SPECIAL PROVISIONS
N.J. ROUTE 7 (1953)
OVER HACKENSACK RIVER (WITTPENN BRIDGE)
INTERIM PRIORITY REPAIRS
FROM STATION 104+50 TO 128+90
CONTRACT NO. 098000
CITY OF JERSEY CITY AND TOWN OF KEARNY
HUDSON COUNTY

AUTHORIZATION OF CONTRACT
The Contract is authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements thereto, and Title 23 of the United States Code - Highways.

SPECIFICATIONS TO BE USED
The 2007 Standard Specifications for Road and Bridge Construction, of the New Jersey Department of Transportation as amended herein will govern the construction of this Project and the execution of the Contract.

These Special Provisions consist of the following:
Pages 1 to 62 inclusive.

State wage rates may be obtained from the New Jersey Department of Labor & Workforce Development (Telephone: 609-292-2259) or by accessing the Department of Labor & Workforce Development’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 are part of this Contract, pursuant to Chapter 150, Laws of 1963 (NJSA 34:11-56.25, et seq.).
If an employee of the Contractor or subcontractor has been paid a rate of wages less than the prevailing wage, the Department may suspend the Work, and declare the Contractor in default.
DIVISION 100 – GENERAL PROVISIONS

SECTION 101 – GENERAL INFORMATION

101.01 INTRODUCTION

101.03 TERMS
THE FOLLOWING TERMS ARE CHANGED.

pavement structure. The combination of pavement, base courses, and when specified, a subbase course, placed on a subgrade to support the traffic load and distribute it to the roadbed (see Figure 101-1). These various courses are defined as follows:

1. pavement. One or more layers of specified material of designed thickness at the top of the pavement structure.
2. base course. One or more layers of specified material of designed thickness placed on the subgrade or subbase.
3. subbase. One or more layers of specified material of designed thickness placed on the subgrade.

101.04 INQUIRIES REGARDING THE PROJECT

1. Before Award of Contract. The Bureau of Construction Management at

CMTEAM2@dot.state.nj.us (ROBERT KOPF)

2. After Award of Contract.

North Region
Mr. Carl F. Kneidinger, Regional Construction Engineer
200 Stierli Court
Mt. Arlington, NJ  07856-1322
Telephone:  973-770-5025

SECTION 102 – BIDDING REQUIREMENTS AND CONDITIONS

102.04 EXAMINATION OF CONTRACT AND PROJECT LIMITS

3. Existing Plans and As-Builts.

Existing Plans and As-builts used are as follows:

a. New Jersey Route 7 Over Hackensack River
(Wittpenn Bridge) Interim Repairs
Procurement Contracts
Contract No. 098000
Town of Kearny, City of New Jersey
Hudson County

b. Reconstruction and Repair of Fenders, 1953
Route 7 Section 1A
Wittpenn Bridge Over Hackensack River
Town of Kearny, City of Jersey City
Hudson County

c. N.J. Route 7 Over Hackensack River (Wittpenn Bridge) Interim Repairs, 1997
Contract No. 010970247
SECTION 105 – CONTROL OF WORK

105.05 WORKING DRAWINGS
THE SECOND PARAGRAPH IS CHANGED TO:

Ensure that working drawing submissions also conform to the Department design manuals and other Department standards for the proposed work. Ensure that working drawings are signed and sealed by a Professional Engineer. After Award, the Department will provide additional formatting information, the number of copies required, and the designated design unit to which the Contractor shall submit working drawings.

105.06 COOPERATION WITH OTHERS
THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The Contractor is advised that the following contracts/agencies/operating companies are within the vicinity of this project and will require coordination to consider their operation, projects, or both that may be under construction during the same time as this contract.

1. Route U.S. 1&9 (Pulaski Skyway)
   MP 0.28 (Rte 139) to 51.78 (Rte 1&9)
   Contract No. 051043220
   Weekend closures required

2. Route U.S. 1&9 (Pulaski Skyway)
   MP 0.28 (Rte 139) to 51.79 (Rte 1&9)
   Contract No. 051083210
   There will be other future Pulaski Skyway Projects in the coming years.

3. Route 139 Contract No. 2
   Contract No. 000970191
   Milepost 0.00 to Milepost 1.5
   Construction will start in 2009 and last about 4 years. Movable barrier will be used in the express roadway to close 1 lane at all times.

4. Route 1&9T(25) – Catenary Tower Construction
   MP 54.74 to 54.76 (Rte 1&9)
5. Route 1&9T(25) St. Paul’s Ave Bridge  
   Contract No. BR-0046(116)  
   Varied lane closures

6. Verizon Directional Drill  
   Project set to begin late summer/early fall 2009  
   Project duration approximately 6 months

7. New Jersey Turnpike Authority  
   Assistant Director of Operations – Traffic Engineering  
   For coordination and permits  
   P.O. Box 5042  
   Woodbridge, New Jersey 07095  
   Mr. Kenneth J. McGoldrick, P.E.  
   (732) 442-8600

8. New Jersey Transit  
   Lower Hack Bridge Rehabilitation  
   Contact Mr. Dip Chaterji – Resident Engineer

In addition, utility work, by others, will be ongoing within the project limits and the PSE&G Plant on Duffield Avenue may begin a major rehabilitation project.

The Contractor shall conduct its Work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors.

The Contractor’s attention is directed to the need for close coordination and cooperation with the contractors on the above listed projects and any additional future projects that may impact the project that may occur during the work of this project. Be aware of the potential for schedule changes on the projects noted above. Contact the contractors of the above listed projects to coordinate maintenance and protection of traffic required within their respective jurisdictions for road and bridge work at least 4 weeks prior to beginning work, changing of traffic patterns, and starting lane closures in the areas of project overlap. Also contact New Jersey Transit for coordination of channel closures.

105.07.01 Working in the Vicinity of Utilities

A. Initial Notice.

   Public Service Electric & Gas Company (Electric)  
   Palisades Division  
   325 County Ave.  
   Secaucus, New Jersey 07094  
   Mr. James E. Lizer – Engineering Technician  
   (201) 330-6582

   Verizon – Jersey City Division  
   1500 Teaneck Road, 2nd floor  
   Teaneck, New Jersey 07666  
   Ms. Sandra Cruger  
   (201) 541-9969

   Verizon – Kearny Division  
   175 Park Ave.  
   3rd floor, room 301  
   Madison, New Jersey 07940  
   Mr. Darren Cray  
   (973) 631-7561

   Teleport Communications New York (AT&T)
175 West Main Street
Freehold, New Jersey 07728
Mr. Scott Jordan
(732) 620-1267
Mr. Carlo Verdi
(732) 577-8062
Mr. Bill Sohl
(732) 577-8084

Sprint Nextel
480 Williamsport Pike, Suite 3
Martinsburg, WV 25401
Mr. Michael Brown – Project Manager
(304) 283-5668

Public Service Electric & Gas Company (Gas)
80 Park Plaza
Newark, New Jersey 07102-4194
Mr. Steve Peterson
(973) 430-8807

Williams (Transco)
99 Farber Road
Princeton, New Jersey
Mr. Nash Kalleeny, P.E.
(609) 936-2423

Amerada Hess Corp.
420 Hook Road
Bayonne, New Jersey 07002
Mr. Kenneth Muniz
(732) 750-6186

Jersey City Municipal Utilities Authority (water)
550 Route 440
Jersey City, New Jersey 07305
Mr. Keh Jong Liu
(201) 369-0413

Town of Kearny
Neglia Engineering Associates
34 Park Ave.
P.O. Box 426
Lyndhurst, New Jersey 07071
Michael J. Neglia – Town Engineer
(201) 939-8805

Jersey City Municipal Utilities Authority (sanitary sewer)
550 Route 440
Jersey City, New Jersey 07305
Mr. Chris Piersa, P.E.
(201) 432-0974

Consolidated Rail Corporation
1000 Howard Boulevard 4th floor
Mr. Laurel, New Jersey 08054
Mr. J.L. McGlynn, P.E. –Director of Engineering and Construction
(856) 231-2450

CSX Intermodal
700 Old Fish House Road  
South Kearny, New Jersey 07032  
Mr. Tim Moore – Terminal Superintendent  
(973) 274-2470

New Jersey Transit Headquarters  
1 Penn Plaza, 8th floor  
Newark, New Jersey 07105  
Mr. Anthony Tanchak – Principal Civil Engineer  
(973) 491-7673

The Port Authority of New York & New Jersey  
Project Management Department  
Two Gateway Center, 15th floor  
Newark, New Jersey 07120  
Mr. Gary Mason – Project Manager  
(973) 792-4747

Bidders are advised to verify the above information as its accuracy and completeness is not guaranteed by the Department.

The Contractor is advised that the design for this Contract did not identify any anticipated utility conflicts. However, this Contract does require the Contractor to install sign posts and is reminded to call the State’s One Call System as specified in Subpart C., to verify that a conflict does not exist.

The Contractor is advised that there are utility services across the waterway under the riverbed. Any anchorage of barges in the river must avoid damage to these services.

