viscosity of the sample that was approved and placed on the QPL.
5. Percent of solids by weight of each coat.
6. Percent of metallic zinc by weight in the dry film of the cured zinc primer coat. This percentage shall be greater than or equal to that of the sample that was approved and placed on the QPL.
7. Percent of metallic zinc by weight in the zinc pigment component.
8. Finish coat color chips for selection of color by the Engineer.
9. The required curing time and dry film thickness for the qualification of the zinc primer for slip-critical connections in conformance with the requirements of AASHTO, Division I, Table 10.32.3C for Class of Surface B. A certified test report with the slip coefficient tested according to AASHTO Division I, Article 10.32.3.2.3.
10. Technical data sheets, MSDS, and specific application instructions for all coats. In the event of a conflict between the data/instruction sheets and these Specifications, with the approval of the Engineer, the manufacturer’s requirements shall govern. Work shall not be allowed to proceed until the information is received and approved.
11. Mixing and thinning directions.
12. Recommended spray nozzles and pressures.

The Contractor shall submit the manufacturer’s recommended repair procedures to correct damage such as that caused in handling and shipping, deficient or excessive coating thickness, removal of zinc salts and other contaminants that would be detrimental to succeeding coats, and procedures for surface preparation and painting of rust spots.

The Contractor shall provide the services of a paint or a painting technical representative from the paint manufacturer at the beginning of operations and whenever required during operations.

Each container of paint shall be labeled to show the name of the manufacturer, the trade name designation of the contents, the lot or batch number, the date of manufacture, and the volumetric contents in gallons or the weight of zinc powder in pounds. Each container shall be labeled according to the Code of Federal Regulations for flammables and shall contain all information necessary to comply with NJSA 34:5A-1 New Jersey Worker and Community Right To Know Act.

THE FOLLOWING SUBSECTION IS ADDED:

912.4.5 Epoxy Mastic Coating System.

A complete coating system of an aluminum epoxy mastic primer and a urethane finish coat shall be selected from one of the approved coating systems listed below. All products for the complete system, including thinners and
solvents, shall be from the same manufacturer and shall be as follows, or from the current Bureau of Materials Qualified Paints List (QPL):

<table>
<thead>
<tr>
<th>Code #</th>
<th>Manufacturer</th>
<th>Primer</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU-4</td>
<td>Devoe</td>
<td>Bar-Rust 235</td>
<td>Devthane 359</td>
</tr>
<tr>
<td>EU-6</td>
<td>Kop-Coat</td>
<td>Aluminum Epoxy Mastic</td>
<td>No. 1122 BRS</td>
</tr>
<tr>
<td>EU-7</td>
<td>Con-Lux</td>
<td>Epolon 81 Aluminum</td>
<td>Acrolon II-2200 Series</td>
</tr>
<tr>
<td>EU-9</td>
<td>Carboline</td>
<td>Carbomastic 90 Aluminum</td>
<td>Carbothane 134 HS</td>
</tr>
<tr>
<td>EU-10</td>
<td>MAB</td>
<td>Ply-Mastic 101</td>
<td>Ply-Thane 890 HS</td>
</tr>
<tr>
<td>EU-11</td>
<td>Birk</td>
<td>Birk Aluminum Mastic Coating No. 50</td>
<td>Birk Aliphatic Polyurethane No. 30</td>
</tr>
<tr>
<td>EU-12</td>
<td>Ameron</td>
<td>Amerlock 400 AL</td>
<td>Amercoat 450 HS</td>
</tr>
<tr>
<td>EU-13</td>
<td>Sherwin Williams</td>
<td>Epoxy Mastic Aluminum</td>
<td>Hi-Solids Polyurethane B65 Series</td>
</tr>
<tr>
<td>EU-14</td>
<td>Mercury Paint</td>
<td>Mermas 100 Epoxy Mastic</td>
<td>Merthane 300 Urethane</td>
</tr>
<tr>
<td>EU-15</td>
<td>Valspar</td>
<td>75-A-1 Alumapoxy</td>
<td>Urethane Enamel V40 Series</td>
</tr>
</tbody>
</table>

Drying time between coats shall be per the manufacturer’s recommendations.

The following information shall be submitted for the system selected at least one month before painting is anticipated:

1. A 1-gallon sample for each coat of paint in the system.
2. Infrared curves (0.1 to 0.6 mils) for each coat. Curves for the dry film of the vehicle (binder) of each component and for the mixed paint shall be included.
3. Weight per gallon, at 77 °F, for each coat. Variance shall be within plus or minus of the nominal weight per gallon of the sample that was approved and placed on the QPL.
4. Viscosity in Krebs Units, at 77 °F, for each coat. Variance shall be within plus or minus 5 Krebs Units, or equivalent units of another viscometer, of the viscosity of the sample that was approved and placed on the QPL.
5. Percent of solids by weight of each coat.
6. Finish coat color chips for selection of color by the Engineer.
7. Technical data sheets, MSDS, and specific application instructions for all coats. In the event of a conflict between the data/instruction sheets and these Specifications, with the approval of the Engineer, the manufacturer’s requirements shall govern. Work shall not be allowed to proceed until the information is received and approved.
8. Mixing and thinning directions.
9. Recommended spray nozzles and pressures.

The Contractor shall submit the manufacturer’s recommended repair procedures to correct damage such as that caused in handling and shipping, deficient or excessive coating thickness, removal of zinc salts and other contaminants that would be detrimental to succeeding coats, and procedures for surface preparation and painting of rust spots.

The Contractor shall provide the services of a paint or a painting technical representative from the paint manufacturer at the beginning of operations and whenever required during operations.

Each container of paint shall be labeled to show the name of the manufacturer, the trade name designation of the contents, the lot or batch number, the date of manufacture, and the volumetric contents in gallons or the weight of zinc powder in pounds. Each container shall be labeled according to the Code of Federal Regulations for flammables and shall contain all information necessary to comply with NJSA 34:5A-1 New Jersey Worker and Community Right To Know Act.

THE FOLLOWING SUBSECTION IS ADDED:

912. 04.06 Organic Zinc Coating System.

A complete coating system of an organic zinc-rich primer, a high build epoxy intermediate coat, and a urethane finish coat shall be selected from one of the approved coating systems listed below. All products for the complete system, including thinners and solvents, shall be from the same manufacturer and shall be as follows, or from the current Bureau of Materials Qualified Paints List (QPL):

SUPPLEMENTARY SPECIFICATIONS PAGE 45
Drying time between coats shall be per the manufacturer’s recommendations.

The following information shall be submitted for the system selected at least one month before painting is anticipated:

1. A 1-gallon sample for each coat of paint in the system.
2. Infrared curves (0.1 to 0.6 mils) for the zinc primer, intermediate, and finish coats to include curves for the dry film of the vehicle (binder) of each component and for the mixed paint.
3. Weight per gallon, at 77 °F, for the zinc primer, intermediate, and finish coats. Variance shall be within plus or minus of the nominal weight per gallon of the sample that was approved and placed on the QPL.
4. Viscosity in Krebs Units, at 77 °F, for the zinc primer vehicle and the intermediate and finish coat paints. Variance shall be within plus or minus 5 Krebs Units, or equivalent units of another viscometer, of the viscosity of the sample that was approved and placed on the QPL.
5. Percent of solids by weight of the zinc primer vehicle and the intermediate and finish paint.
6. Percent of metallic zinc by weight in the dry film of the cured zinc primer coat. This percentage shall be greater than or equal to that of the sample that was approved and placed on the QPL.
7. Percent of metallic zinc by weight in the zinc pigment component.
8. Finish coat color chips for selection of color by the Engineer.
9. The required curing time and dry film thickness for the qualification of the zinc primer for slip-critical connections in conformance with the requirements of AASHTO, Division I, Table 10.32.3.C for Class of Surface A. A certified test report with the slip coefficient tested according to AASHTO Division I Article 10.32.3.2.2.
10. Technical data sheets, MSDS, and specific application instructions for all coats. In the event of a conflict between the data/instruction sheets and these Specifications, with the approval of the Engineer, the manufacturer’s requirements shall govern. Work shall not be allowed to proceed until the information is received and approved.
11. Mixing and thinning directions.
12. Recommended spray nozzles and pressures.