B. Locating Existing Facilities.

Bureau of Traffic Operations, North Region (TOCN)  
670 River Drive  
Elmwood Park, NJ 07407-1347  
Telephone: 201-797-3575

Bureau of Electrical Maintenance, North Region  
200 Stierli Court  
Mt. Arlington, NJ 07856-1322  
Telephone: 973-770-5065

C. Protection of Utilities.

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

Where the Project includes work adjacent to railroad tracks or railroad ROW, safeguard the traffic, tracks, and appurtenances, and other property of the railroad that may be affected by the Work. Comply with the regulations of the railroad relating to its Work, keep tracks clear of obstructions, and provide barricades, warning signs, lights, or other safety devices as required by the railroad. Prior to the commencement of any work within the railroad ROW or on railroad facilities, obtain the railroad’s written approval of access, the method of construction (including demolition), and the schedule or the Work. Provide a copy of the submittal and the approval to the RE.

The safety and continuity of railroad operations shall be the first priority when working in proximity to the railroad. Railroad approval does not release the Contractor from responsibility or liability for any damage that the railroad may suffer, or for which the Contractor may be held liable, by the acts of the Contractor.

Fouling of railroad facilities’ track, power lines and signal systems occurs when the railroad parameters for normal operations are jeopardized because obstructions are in close proximity to the facilities. Obtain from the railroad its fouling parameters for the work site and observe the railroad’s regulations concerning fouling, track outages, and restrictions (CE-6 REV 2-97 “Specific Requirements of Consolidated Rail Corporation for Work on its Right of Way”). Do not store or operate construction equipment or material within the fouling distance of the railroad facilities without written permission of the railroad, with a copy to the RE.
The Contractor must submit for review and obtain approval, before the start of work, a site specific work plan(s) for operations that will foul or have the potential to foul CONRAIL’s bridge or track. The Contractor’s site specific work plan as well as any shielding, lifting, or supporting procedures must be reviewed and accepted by both CONRAIL and the RE prior to performing work which has the potential to foul CONRAIL’s tracks. The RE will assure the Contractor’s site specific work plan is followed. The capacity of all cranes must be adequate to lift 150 percent of the pick weight when the lifting operation will foul or have the potential to foul CONRAIL’s bridge or track. Shielding or other protection methods must be used to prevent embers from welding operations to fall onto CONRAIL’s bridge (including the fender system) or track. A copy of CE-6 has been included as an attachment to these Special Provisions.

The railroad will assign inspectors, engineers, flagmen, or all 3 during the time the Contractor is engaged in work on or with the potential to foul railroad property for the general supervision of construction operations to ensure adherence to the Contract Documents and applicable railroad requirements, and to ensure the use of approved construction methods.

If materials are to be hauled across the tracks of any railroad, the Contract Documents will provide for any new crossings required or for the use of any existing crossings. If the Contractor elects to use crossing other than those designated, obtain written approval from the railroad with a copy of the approval to the RE at least 10 State Business Days in advance of performing the work.

THE FOLLOWING IS ADDED TO THE SIXTH PARAGRAPH

Access within railroad right-of-way is restricted. Comply with the railroad’s permit requirements for working within the railroad right-of-way. Coordinate the work with the railroad’s access and safety restrictions.

SECTION 106 – CONTROL OF MATERIAL

106.02 DEPARTMENT-FURNISHED MATERIAL

The Department will furnish the ropes, sockets, pins, trunnion shafts and sheaves to the Contractor at the Jersey City Maintenance Storage Facility. The Contractor is responsible for transporting the material from this site.

106.09 SUBSTITUTES FOR PROPRIETARY ITEMS

No substitution is permitted.

SECTION 107 – LEGAL RELATIONS

107.01.02 Permits, Licenses, And Approvals

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

Construction Over or Adjacent to Navigable Waters

The Contractor will be required to operate the bridge during construction. Except during the authorized period for navigation closure described below, do not impede the normal operation of the bridge.

The Contractor may close the bridge to navigation only during the period between June 5 and July 15 in order to perform the construction operations that preclude normal operation of the bridge. By July 16 restore the bridge to normal operating conditions. Coordinate channel closures with the USCG. Submit a plan and schedule of operation for approval at least 45 days prior to commencement of work in the waterway. Submit 2 concurrent copies of such information to the RE and the USCG. Include a sketch of the waterway; the bridge; the location of any restrictions that will be placed in the waterway such as barges, anchors, and anchor lines; the location and height above mean high water and detailed descriptions of any scaffolding, or netting; detailed description indicating placement, type and dimension of any cofferdams if used, with the method of screening silt from dewatering operations; and a project set of dates and length of time each operation will take. The schedule should also include the hours of operation and whether or not the equipment will be removed at night. No deviation from the approved plan and schedule of operation may be made unless the modification has previously been submitted and approved by the USCG. Comply with all provisions of the

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INTERIM PRIORITY REPAIRS
CONTRACT NO. 098000
The construction of falsework, cofferdams, or other obstructions, if required, shall be in accordance with plans submitted to and approved by the District Commander prior to construction of the bridge. Conduct all work so that the free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. Give timely notice (at least 45 days) of any and all events that may affect navigation to the District Commander during construction of the bridge. Promptly clear the channels through the structure of all obstructions placed therein or caused by the construction of the bridge to the satisfaction of the District Commander, when in the judgment of the District Commander the construction work has reached a point where such action should be taken.

The First District USCG office contact information is as follows:
Mr. Gary Kassof
First Coast Guard District
Bridge Program Manager
One South Street
Battery Park Building
New York, NY 10004-5073
212-668-7021

Except as noted above, at no time during the construction will the waterway be closed to navigation without prior written notification to and approval from the USCG. Request in writing, all waterway closures or restrictions to be received by the First District USCG Office at least 45 days in advance. At the same time, coordinate waterway closings with the harbormasters of the local marinas so as to minimize the impact on commercial operations. Written confirmation of the coordination shall be received by the RE at least 14 days in advance of the closings. In addition, coordinate with NJDOT maritime police for continued maintenance of the waterway. While the channel is in operation, all restrictions placed on the waterway shall be able to clear the channel within one hour’s notice.

Take positive means to prevent any hot work, debris or construction material from entering the waterway. This includes sand blasting material, paint and any concrete work by-products. If welding or burning is to take place, some type of flameproof material shall be the upper most protective containment material. All welding and burning shall cease upon approach of a vessel and shall not start again until the vessel is past the bridge. Station an observer or observers so as to have an unimpeded view of both upstream and downstream access to the waterway area thereby assuring that all workmen can be alerted of a vessel’s approach by appropriate, mechanical means, such as an air horn.

Provide a radiotelephone on floating equipment capable of operation from its main control station as specified in Part 26 Title 33, Code of Federal Regulations and monitor during all periods the floating equipment is on station.

Light all construction equipment (including falsework, buoys, barges, cranes, and any other obstruction in or above the waterway) placed in the waterway in accordance with the provisions outlined in the Navigation Rules International-Inland and the Code of Federal Regulations, 33.

Move floating work equipment (barges, etc) out of the navigable channel during darkness after work hours or, upon approval of the First District Commander, may remain in the channel with appropriate lighting. Do not impair or block existing bridge navigation lights during periods of darkness or periods of reduced visibility. Notify the First District USCG at least 45 days in advance of placement of the equipment in the channel. If barges are used and held in place by anchors orient them so as to minimize reduction of the horizontal clearance. Mark all anchor lines by lighted anchor buoys.

If permanent navigational lighting cannot be maintained operable, install identical, temporary battery or power-operated lights at the same locations. These temporary lights shall be visible for a distance of 2,000 yards on 90 percent of the nights of the year. Generally, a lamp of 20-foot candles will meet these requirements. The temporary lights shall be in place until the repairs have been completed or permanent navigational lighting has been installed and determined to be operating satisfactorily. Submit plans for temporary lighting (if used) during periods of construction to the USCG for written approval. If temporary lights are not installed in the same locations as permanent lights, provide specific information regarding proposed locations compared to the permanent position. Deviations from the approved temporary lighting shall be permitted only upon written authorization from the RE.

During the progress of work should any material, machinery or equipment be lost, dumped, thrown overboard, or sunk so as to obstruct, interfere with or hazard navigation, give immediate notice to the USCG and remove the object as soon
as possible. Until removal can be effected, properly mark the obstruction in order to protect navigation. Give a description and location to the USCG of any such object and the action taken or being taken to protect navigation and of the action to remove the obstruction.

Spillage of oil and hazardous substances is specifically prohibited by Section 311 of the Clean Water Control, as amended. Take measures including: (1) proper maintenance of construction equipment, (2) arrangement of fuel/hazardous substances handling areas so as to ensure that any spills are contained before reaching navigable waterways or their adjoining shorelines, (3) instructions to personnel not to dispose of hazardous substances into drains or the navigable waterways directly or onto adjoining shorelines and (4) other procedures to prevent spillage. If in spite of such planning oil/hazardous substances are spilled into a navigable waterway or adjoining shoreline, notify the USCG immediately at 212-668-7021. Retain a supply of an absorbent material so that it may be rapidly deployed to soak up any spillage, pending Coast Guard arrival on the scene. The use of chemical dispersing agents and emulsifiers is not authorized without prior, specific, Federal approval.