The Contractor shall submit the manufacturer’s recommended repair procedures to correct damage such as that caused in handling and shipping, deficient or excessive coating thickness, removal of zinc salts and other contaminants that would be detrimental to succeeding coats and procedures for surface preparation and painting of rust spots.

The Contractor shall provide the services of a paint or a painting technical representative from the paint manufacturer at the beginning of operations and whenever required during operations.

Each container of paint shall be labeled to show the name of the manufacturer, the trade name designation of the contents, the lot or batch number, the date of manufacture, and the volumetric contents in gallons or the weight of zinc powder in pounds. Each container shall be labeled according to the Code of Federal Regulations for flammables and shall contain all information necessary to comply with NJSA 34:5A-1 New Jersey Worker and Community Right To Know Act.

SUPPLEMENTARY SPECIFICATIONS PAGE 46
THE FOLLOWING SUBSECTION IS ADDED:

912. 04.07 Pavement Reflectors and Castings.

Alternate pavement reflectors and castings shall be from the NJDOT approved products list maintained by the bureau of materials engineering and testing.
SECTION 917 – LANDSCAPING MATERIALS

917.1 Topsoil.
   1. Unacceptable Topsoil Sources
   THE FOLLOWING IS ADDED:

      5. Soils having less than 4.1 pH value, or greater than 8.0 pH value.

2. pH
   TABLE 917.01-1 IS CHANGED TO:

   Table 917.01-1 Requirements for pH of Topsoil

<table>
<thead>
<tr>
<th>pH Range</th>
<th>Acceptability / Remediation</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH &lt; 4.1</td>
<td>Topsoil is unacceptable.</td>
</tr>
<tr>
<td>4.1 ≤ pH &lt; 5.8</td>
<td>Add pulverized lime to increase the pH to 6.5 before use.</td>
</tr>
<tr>
<td>5.8 ≤ pH &lt; 7.0</td>
<td>Topsoil is acceptable.  No remediation needed.</td>
</tr>
<tr>
<td>7.0 ≤ pH &lt; 8.0</td>
<td>Decrease pH to at least 6.8 before use.¹</td>
</tr>
<tr>
<td>pH ≥ 8.0</td>
<td>Topsoil is unacceptable</td>
</tr>
</tbody>
</table>

1. Obtain Department approval of remediation method to lower pH.
SECTION 919 – MISCELLANEOUS

919.15 Portland or Blended Hydraulic Cement

Portland cement shall conform to the following:

Masonry Cement .......................................................... ASTM C 91
Portland Cement, Type I, II, and Type III (see Note 1) ........................................ ASTM C 150
White Portland Cement, Type I and III (see Note 2) .............................................. ASTM C 150
Blended Hydraulic Cement (see Note 3) ................................................................. ASTM C 595

Note 1: Type III may be used only for prestressed or precast items.
Note 2: Shall not contain more than 0.55 percent by weight of ferric oxide (Fe₂O₃).
Note 3: Only types IS, I(PM), and I(SM) may be used. Portland cement, may be pre-blended with a maximum of 15 percent fly ash, by weight, or a maximum of 10 % silica fume by weight, or with a maximum of 50% GGBFS by weight. If more than 30% GGBFS is used, a scaling test conforming to ASTM C 672 must be completed on the mix design and the concrete must have a visual rating less than 3 as based on ASTM C672 10.1.5 after 50 cycles.

When blended portland cement is used, no additional mineral admixtures shall be added.
Different brands of cement, the same brand of cement from different mills or different types of cement shall not be mixed.
Suitable means shall be provided for storing and protecting the cement against dampness. Cement which for any reason has become partially set or which contains lumps of caked cement will be rejected. The temperature of the cement at the time of delivery to the mixer shall not exceed 160 °F.

THE FOLLOWING NEW SUBSECTION IS ADDED:

919.16 Ground, Granulated Blast Furnace Slag

Ground, granulated blast furnace slag may be used as a replacement for portland cement as specified in Subsection 919.15 up to a maximum replacement level of 50 percent by weight. Replacement of portland cement greater than 30 percent will require a scaling test on the mix design conforming to ASTM C 672 with a visual rating less than 3.