Upon completion of the bridge work, perform an inspection of the waterway bottom to ensure that all bridge construction waste materials have been completely removed from the waterway. The USCG will require certification in writing by a licensed Engineer, licensed Surveyor or responsible official of the Contractor that the waterway has not been impaired and all construction related debris has been cleared from the same. The USCG recommends that a bar sweep (wire drag) or sidescan sonar be used as the method of determining that the waterway is cleared of debris. The Contractor’s certification shall include the actual method used to conduct the inspection. Remove any bridge related debris, resulting from the current or prior work or occurrences, discovered during this survey. Perform channel surveys in accordance with the requirements of the USCG as many times as required and this work will not be measured for payment. No payment will be made for surveys required based on the Contractor’s methods of operation.

It shall be the Contractor’s responsibility to ensure that the waterway depths are not affected by his work. Should it be suspected that waterway depths have been impaired or that an obstruction resulting from the work may exist, the Contractor, upon request of the USCG or ACOE, shall provide the necessary equipment and personnel to undertake a survey to determine the presence of such impairment or obstruction. The cost of this work shall be the responsibility of the Contractor.

Remove all instrumentation from the waterway upon termination of its use.

Compliance with the requirements stated herein does not relieve the Contractor of the obligations or responsibility for compliance with the provisions of any other law or regulation as may be under the jurisdiction of the State of New Jersey, or any other federal, state or local authority having cognizance of any aspect of the location, construction or maintenance of said bridge.

Strictly adhere to all time restrictions for the navigational traffic shutdown. Forward any request for an extension of the closure dates stated above in a timely manner to the USCG First District Office for approval. It is advised that the USCG may levy monetary civil penalties for violations of bridge regulations and statutes. Should the Contractor fail to comply with any of the aforementioned requirements and should the Federal Government be required to take action for the protection of navigation, the Government reserves the right to recover costs for any such action from the Contractor.

**SECTION 108 – PROSECUTION AND COMPLETION**

108.01 **SUBCONTRACTING**

Specialty Items are as listed below:

Electrical wire items.

108.08 **LANE OCCUPANCY CHARGES**

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The lane occupancy charges are as follows:

- Overrun of “One Lane Maintained” Time Limits - $40/minute
- Overrun of “Overnight Complete Roadway Closure” Time Limits - $50/minute
108.09 MAINTENANCE WITHIN THE PROJECT LIMITS
THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The Contractor shall be responsible for the maintenance and repairs of the existing bridge roadways, electrical and lighting systems for the duration of the project until Acceptance. During this period the Contractor shall be responsible for maintaining the existing bridge for uninterrupted use by vehicular traffic.

A. Routine Maintenance of Existing Facilities: Maintain the existing electrical and structural components of the bridge and roadway in serviceable condition at all times throughout the construction of the project in order to maintain unrestricted normal traffic operations. At the start of construction the Contractor will assume responsibility for the bridge operation and maintenance in accordance with Section 519 of these Special Provisions. The routine maintenance of the bridge includes, but is not limited to, roadway lights, pavements, shoulders, guide rails, signage, minor spalls, minor bulkhead repairs, bridge railing, bridge lighting and any other routine bridge and roadway maintenance required for safe operation of these facilities. Maintenance of Bridge Operations will be in accordance with Section 519. Furnish and install any temporary equipment necessary to conform to the above requirements. The arrangement of any temporary facilities and controls shall be approved by the RE. Lane closures, if required, shall be in accordance with the requirements listed on the Traffic Control and Staging plan sheets.

Snow plowing and salt spreading on the highway will be done by the State except where essential to a bridge, roadway or electrical maintenance or repair activity required under this Special Provision.

Typical required bridge/roadway/electrical maintenance/repairs include but are not limited to the following:

**BRIDGE**

1. Routine repair of minor concrete deck repairs, minor concrete spalls, minor bulkhead repairs, bridge railing repairs, deck joint repairs, removal of debris or water which impedes traffic and temporary concrete barrier curb repairs.
2. Application of protective coatings
3. Traffic control in accordance with the MUTCD and appropriate for protection of the traveling public during implementation of the corrective action to the structural elements.

**ROADWAY**

1. Repairs for concrete and asphalt pavement structures, approach slabs, shoulders, pavement joints, crack sealing, embankment slopes, drainage facilities including inlets pipes, culverts, parallel ditches, slope drains, and curbs.
2. Pavement markings, signs, sign mountings, pavement graphics, delineators, RPMS, reflectors, and MRPMS.

**ELECTRICAL**

1. Relamping of street lights.
2. Maintaining power supply lines, circuit protection devices, junction boxes, grounds, conduits, transformers, ballasts, insulators, cabinets, and like facilities.
3. Maintaining, and/or replacing mounting poles.

B. Emergency Call-Outs: This work shall include all work required for maintaining the structural integrity and stability of the existing bridge. The emergency call-outs shall include but not be limited to any major structural repairs to concrete or steel bridge components (concrete deck, girders, diaphragms, bent caps, piles, etc. not already designated in the Contract Documents) including any necessary temporary supports shielding and temporary concrete barrier curbs if necessary.
C. Materials and Workmanship: All repair and maintenance materials used to correct bridge, roadway, and electrical equipment and its installation shall conform to the requirements of the 2007 NJDOT Standard Specifications and NJDOT Maintenance Standards, except as may be otherwise provided herein.

Coordinate all bridge and roadway maintenance and repairs with the Engineer, Traffic Operations Center – North, New Jersey State Police, and New Jersey DOT Maintenance Region – North.

All electrical work shall conform to the requirements of the current national electrical code and to any applicable NJDOT and local rules and ordinances. Obtain any required permits and approvals of all departments or agencies having jurisdiction.

All equipment, materials, and workmanship shall be manufactured and erected to the satisfaction of the RE.

Assume full responsibility for maintenance of bridges, roadway, and lighting/electric facilities immediately after the notice to proceed is issued for the project. Immediately after the notice to proceed is issued, the Contractor and RE will examine all the facilities on the bridge and roadway to establish their condition prior to the start of construction. After completion of the review of the existing bridge and roadway facilities, the Contractor will make arrangements to use his own forces or other parties to promptly make any required bridge or roadway repairs, maintenance operations, or both.

Upon notification of an emergency call-out, report to the site to review the conditions and discuss proposed options for correcting the existing bridge deficiency, defects, damage or all 3. Obtain direction of the Department’s RE or his representative on actions to be taken. If an event results in restriction of traffic flow on the bridge or roadway for any reason, the Contractor is required to respond to the project site with sufficient emergency personnel and equipment within 2 hours from the time notified that a condition has developed and immediate response is required to address the emergency condition and restore normal travel conditions in the least time possible.

The Contractor shall have available on call employees who are knowledgeable in bridge structures repairs and electrical troubleshooting and corrective actions. During the construction period when the bridge and roadway are in use for traffic operations, the Contractor shall provide sufficient maintenance personnel during normal working hours to patrol, identify, and correct roadway pavement conditions or structural repairs on a schedule consistent with the priority established by the RE. The bridge and roadway function 24 hours per day, every day of the year.

The Contractor shall be responsible for removal and disposal of all debris, contaminated waste, construction debris, and like materials deposited on the bridge and roadway surfaces at all times during the maintenance period in accordance with all applicable environmental regulation.

The existing bridge shall not be used for construction activities. This bridge has low sufficiency ratings and its ability to support construction loads has not been established.

The Contractor will also be held by the criteria, limits and boundaries set in subsection 519.02 subparagraph 3 of these Supplementary Provisions. Accordingly any maintenance, repairs, or both required on the existing bridge, roadway and facilities that result from the Contractor’s negligence or non conformance with the limits and boundaries set by these Contract Documents shall be performed at no additional cost to the State.

Provide notification to the 1st District USCG at least 45 days prior to initiating any work over or in the waterway that may present an obstruction or hazard to navigation. Notification shall meet the requirements specified in Subsection 107.01.02 Permits, Licenses, and Approvals, Construction Over or Adjacent to Navigable Waterways of the Contract Specifications.

Except for work noted in Section 519 which includes the work associated with Emergency Call-Outs, all costs for normal routine maintenance during construction shall be included in the various Pay Items in the Proposal.

108.10 CONTRACT TIME

A. All work for the rehabilitation of the lift span expansion shoe bearing must be completed on or before May 25, 2009.
B. Complete all work required for the installation of new ropes and sheaves in 40 days. The work period shall begin on or about June 5th when the navigational channel is closed to marine traffic and end when the lift span is operational.

C. Complete all work required for Substantial Completion on or before October 12, 2009.

D. Achieve Completion on or before December 12, 2009.

108.19 COMPLETION AND ACCEPTANCE
THE FOLLOWING IS ADDED:
No Incentive Payment for Early Completion is specified for this project.

108.20 LIQUIDATED DAMAGES
Liquidated damages are as follows:

A. For each day that the Contractor fails to complete the work as specified in Subpart A of Subsection 108.10 of these Special Provisions, for Interim Completion, the Department will assess liquidated damages consisting of Road User Costs in the amount of $10,000.

B. For each day that the Contractor fails to complete the work as specified in Subpart B of Subsection 108.10 of these Special Provisions, for Interim Completion, the Department will assess liquidated damages consisting of USCG Civil Penalty and Road User Costs in the amount of $35,000.

C. For each day that the Contractor fails to complete the work as specified in Subpart C of Subsection 108.10 of these Special Provisions, for Substantial Completion, the Department will assess liquidated damages in the amount of $12,700.

D. For each day that the Contractor fails to achieve Completion as specified in Subpart D of Subsection 108.10 of these Special Provisions, the Department will assess liquidated damages in the amount of $1,350.