THE FOLLOWING NEW SUBSECTION IS ADDED:

919.17 Sampling and Testing Methods

Sampling and testing will be performed according to the following:

Mineral Admixtures .......................................................... 8 pounds from each source
Blended Hydraulic Cement ....................................................... ASTM C 595

919.18 Controlled Low Strength Material (CLSM).

CLSM shall conform to the following:

Fine Aggregate .......................................................... 901.12
Chemical Admixtures ......................................................... 905.02
Portland Cement, Type I, II, III .................................................. 919.11
Water ............................................................................. 919.15

CLSM shall consist of a mixture of portland cement, water, fine aggregate and chemical admixtures. Fly ash shall not be permitted in mixes intended for trench backfilling. The CLSM mixture shall be proportioned to provide a backfill material that is self-compacting and capable of being excavated with hand tools at a later date. CLSM shall be proportioned to produce a 28-day compressive strength of 50 to 150 pounds per square inch. An accelerating admixture shall be used to produce a fast setting flowable mixture as required. The CLSM shall have a permeability of $1.7 \times 10^{-3} \pm 0.2 \times 10^{-3}$ centimeters per second according to ASTM D5084 for backfilling of conduits and piping.

At least 45 days prior to the start of any CLSM placement, trial batches of CLSM shall be prepared of the same materials and proportions proposed for use on the project. Each mix design shall be submitted on portland cement concrete mix design forms furnished by the Department, naming the sources of materials and test data.

Department personnel will be present at the time of verification batching to confirm that the proportions and materials batched are according to the proposed mix designs. At least six 6 X 12 inch compression test cylinders shall be prepared for each batch according to ASTM 5971-96 for 28-day strengths except for fast setting mixes, which shall be tested at the specified cure time.
DIVISION 1000 – EQUIPMENT

SECTION 1010 – CONCRETE PLANT AND MIXING EQUIPMENT

1010.02 Concrete Trucks.

2. Transit Mixing Truck.

THE FOLLOWING IS ADDED:

Mixing shall begin immediately following the complete charging of the drum and continue for not less than 50 revolutions of the drum at the mixing speed recommended by the manufacturer of the truck mixer. Upon completion of at least the minimum number of mixing revolutions at the plant, the speed of the drum shall be reduced to the agitation speed recommended by the manufacturer.

Transit mix concrete will be rejected for any of the following reasons:

a. If the concrete is not discharged within the specified time limit after loading all ingredients into the drum;

b. If the indicator on the counter shows that the instrument has been turned off or tampered with;

c. If the non-resettable total revolution counter shows more than 300 revolutions;

d. If water has been added while the truck mixer is en route to the Project. Two-way telephone or radio communication between the site of the placement of concrete and the batching plant shall be provided.

THE FOLLOWING NEW SUBSECTION IS ADDED:


Mixing on the Project in truck mixers shall not be used for concrete surface course or structural concrete items.

Each truck mixer shall have attached a metal plate or plates on which is plainly marked the manufacturer's capacity rating in terms of the gross drum volume, the capacity of the drum in terms of the volume of mixed concrete, and the manufacturer's designated drum speed of rotation for both mixing and agitation. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum may be readily verified.

The counter unit shall be positioned on the truck so as to be plainly visible if the driver's door is open.

The mixer shall be capable of producing a thoroughly mixed and uniform mass and discharging the concrete with satisfactory uniformity within the ranges of slump and air entrainment specified for the class and type of concrete being furnished.

Each truck mixer shall be equipped to carry sufficient water to mix a full capacity load of concrete within the required range of slump and shall also carry wash water as necessary.