THE FOLLOWING IS ADDED:

When the Contractor may be subjected to more than one rate of liquidated damages established in this Section, the Department will assess liquidated damages at the higher rate.

109.01 MEASUREMENT OF QUANTITIES
THE SECOND PARAGRAPH IS CHANGED TO:
The Department will designate Items as Measured Items or as Proposal Items by having a suffix of M or P in the Item number respectively. The Department will measure quantities of Measured Items for payment.

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:
The Department will require a schedule of values from the Contractor for a breakdown of the lump sum costs, after award, to substantiate the breakdown of items included in the lump sum and for use in evaluating any changes to the contract items.

109.02 SCOPE OF PAYMENT
THE THIRD SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO:
The Department will not make additional or separate payment for work or portion of work unless specifically provided for in the “Measurement and Payment” Subsection.
SECTION 152 – INSURANCE

152.03.02 Railroad Protective Liability Insurance

Procure and Maintain insurance coverage for the following railroad:
Consolidated Rail Corporation (CONRAIL)
Leo McGlynn, P.E.
Director – Engineering and Construction
Consolidated Rail Corporation
1000 Howard Boulevard
Room 470
Mt Laurel, NJ 08054
856-231-2540

The following is added to the end of this section:
Consolidated Rail Corporation is the named insured for the Railroad Protective Liability Insurance policy and all provisions of this policy are to be in accordance with CE-6 (see attachment). The Contractor shall provide evidence of insurance to CONRAIL for all policies specified in CE-6.

SECTION 153 – PROGRESS SCHEDULE

153.03.02 CPM Progress Schedule Updates

The last paragraph is changed to:

If the project falls behind schedule for nonexcusable delays, so that the schedule indicates that the Work will not be completed by the Completion date, as specified in 108.10, take the necessary steps to improve progress. Under such circumstances, the RE may direct the Contractor to increase the number of shifts, begin overtime operations, work extra days including weekends and holidays, and supplement its construction plant. Furthermore, the RE may require the Contractor to submit for approval a recovery schedule showing how the Contractor proposes to meet the directed acceleration.

153.04 MEASUREMENT AND PAYMENT

The third paragraph is changed to:

If the Contractor’s CPM Progress Schedule update is not approved by the date of the progress meeting for the following update, the Department will assess liquidated damages to recover the Department’s increased administrative costs. The Department will assess damages for each delinquent update as follows:

SECTION 155 – CONSTRUCTION FIELD OFFICE

155.03.01 Field Office

   a. Telephones. Provide 2 cordless phones with auto-switching.
   c. Cell Phones. Provide 4 cellular phones. Ensure the cellular phone plan provides for unlimited mobile to mobile in-network usage, unlimited push-to-talk/ walkie-talkie usage and an anticipated monthly usage of 900 any-time minutes for each phone. Ensure the phones are on the same plan. Ensure the cellular phone plan has a home rate with no roaming charges within the state. Ensure each cellular phone has the following features:
1. Push to Talk / Walkie-Talkie capable
2. Camera with 1 megapixel picture capability
3. Battery life capable of 180 minutes of continuous use and 72 hours of standby use
4. Equipped with a hands-free headset
5. Base charger and car charger

d. **Computer System.** Provide a computer system meeting the following requirements:

- 2 computer configurations each meeting the following:
  1. Equipped with an Intel Pentium IV processor with Hyper Threading technology having a clock speed of 3.5 GHz or faster, 2 GB RAM, 512 MB Video RAM, 200 Gigabyte hard drive designated as drive C, one DVD (+/-) Writer Drive, one CD-R Recordable Drive. Ensure the system is USB 2.0 compatible and has at least two front USB ports.
  2. Wireless Ethernet Hub Switch with appropriate number of ports and cables and a print server.
  3. High-speed broad band connection and service with a minimum speed of 3 Megabytes per second (mbps) with dynamic IP address for the duration of the project.
  4. 19 inch or larger Flat Screen LCD monitor with tilt/swivel capabilities.
  5. 250 Megabyte or larger Zip Drive internal or external with backup software for MS-Windows and DOS, and fifteen corresponding formatted data cartridges corresponding to the tape drive size.
  6. 1 Flatbed USB version 2.0 or greater Color Scanner with automatic document feed.
  7. Uninterruptible power supply (UPS).
  8. Surge protector for the entire computer configuration to be used in conjunction with the UPS.
  9. 2 computer workstations, chair, printer stand, and/or table having both appropriate surface and chair height.
  10. One can of compressed air and screen cleaning solution every other month of the duration of the contract.

Ensure one computer has a 56K baud data/fax modem. If more than one computer configuration is specified, provide one wireless network card for the base computer configuration and hardwire connections between computer configurations as directed by the RE.

Also provide:
- 10 USB 2+ GB Flash/Jump memory drives
- 50 CD-R 700 MB (or larger) recordable CD’s compatible with the CD drive and 50 recordable DVD’s.
- 2 CD/DVD Holder (each holds 50)

1 color laser printers and supplies as follows:

1. HP PCL 5 emulation, with a minimum of 192 Megabytes of expanded memory, printer cable, and legal size paper tray.
2. One set of printer ink cartridges every other month for the duration of the construction project for each printer.

Software as follows:

1. Microsoft Windows, latest version with future upgrades for the duration of the entire project. Ensure 1 computer has a Microsoft Windows 32 Bit Operating System for ACES, Extra and GroupWise.
4. Anti-Virus software, latest version with monthly updates for the duration of the contract.
6. Primavera Project Planner, latest version
7. Adobe Acrobat Professional, latest version, for Scanner

THE THIRD PARAGRAPH IS CHANGED TO:

N.J. ROUTE 7 OVER HACKENSACK RIVER (WITTPENN BRIDGE)
INTERIM PRIORITY REPAIRS
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When the computer system is no longer required by the RE, the Department will remove and destroy the hard drive, and return the computer system to the Contractor. The Department will retain other data storage media.

6. Office Equipment.

2. 2 digital camera(s). Ensure each digital camera has auto-focus, with rechargeable batteries and charger, 256 MB memory card, USB Memory Card Reader compatible with camera and field office computer, 1.5 inch LCD monitor, 5 mega pixel resolution, 10X optical zoom lens, built in flash, image stabilization, computer connections, and a carrying case

3. 1 video camcorder(s). Ensure each video camcorder is a mini DVD camcorder with 10 optical zoom, 2” LCD monitor, USB 2.0 compatible and includes USB 2.0 connections.

7. Inspection Equipment.

1. 2 Calculators with trigonometric capability
2. 1 Date/ Received stamp and ink pad
3. 1 Electronic Smart level, 4 foot
4. 3 Carpenter rulers
5. 1 Steel tape, 100 feet
6. 1 Cloth tape, 100 feet
7. 1 Illuminated measuring wheel
8. 1 Plumb bob and cord
9. 1 Line level and cord
10. 1 Surface thermometer
11. 1 Concrete thermometer
12. 0 Digital infrared asphalt thermometer
13. 1 Direct Tension Indicator (DTI) Feeler Gage, 0.005 inch
14. 1 Sledge hammer, 8lb
15. 1 Self leveling laser level with range of 100 feet and an accuracy of ¼ inch per 100 feet
16. 10 Hard hats - orange, reflectorized hard hats according to ANSI Z89.1
17. 10 Safety garments – orange, reflectorized, 360º high visibility safety garments according to ANSI/ISEA Class 3, Level 2 standards. To be replaced yearly for the duration of the contract.
18. 5 Sets of rain gear with reflective sheeting
19. 5 Sets of hearing protection with a NRR rating of 22 dB
20. 10 Sets of eye protection according to ANSI Z87.1
21. 2 Sets of fall arrest equipment according to ANSI Z359.1 standards consisting of a full body harness, lanyard and anchor.
22. 1 Light meter - capable of measuring the level of luminance in foot-candles
23. 4 Lantern flashlight, 6V with monthly battery replacements
24. 1 Digital Psychrometer
25. Testing equipment and apparatus conforming to AASHTO T23, T119, T152
26. 2 Hard Bound Daily Diaries, 5-½” X 8” minimum with one day per page. To be provided yearly for the duration of the contract.
27. 1 White Board with easel and erasable markers
28. 1 Digital Caliper
29. 1 Micrometer
30. 1 SSPC Publications Volume 1 and 2
31. 1 Positector 60000 (Coating Thickness Gage)
32. 1 NIST calibration standards
33. 2 Sets of Plastic Shims
34. 1 Digital Dew Point Meter
35. 2 Testex “Press-O-Film” test kits
36. 1 Digital thermometer, 1% accuracy
37. 200 Pairs Disposal Latex Gloves (sizes as needed)
38. 100 “Tyvek” suits (sizes as needed)
39. 2 Portable flashlights with 14,000 candle power
40. 2 Coating inspection mirrors
41. 1 SSPC Visual Standard Vis 1
42. 1 SSPC Visual Standard Vis 2
43. 1 Dry Film thickness gauge – Tooke Gauge
44. 1 Wet film thickness gauge

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

Provide a boat for the exclusive use of the RE and his representatives for inspection and survey purposes throughout the life of the contract. The boat shall be a minimum of 20 feet in length and certified by the Boating Industry Association (BIA) to carry the operator, 4 passengers, and a minimum of 150 pounds of equipment. The boat must be approved by the RE and comply with all applicable OSHA regulations. Equip the boat with a minimum of a 90hp outboard motor, all applicable to BIA safety features, and all required Coast Guard safety equipment (including but not limited to life jackets, fire extinguishers, running lights, throwable floatation device, etc.). Equip the boat with a VHF radio capable of communicating with marine traffic, the bridge operators and the Contractor’s superintendent.

Keep the boat in seaworthy, first class operating condition and ready for use at all times. In the event this boat becomes inoperable, provide a comparable replacement boat satisfying all contract requirements. Furnish the fuel necessary to operate the boat and pay the cost of all maintenance, licensing and repairs. The boat and motor shall become the property of the Contractor after the completion of the project.

Provide suitable, stable docking facilities in accordance with all local, state and federal ordinances for the RE’s inspection boat, which will permit safe boarding and unloading by the RE’s representatives as approved by the RE. If nearby facilities are leased for this purpose, maintain the facility in a good and safe condition or arrange with the owner to maintain.

Maintain the RE’s inspection boat and berthing facilities for the entire contract period or until the RE determines that they are no longer required at the project site. In the event that the boat and docking facilities are no longer required and are released, the Contractor will be notified in writing. The RE and his representatives will operate or provide an operator for the boat until the boat is released.

155.03.03 Telephone Service
THIS SUBSECTION IS CHANGED TO:
Telephone service consists of monthly charges for telephone and cellular phones provided for the field office and materials field laboratory excluding set up charges.

155.04 MEASUREMENT AND PAYMENT
THE FIRST PARAGRAPH IS CHANGED TO:

The Department will measure and make payment for Items as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIELD OFFICE TYPE D SET UP</td>
<td>UNIT</td>
</tr>
<tr>
<td>FIELD OFFICE TYPE D MAINTENANCE</td>
<td>MONTH</td>
</tr>
</tbody>
</table>

THE SECOND PARAGRAPH IS CHANGED TO:

The Department will make payment for FIELD OFFICE TYPE D MAINTENANCE for each month or portion of a month that the field office is required, except that the Department will not make payment for any month or fraction of a month that the Contractor is assessed liquidated damages as specified in 108.20.

THE THIRD PARAGRAPH IS CHANGED TO:

The Department will make payment for TELEPHONE SERVICE for the actual costs of the charges as evidenced by paid bills submitted within 60 days of receipt from the service provider for telephone and cell phones.
SECTION 158 – SOIL EROSION AND SEDIMENT CONTROL
AND WATER QUALITY CONTROL

158.03.02 SESC Measures

19. Oil-Only Emergency Spill Kit.
THE SECOND SENTENCE OF THE FIRST PARAGRAPH IS CHANGED TO:

Include Oil-only Emergency Spill Kit, Type 1 consisting of the following:

SECTION 160 – PRICE ADJUSTMENTS

160.03.02 Asphalt Price Adjustment

NOTE 1 OF THE THIRD PARAGRAPH IS CHANGED TO:

1. The Department will determine the weight of asphalt binder for price adjustment by multiplying the percentage of new asphalt binder in the approved job mix formula by the weight of the item containing asphalt binder. If an item has a payment unit other than ton, the Department will apply an appropriate conversion factor to determine the number of tons used.

THE FOURTH PARAGRAPH IS CHANGED TO:

\[ A = B \times \left(\frac{MA - BA}{BA}\right) \times C \times M \times G \]

Where:
A = Asphalt Price Adjustment
B = Bid Price for Tack Coat/Prime Coat
MA = Monthly Asphalt Price Index
BA = Basic Asphalt Price Index
C = Petroleum Content of the Tack Coat and Prime Coat in Percent by Volume:
   Use 100% for cutbacks and Tack Coat 64-22
   60% for Polymer Modified Tack Coat
   60% for RS or similar type emulsions
M = Percentage of Bid Price Applicable to Materials Only: Use 82%
G = Gallons of Tack Coat and Prime Coat Furnished and Applied
DIVISION 200 – EARTHWORK

SECTION 201 – CLEARING SITE

201.03.02 Clearing Site, Bridge and Clearing Site, Structure

THE FOLLOWING IS ADDED TO THE FIRST PARAGRAPH.

Only the following equipment is permitted for the work:

1. Pneumatic or Electric Equivalent Hand Operated Hammers.
   a. When demolishing concrete not closer than 6 inches to structural members: hammers weighing no more than 90 lbs (exclusive of bit), equipped only with chisel point bits.
   b. When demolishing concrete within 6 inches of structural members: hammers weighing no more than 30 lbs (exclusive of bit).

2. Saw Cutters.
   a. When cutting concrete within 6 inches of structural members: concrete cutters and concrete saws. While using water in the cutting operation, provide shielding beneath the cutting operation to prevent water leakage. Continuously collect slurry and dispose of as specified in 201.03.09. Ensure that the slurry does not enter the structure or highway drainage system.

3. Hydraulic Breakers. Ram-hoe type breakers, hydraulic breakers, and demolition shears may be used with the following restrictions:
   a. Submit required data to the RE for Department’s analysis of stresses induced to the girders.
   b. Delineate the centerline and limits of the top flange of girders before the equipment operation.
   c. Do not use equipment within 6 inches of the delineated flanges.
   d. Do not pull or twist the reinforcement steel.


5. Other Equipment. Obtain RE approval before use.

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

Clear the ground surface and dispose of excessive debris buildup under the south side of east approach spans 13 through 20. Remove debris and clean the ground surface under the bridge up to 50 feet north and south of the centerline of these spans or as directed by the RE. Remove existing debris from the top of pier caps and walls as designated or as directed by the RE. Do not remove or damage trees, shrubs, or any other landscape features that do not interfere with the work or that are designated for preservation.

Remove any debris and loose concrete from the top of the existing bridge sidewalks. Clean the concrete surface using a hand power air tool or high pressure water tool having a minimum water pressure of 1500-psi. Submit a cleaning plan to the RE for approval. No material from removal and cleaning is permitted to enter the river water.

Remove existing bridge railing from lift span after installation of fence. Cut railing flush with top of sidewalk as shown on the Plans.

The bridge rehabilitation work shall include a pre-construction sounding of the channel bottom prior to the start of work as well as a detailed survey of the channel bottom upon completion of the existing bridge rehabilitation. A report of the soundings and a video of the survey inspection shall be supplied to the RE for his review and approval. Any debris found on the channel bottom shall be promptly removed at no additional cost to the State. Provide notification to the First District USCG at least 45 days prior to initiating any work over or in the waterway that may present an obstruction or hazard to navigation. Notification shall meet the requirements specified in Subsection 107.01.02 Construction Over or Adjacent to Navigable Waterways of these Special Provisions.
201.04 MEASUREMENT AND PAYMENT
THE FOLLOWING IS ADDED:

The Department will not make payment for the Item CLEARING SITE in excess of $18,000 until Completion.
DIVISION 400 – PAVEMENTS

SECTION 401 – HOT MIX ASPHALT (HMA) COURSES

401.01 DESCRIPTION
THE FIRST PARAGRAPH IS CHANGED TO:
This Section describes the requirements for constructing base course, intermediate course, and surface course of HMA for the repair of the existing hot mix asphalt overlay on the bridge deck.

401.02.02 Equipment
THE LAST PARAGRAPH IS CHANGED TO:
When an MTV is used, install a paver hopper insert with a minimum capacity of 14 tons in the hopper of the HMA paver.

401.03.01 Preparing Existing Pavement
A. Milling of HMA.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Max. time interval allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1, 2 and 3</td>
<td>24 hours</td>
</tr>
</tbody>
</table>

401.03.03 HMA Courses
D. Transportation and Delivery of HMA.
THE FIRST PARAGRAPH IS CHANGED TO:
Deliver HMA using HMA trucks in sufficient quantities and at such intervals to allow continuous placement of the material. Do not allow trucks to leave the plant within 1 hour of sunset unless nighttime lighting is provided as specified in 108.06. The RE will reject HMA if the HMA trucks do not meet the requirements specified in 1009.02. The RE will suspend construction operations if the Contractor fails to maintain a continuous paving operation. Before the truck leaves the plant, obtain a weigh ticket from a fully automatic scale. Before unloading, submit for each truckload a legible weigh ticket that includes the following:

1. Name and location of the HMA plant.
2. Project title.
3. Load time and date.
4. Truck number.
5. Mix designation.
6. Plant lot number.
7. Tare, gross, and net weight.

E. Spreading and Grading.
THE THIRD PARAGRAPH IS CHANGED TO:
The use of an MTV is optional for the construction of intermediate and surface course in the traveled way. If an MTV is used, ensure that the MTV independently delivers HMA from the HMA trucks to the HMA paver. Operate the MTV to ensure that the axle loading does not damage structures, roadway, or other infrastructure.

J. Ride Quality Requirements.
THIS SECTION IS REPLACED WITH THE FOLLOWING:
For this Project, no payment adjustment will be provided for ride quality requirements.

401.04 MEASUREMENT AND PAYMENT
THE SECOND PARAGRAPH IS CHANGED TO THE FOLLOWING:

The Department will measure HOT MIX ASPHALT PAVEMENT REPAIR before overlay by the square foot of area bounded by the sawcuts.