The mixing water tank, pump, and the piping shall be kept clean and free of leaks. An in-line multi-jet or positive displacement meter shall be provided which indicates the amount of mixing water added to the batch. Either meter shall be provided, as a minimum, on one truck mixer for each concrete pay-adjustment item per day. The device shall have an accuracy of plus or minus 1.5 percent, by volume, of the indicated amount dispensed. The meter shall have a nonresettable register with a capacity of 380,000 liters. A remote, readily visible, resettable three or four-digit counter shall be mounted in the truck cab. The counter shall measure water added to the nearest liter and shall be provided with a unique mechanical or electrical device for resetting. This device shall remain in the possession of the Engineer during production. The distribution system shall be equipped with three-way valves and bypasses or other suitable means for calibration of the water-measuring device. The water-measuring device shall be calibrated prior to use and recalibrated whenever any repairs or modifications are made that may affect the calibration. Documentation showing the date and results of calibration of the water-measuring device shall be carried on each truck mixer and copies shall be furnished upon request. Near the measuring device, on the mixing water tank, there shall be stenciled the word calibrated and the date of the last calibration.

The mixing water-measuring device shall be located so as to be plainly visible to the truck operator when operating the mixing water and the drum controls, and to the Engineer while standing on the ground. All measuring indicators shall be kept clean and in good condition.

Truck mixers are subject to inspection by the Engineer, including the mechanical condition of the truck mixer, verifying the mixing and agitation rates, the accuracy of the water-measuring device, the size of discharge opening and chutes, and the general condition and wear of the blades. The truck mixer will not be
approved for use if any part or section of the pickup and throw-over blades is broken, missing, or excessively worn. Truck mixers shall be examined daily for cleanliness of the drum and blades, leaks in the mixing water system, and the condition of the water-measuring device and the revolution counter.

The concrete supplier shall maintain, at a convenient location, a copy of the manufacturer's design for each size and type of truck showing the dimensions and arrangements of the blades, the dimensions of the drum, the gross volume of the drum, the recommended rates of rotation for all types of operations, and any other pertinent information.

Prior to the time mixing water is added at the job site, no water or other fluids will be permitted in the drum of the truck mixer except concrete admixtures which are measured and dispersed with the dry ingredients. Truck mixers may be required to pull under the batch plant with the drums revolving in discharge rotation as an indication that the drum is empty.

The truck mixer, when loaded for mixing concrete, shall not contain more than 63 percent of the gross drum volume.

The maximum elapsed time from the loading of the portland cement into the drum to the discharge of all the concrete from the mixer shall be 90 minutes except that, under conditions contributing to quick stiffening of the concrete or when the temperature of the concrete is 30°C or above, such time limit shall be changed to 60 minutes. However, if retarders are used, the time limit may be increased to a maximum of 90 minutes, if approved. Under very severe conditions, further reductions of the time limits or the size of the loads may be required.

Immediately following the addition of all the mixing water, the mixing revolution counter shall be reset to zero with the drum revolving at the rate of speed designated by the manufacturer for mixing.

Each batch shall be mixed not less than 50 revolutions at the rate of rotation designated as mixing speed. The concrete shall be mixed into a plastic, uniform mass complying with the specified range of slump and air entrainment. The number of revolutions within the limits specified above, and the control of the consistency shall be as directed.

If the concrete cannot be entirely discharged within ten minutes after the mixing has been completed, the concrete remaining in the drum shall be kept plastic and workable by revolving the truck drum, at the manufacturer's designated speed for agitation, for a period of two minutes in each ten minutes. In no case shall the total revolutions exceed 200.

Prior to the completion of 100 mixing revolutions, the operator may add water or air entraining agent or both incrementally in order to produce concrete within the required slump or air content range in conformance with Subsection 903.03.02.

During discharge, drum gates and cover shall be fully opened and the rate of discharge shall be governed by drum speed.

Discharge chutes shall be ample in size, without struts, and capable of handling the concrete within the specified slump range. Use of extension chutes shall be restricted as much as is practical.

Wash water shall be provided in addition to the water required for mixing. If the wash water runs through the measuring device for the mixing water, it shall not be used during any of the periods when mixing water is being measured into the drum. Under no circumstances shall the washdown hose be used to temper the concrete or to aid the flow of concrete in the chute except for pre-wetting the chute. Any concrete that has been wetted with wash water shall be discarded.

Immediately after the discharge of each load, the drum shall be washed out and the wash water and any residue from the previous batch shall be completely discharged before reloading the drum at the batch plant.

END OF SUPPLEMENTARY SPECIFICATIONS