THE THIRD PARAGRAPH IS CHANGED TO THE FOLLOWING:

The Department will not make separate measurement and payment for milling of HMA, concrete surface course and HMA overlay, placing TACK COAT 64-22 and PRIME COAT, removing waterproofing membrane, sawcutting and sealing of joints in the items HOT MIX ASPHALT PAVEMENT REPAIR and REPAIR OF CONCRETE DECK, TYPE B1 or C1.

THE FOURTH AND FIFTH PARAGRAPHS ARE DELETED

THE FOLLOWING IS ADDED:

The Department will make a payment adjustment for HMA air void quality by the following formula:

\[ \text{Pay Adjustment} = Q \times BP \times PPA \]

Where:
- \(BP\) = Bid Price
- \(Q\) = Air Void Lot Quantity
- \(PPA\) = air void PPA as specified in 401.03.03H.

The Department will make a payment adjustment for HMA thickness quality by the following formula:

\[ \text{Pay Adjustment} = Q \times BP \times PPA \]

Where:
- \(BP\) = Bid Price
- \(Q\) = Thickness Lot Quantity
- \(PPA\) = thickness PPA as specified in 401.03.03I
DIVISION 500 – BRIDGES AND STRUCTURES

SECTION 504 – STRUCTURAL CONCRETE

504.01 DESCRIPTION
THE FIRST PARAGRAPH IS CHANGED TO:

This Section describes the requirements for removal of existing deteriorated concrete pier spalls and constructing cast-in-place concrete and substructure concrete repair.

504.03 CONSTRUCTION

504.03.02 Constructing Concrete

G. Removal of Forms and Falsework.

Do not remove forms and false work until the concrete obtains a compressive strength of 3000 psi.

THE FOLLOWING SECTION IS ADDED:

504.03.04 Substructure Concrete Repair

A. Sawcut and Removal. When Pier Column and Cap repair is specified, provide temporary shielding, as specified in 201.03.03, to prevent debris from falling below. Sawcut repair areas to a depth of 1 inch.

Remove loose and disintegrated concrete from the areas to be repaired to a sound concrete surface. Ensure that the remaining concrete is not damaged and that the reinforcement is not damaged or debonded during concrete removal. The Contractor may remove concrete or prepare and shape repair areas with power chipping or hand tools.

Do not use pneumatic hammers heavier than 33 pounds. The Contractor may start such tools in the vertical position but must immediately tilt to a 45 degree operational angle. Do not operate pneumatic hammers and chipping tools at an angle exceeding 45 degrees relative to the surface of the pier column and cap. Do not use pneumatic hammers heavier than 20 pounds for chipping areas directly below the top surface reinforcement steel. Perform sounding of concrete along with the requirements for removal of unsound concrete before patching the concrete spalls and disintegrated area.

Remove delaminated, deteriorated, and designated concrete to a minimum depth of 1 1/2 inch below the bottom of the main surface layer of existing reinforcement. The RE may require the Contractor to remove sound concrete to achieve the limits of the designated repairs. Construct the falsework to support the forms and structure. Construct forms that are true to line and grade; are mortar tight; and provide a smooth, even concrete surface.

B. Cleaning and Splicing Reinforcement Steel. Clean corroded, uncoated reinforcement steel by sandblasting, waterblasting, or wire brushing. For coated steel, clean areas where the coating is damaged by wire brushing and repair the coating according to AASHTO M 284. For reinforcement that has lost 25 percent or more of its original cross-sectional area, splice in or couple new epoxy-coated reinforcement of the same size. Lap the reinforcement at least 15 bar diameters from each end of the damaged area and wire tie together. If necessary, perform additional chipping of adjacent concrete to provide for this lap. Where reinforcement is broken or missing, lap new bars at least 30 bar diameters from each end of the break.

C. Concrete Pier Column and Cap Condition Survey. The RE will perform the condition survey before applying 1:1 mortar slurry, if scheduled. Submit written notice to the RE at least 15 days before the work site is available for concrete pier column and cap condition survey. The Department will schedule surveys during daylight hours unless the working time is restricted in the Contract. The RE will perform surveys only if the ambient temperature has been above 40 °F for at least 72 hours before the beginning of the survey and only if the deck is dry. The RE will use the data obtained to determine actual limit of the repair.

D. Patching. The Contractor shall use Type IA quick-setting patch material. For concrete pier column and cap repair, provide forms for placing the patch material.
**Quick Setting Patch.** For Type IA quick-setting patch material, place according to the manufacturer’s recommendations. Wet cure the patched area using wet burlap as specified in 504.03.02.F.2 immediately after placing and finishing. Keep the patched area covered for 3 hours.

Do not remove curing until compressive strength as measured by the average of 2 test cylinders is more than 2000 pounds per square inch.

### 504.04 MEASUREMENT AND PAYMENT

**THE FOLLOWING PAY ITEM IS ADDED:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBSTRUCTURE CONCRETE REPAIR</td>
<td>SQUARE FOOT</td>
</tr>
</tbody>
</table>

**THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:**

At bridge pier column and cap areas outlined as SUBSTRUCTURE CONCRETE REPAIR on the Plans or at locations designated, the Department will make final payment for each outlined area for only as measured in the field and as specified in the construction details regardless of original designation or preparatory work for another repair type.

The Department will measure for payment for the item SUBSTRUCTURE CONCRETE REPAIR before placing the new concrete by square foot area bounded by the sawcuts in the concrete pier column and cap for removal of concrete.

The Department will not measure and make payment for sawcuts, removal, disposal, cleaning, repairing rebars, forms, falsework, 1:1 mortar slurry patching, repair material, concrete surfacing, curing, and any other related items necessary to complete the SUBSTRUCTURE CONCRETE REPAIR work.

### SECTION 506 – STRUCTURAL STEEL

#### 506.01 DESCRIPTION

**THE FIRST PARAGRAPH IS CHANGED TO:**

This Section describes the requirements for furnishing, constructing, repairing, or replacing, cleaning, and painting structural steel, steel collars, steel support brackets, temporary jacking structures, sheave hoods, rope connection cover plates, counterweight cover plates, structural bearings, and associated elements that include the use of structural steel and miscellaneous metals.

#### 506.02 MATERIALS

**THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:**

Mortar 903.08.01

#### 506.03.01 Structural Steel

**B. Erection Plan.**

**THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:**

10. Procedure for repairing existing steel collar at pier cap
13. Procedure for removal and replacement of tower sheave hood and rope connection cover plates.
14. Procedure for replacing existing counterweight cover plates.
15. Procedure for resetting (repairing) the south expansion bearing.

**D. Erecting**

**THE SECOND PARAGRAPH IS CHANGED TO THE FOLLOWING:**

N.J. ROUTE 7 OVER HACKENSACK RIVER (WITTPENN BRIDGE) INTERIM PRIORITY REPAIRS

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Obtain Department approval before welding to members or parts of members subject to tension or reversal of stress. If necessary to weld in these areas, ensure that the actual stress range at the point of attachment does not exceed the value for Category F according to the AASHTO Bridge Design Specification. If field welded splices are made, inspect splices using nondestructive tests at the site of erection.

THE FOURTH PARAGRAPH IS CHANGED TO THE FOLLOWING:

Erect structural steel according to Section 11 of the AASHTO Bridge Construction Specifications. Ensure that temporary attachments or supports for scaffolding or forms do not damage the coating system of the steel. Use sufficient support of pads for fascia bracing.

E. Installing High-Strength Steel Bolts.

THE SECOND PARAGRAPH IS CHANGED TO:

Provide a Skidmore-Wilhelm calibrator or an acceptable equivalent tension measuring device on the Project during erection. Ensure that the manufacturer’s representative is present during the first full day of tensioning work to provide technical assistance. Verify each lot of DTIs using the Skidmore-Wilhelm calibrator as specified in NJDOT S-3.

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

G. Structural Steel Repair, Type 1 and 2 (Bridge Steel Stringers, Hanger Steel and Lateral Bracing Steel).

Verify all dimensions in the field to prepare erection drawings. Submit an erection plan and procedure as specified in 506.03.01.B. Clean the base of metal surface by wire brushing until free of scale, slag, rust, moisture, grease and paint. Clean and repair floor beams or girders, if required, by spot cleaning the existing steel in the vicinity of the Type 1 and 2 repairs. Install or repair gusset plates, provide high strength bolts and repair hangers. Paint with an organic zinc coating system as specified in Section 554. Repair damaged, deteriorated, and rusted bridge structural steel members as directed by the RE. Replace with new structural steel members similar in size, shape, and material to the existing steel members or as shown on the Plans. If the existing shape is not available use an alternate structural member of adequate size and capacity. Clean, repair and paint existing gusset plates after connecting to the new steel members as specified in Section 554. Replace existing rivets with the same size high strength bolts. Match connection holes to existing drilled holes in gusset plates. Ream the existing rivet holes where required to install the high strength bolts as directed by the RE. Use temporary shielding as specified in section 201.03.03 for all repair work. For removal and painting of existing rivets, submit the method and staging plans to the RE for approval.

H. Structural Steel Collar Repair.

Submit an erection plan and procedure as specified in 506.03.01.B. Remove and repair damaged or rusted steel collars as directed by the RE. Repair the existing steel collar so that the repaired steel collar is similar in size, material, and shape to the existing steel collar or as directed by the RE. Apply mortar as specified in 553.03.01 on areas to be covered by steel collar plate. Replace all steel collar rods, washers, and nuts in kind. Install steel collars and false work as required to seal gaps between concrete pier cap surface and steel collar plate. Seal all gaps with pneumatically applied mortar or grout material. Allow concrete to harden a minimum of seven days before tightening collar bolts. Clean the metal surface base of the steel collar by wire brushing until free of scale, slag, rust, moisture, grease and paint. Paint steel collar after installation is complete. Use an organic zinc coating system for the paint, supplied by the same manufacturer as the originally applied system. If the originally applied coating system is not available, the RE will designate an alternate system. All cleaning and painting shall be as specified in Section 554.

I. Structural Steel Collar.

Verify pier cap dimension in the field to prepare erection drawings. Submit an erection plan and procedure as specified in 506.03.01.B. Apply mortar as specified in 553.03.01 on areas to be covered by steel collar plate. Measure pier cap dimensions to prepare working drawings of steel collar for pier cap. Install structural steel collars and false work as required to seal gaps between concrete pier cap surface and steel collar plate. Seal all gaps with pneumatically applied mortar or grout material. Allow concrete to harden a minimum of seven days before tightening collar bolts. Use an organic zinc coating system for the paint, supplied by the same manufacturer as the originally applied system. If the originally applied coating system is not available, the RE will designate an alternate system. All cleaning and painting shall be as specified in Section 554.

J. Structural Steel (Brackets).

Verify all dimensions in the field to prepare working and erection drawings of steel support brackets for anchoring chain link fence posts. Submit an erection plan and procedure as specified in 506.03.01.B. Use temporary shielding as specified in section 201.03.03. Submit the method of removal of the...
existing steel encasement and staging plans to the RE for approval. Remove any existing steel encasement necessary for the installation of the new steel angle brackets required for the chain link fence post anchorage system. Clean and drill holes in the existing steel channel sections to erect the structural steel brackets in accordance with section 11 of the AASHTO Bridge Construction Specifications. Temporary attachments or supports for scaffolding or shielding must not damage the coating system of the steel. Set all steel angle bracket legs level in position and provide full contact with channel web and pipe sleeves. Install bolts and rods in all connection holes and tighten to a snug-tight condition to compact the joint. Clean the surface, paint, and restore the steel encasement after connecting the new steel rod anchoring systems to the steel brackets. Repair damaged coatings and steel encasement as directed by the RE. Ensure that cleaning and painting are handled as specified in section 554.

K. Replacement of Sheave Hoods, Rope Connection Cover Plates, and Counterweight Cover Plates. Verify all dimensions in the field prior to preparing working and erection drawings for the replacement of the sheave hoods, counterweight rope cover plates, and replacement of the counterweight pocket cover plates. Submit an erection plan and procedure as specified in Section 506.03.01B. Use temporary shielding as specified in Section 201.03.03. Submit the method of removal and staging plan for the existing sheave hoods and counterweight rope connection cover plates to the RE for approval. Drill holes in the new steel members according to Section 11 of the AASHTO Bridge Construction Specification.

REPLACE SHEAVE HOODS: Remove the existing sheave hood and install the new sheave hood at each location as shown on the Plans. Ensure that any temporary attachments from scaffolding and shielding supports do not damage the existing steel. Ensure that all sheave hoods are set level in position and have no contact with the shafts, bearing, sheave, or ropes. Tighten all connection bolts to a snug-tight condition compacting the joint. Repair damaged paint or coating with touch up paint as directed by the RE. Ensure that cleaning and painting are handled as specified in section 554.

REPLACE ROPE CONNECTION COVER PLATES: Remove and replace existing rope connection cover plates, connection bolts, nuts and washers in kind at all locations as shown on the Plans. Drill holes in the existing steel sections in accordance with Section 11 of AASHTO Bridge Construction Specifications. Ensure that any temporary attachments from scaffolding and shielding supports do not damage the rope separator plates. Ensure that all new steel plates are set level in position and have full contact with the counterweight or lift span steel framing. Tighten all connection bolts and rods to a snug-tight condition compacting the joint. Repair damaged paint or coating with touch up paint as directed by the RE. Ensure that cleaning and painting are handled as specified in section 554.

REPLACE COUNTERWEIGHT COVER PLATES: Verify all dimensions in the field prior to preparing erection drawings. Submit an erection plan as specified in Section 506.03.03.B. Replace the damaged, deteriorated and rusted counterweight cover plates with 4 new cover plates identical to the original covers. Use temporary shielding as specified in Section 201.03.03 for all repair work. Submit the method of cleaning and removal of the existing paint to the RE for approval. Repair damaged paint or coating with touch up paint as directed by the RE. Ensure that cleaning and painting are handled as specified in section 554.

L. Reset Bearing (Repair of the South Expansion Shoe). Verify all dimensions in the field prior to preparing working and erection drawings for the repair of the south expansion shoe. Submit an erection plan and procedure as specified in Section 506.03.01B. Follow the repair procedure as shown on the Plans.

506.04 MEASUREMENT AND PAYMENT
THE FOLLOWING ITEMS ARE ADDED:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURAL STEEL REPAIR, TYPE 1</td>
<td>LBS</td>
</tr>
<tr>
<td>STRUCTURAL STEEL REPAIR, TYPE 2</td>
<td>LBS</td>
</tr>
<tr>
<td>STRUCTURAL STEEL COLLAR REPAIR</td>
<td>UNIT</td>
</tr>
<tr>
<td>STRUCTURAL STEEL COLLAR</td>
<td>UNIT</td>
</tr>
<tr>
<td>RESET BEARING</td>
<td>UNIT</td>
</tr>
</tbody>
</table>

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The Department will not measure or make separate payment for the removal of the existing steel encasement, drill holes for connections, cleaning, surface preparation, scaffolding, shielding, painting, steel encasings and other related items.
necessary to install new structural steel brackets for bridge chain link fence post anchoring systems in the item
STRUCTURAL STEEL.

The Department will not measure or make separate payment for the removal of the existing sheave hoods and rope
connection cover plates, replacing existing hatch cover and chains, drilling holes for connections, field welding, the
replacement of bolts, rods, and washers, cleaning, surface preparation, scaffolding, shielding, painting or any other
related items necessary to replace the existing sheave hoods and rope connection cover plates and to replace the existing
counterweight cover plate in the lump sum pay item STRUCTURAL STEEL.

Any damage caused to any part of the structure during the repair of the south expansion shoe will be repaired or replaced
at no additional cost to the Department.

THE FOLLOWING SECTION IS ADDED:

SECTION 515 – TEMPORARY JACKING SYSTEM

515.01 DESCRIPTION
This Section describes the requirements for temporary jacking and securing of the counterweights during the
replacement of the sheaves and counterweight ropes. It also describes the removal of the temporary jacking system.

515.02 MATERIALS
Provide materials as shown on the Plans.

515.02 CONSTRUCTION
The work under this section shall consist of furnishing all labor, materials, and incidental items required to temporarily
jack and secure the counterweight during the replacement of the sheaves and counterweight ropes. It also includes the
removal of the temporary jacking system and the restoration of the structure to its original condition prior to jacking.

515.03.01 Temporary Jacking Requirements
A. Follow jacking notes and suggested jacking procedures as shown on the Plans.
B. Coordinate the work of this section with the work of section 518.
C. The jacking scheme and procedures shown on the Plans are a suggested procedure only. Prepare and submit all
details of the jacking scheme, scaffolding, and temporary shielding to the Department for approval.

515.03.02 Quality Control
A. Fabrication Qualification: AISC Certification Category MBr.
B. Jack Calibration and Stability: 1926.305, OSHA.
C. Construction Safety: OSHA and PEOSHA.
D. Submit shop quality control manual prior to fabrication.
E. Submit welder’s qualification.
F. Perform all jacking and load transfer operations in the presence of a licensed Professional Engineer registered in the
   State of New Jersey.

515.03.03 Submittals
A. Draft working drawings in accordance to the drafting requirements of the Department of Transportation of the State
   of New Jersey.
B. Submit working drawings at least 30 days before beginning of work for approval. On working drawings show the
   method, staging, and all necessary details for the construction of the jacking system and support of each
   counterweight. Submit details of shop assemblies.
C. Submit a complete jacking procedure at least 30 days prior to beginning of work for approval.

D. Submit data for the pressure gage and jack combination, certified by an accepted testing laboratory, no earlier than 14 days prior to the start of use.

E. Submit certification letter of calibration in accordance with 1926.305, OSHA. The manufacturer’s rated capacity shall be legibly marked on all jacks.

F. Submit work plan for sampling location for weldability and strength test for existing steel.

G. Provide the following detailed information for shop assemblies and field installation of members:
   1. Mark each member for a particular location, elevation, and sequence.
   2. Mark total weight on shop assembled members.
   3. Show lifting lugs and holes when required.
   4. Other pertinent details for working drawings.

515.04 MEASUREMENT AND PAYMENT

No measurement of the work will be made. Payment will be made at the lump sum bid price as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMPORARY JACKING SYSTEM</td>
<td>LUMP SUM</td>
</tr>
</tbody>
</table>

Any damage caused to any part of the structure as a result of constructing or removing the jacking system will be repaired or replaced at no cost to the Department.

THE FOLLOWING SECTION IS ADDED:

SECTION 518 – INSTALLATION OF MACHINERY AND WIRE ROPES

518.01 DESCRIPTION

518.01.01 General

A. Basis of Machinery and Wire Rope Installation
   1. The installation of new machinery and wire ropes shall conform to the requirements of the 1988 AASHTO Standard Specifications for Movable Highway Bridges, except as otherwise shown on the Plans or specified herein.

B. Under Section 518 the Contractor shall:
   1. Provide components not procured under separate procurement contracts.
   2. Take possession of material supplied by NJDOT at the Jersey City Maintenance Storage Facility.
   3. Remove existing machinery and wire ropes.
   4. Install new machinery and wire ropes.
   5. Perform field-testing of new machinery and wire ropes.
   6. Put the bridge with new machinery and wire ropes in satisfactory operating condition as shown on the Plans and as directed by the RE. It is the intent of the Contract Documents to provide finished work that is tested and ready for operation.
   7. Coordinate with suppliers of separate procurement contracts awarded by the Department for the sheaves and ropes.

C. Major elements of machinery work include the following:
1. Main sheaves
2. Main trunnion shafts
3. Main trunnion bushings
4. Main counterweight ropes
5. Main counterweight rope sockets and pins
6. Replacement of expansion live load shoe circular rings
7. Cleaning of balance chain links

D. Work includes the following:

1. Any parts, apparatus, appliance, material, labor or service either shown on the Plans or noted in the Specifications.
2. Any incidental parts, apparatus, appliance, material, labor or service of a minor nature, necessary to make the work complete in all respects, and ready for operation, even if not particularly shown on the Plans or noted in the Specifications.
3. Small details not shown on the Plans or noted in the Specifications, but which are necessary for the proper and complete installation and operation of the machinery.
4. Coordination of the machinery work with that of all other trades including, but not limited to, architectural, electrical, and structural work.

518.02 MATERIALS

518.02.01 General
A. Provide materials as shown on the Plans and as specified herein. All materials shall meet the requirements of material specifications listed under subpart 518.02.02 Codes and Standards.
B. The current issue of all material specifications and standards shall be those in effect on the date of the bid for this project.
C. Provide materials that are new, clean, and free of defects.

518.02.02 Codes and Standards
A. Work under this Section shall comply with, but not be limited to, all applicable requirements of the following codes and standards. The abbreviations used in this specification are as follows:

- AASHTO: American Association of State Highway and Transportation Officials, Standard Specifications for Movable Bridges
- AGMA: American Gear Manufacturers Association
- AISI: American Iron and Steel Institute
- ANSI: American National Standards Institute
- ASTM: American Society for Testing and Materials
- AWS: American Welding Society
- AFBMA: Anti-Friction Bearing Manufacturers Association
- NLGI: National Lubricating Grease Institute
- SAE: Society of Automotive Engineers
- SSPC: Steel Structures Painting Council

518.02.03 Qualifications
A. Products used in the work under this section shall be produced by manufacturers regularly engaged in the manufacture of the specified products.
B. The Contractor and Fabricator(s) shall use an adequate number of skilled, trained, and experienced machinists and millwrights for the installation and testing of the machinery and wire ropes. Machinists and millwrights shall be thoroughly familiar with the specified requirements and methods for the proper execution of the work.

518.02.04 Product Substitutions
A. The terms “approved equal”, “of equal quality”, and “or equal” which appear on the Plans and in this Specification are intended to allow the Contractor to substitute other manufacturers products of equal or greater quality and rating for those specified. Supply at no additional cost to the Department, test reports, samples, specifications, and other data as necessary to confirm that the Contractor's proposed products are equal to those named in these Specifications or on the Plans.

B. Prior to ordering any substitute products, obtain in writing the RE's approval of the equivalence of the substitute product. The acceptance of substitute products is at the sole discretion of the RE who will establish the basis for equivalence and will review the quality of the materials and products described in detail on the submitted working drawings and product data.

C. The RE will indicate “Approved”, “Approved as Noted”, “Revise and Resubmit”, or “Rejected” or for the substitute material. Upon return of a rejected working drawing resubmit the working drawings with the product as specified. Additional review time required for alternate products shall be considered in the Contractor’s schedule and shall not be a cause for a delay.

D. The RE’s approval of any substitute products will not relieve the Contractor of responsibility for the proper operation, performance, or functioning of that product.

E. If any departures from the Plans or these Specifications are deemed necessary by the Contractor, submit details of such departures and the reasons therefore as soon as practical to the RE for review. Make no such departures without prior approval by the RE.

518.02.05 Material Substitutions
A. Alternative materials may be requested in writing. The request must provide complete data justifying the suitability of the alternate materials and must be approved by the RE prior to initiating manufacture or construction. Additional review time required for alternate materials shall be considered in the Contractor’s schedule and shall not be a cause for a delay.

518.02.06 Warranties and Guarantees
A. Obtain and assign to the Department all manufacturer’s warranties or guarantees on all equipment, material, or products furnished for or installed as part of the work.

B. Warrant the satisfactory in-service operation of the mechanical equipment, materials, products, and related components. This warranty shall extend for a minimum period of one year following the date of final acceptance of the Project.

518.02.07 Steel Plates
Steel structural shapes and plates, unless otherwise specified, shall meet the requirements of ASTM A709 Grade 36.

518.02.08 Welding
A. All welding shall conform to current ANSI/AASHTO AWS D1.5 standards. Treat all machinery and weldments that support machinery as main members and all welds as joining primary components. Show all welding details and procedures on the working drawings.

B. Keep to a minimum any distortion during fabrication by the use of welding fixtures and proper welding procedures. Stress relieve all weldments requiring machining prior to matching.

C. Inspect all weldments utilizing dye penetrant tests supported by ultrasonic or radiographic testing as required by the RE. Show complete inspection requirements for each weld on the working drawings.
D. Submit complete procedures for structural welding in the field to the RE for approval prior to the welding. Include a certified copy of a test report showing the chemical composition of the specific steel piece(s) to be welded for any welding procedure involving attachment to existing steel work. Consider this chemical composition in the weld procedure.

518.02.09 Keys and Keyways

A. Keys and keyways shall conform to the dimensions of ANSI B17.1, Keys and Keyseats, for square and rectangular parallel keys. Unless otherwise specified, key widths shall fit keyseats with an ANSI B4.1 LC3, locational clearance fit.

B. Effectively hold in place all keys preferably by setting them into closed-end keyways milled into the shaft. Round the ends of all such keys to a half circle equal to the width of the key. Do not extend keyways into any bearing. If two keys are used in a hub locate them 120 degrees apart and in line with wheel arms where practicable.

C. Unless otherwise indicated on the Plans, machine keys from allow steel forgings conforming to the requirements of ASTM A668 Class K.

D. Provide fillet radii on all keyways, except electrical device drive couplings, in the keyway corners sized per ANSI B17.1. Provide chamfered corners on keys to suit the fillet radii.

518.02.10 Bushings

A. Provide split type bushings on machinery shafts and mount to the base and cap. The outside diameter fit between bushing and housing shall be ANSI LC1 locational clearance fit. Double flanged bushings shall have the same fit between flanges and the end faces of the base and cap. Fit the bores to achieve an ANSI RC6 medium running clearance fit with the shaft journal.

B. Turn the bushings with a predetermined gap between halves to suit the liner or shim thickness. The total thickness of liners in each bushing set shall include at least 1/8 inch laminated construction permitting adjustment in increments of 0.003 inch. Cut liners to fit shoulder fillets so they are square with bushing flanges and drill bolt holes through them.

C. Provide double spiral grease grooves on bushings, unless shown otherwise, such that the grease grooves intersect at the center of each bushing half. Machine cut the grease grooves and provide well rounded corners to a radius not more than one half the groove width.

D. Solid bushings, where shown on the Plans, shall be one piece bronze sleeves with spiral cut lubrication grooves; use an ANSI FN1 light drive fit or FN2 medium drive fit between the bushing outside diameter and housing (refer to plans). Fit the bores with the shaft to achieve an ANSI RC6 medium running fit.

E. In cases of solid or split bushings required to support axial loads, provide grease grooves on the flanges.

F. Provide lubrication fittings for all new components requiring lubrication.

518.02.11 Shims

A. All machinery shims required for leveling and alignment of equipment shall be ASTM A666 Type 304 stainless steel, neatly trimmed to the dimensions of the assembled parts having holes drilled 1/8 inch larger than the bolts that pass through the shims. In general, furnish sufficient thickness to obtain 0.005 inch variations of the shim allowance plus additional shims to equal twice the full nominal design thickness of the shim stack shown on the Plans.

B. Except as shown otherwise on the Plans, place shims to provide full contact with all bearing surfaces of machinery bases.

C. Orient shims for motors, brakes and other electrical devices having independent mounting feet such that a difference in thickness between the independent shim packs shall align the device longitudinally along its axis, not rotate it about its axis.

D. Show and fully dimension and detail all shims on the working drawings.

E. Shims with open side or U-shaped holes for bolts will not be permitted. Secure shims with a minimum of 2 bolts.
F. The use of peelable laminated shims with solder or resin bonding will be permitted. Plastic or other non-metallic shims will not be permitted.

518.02.12 Fasteners

A. The following requirements for bolts, nuts, studs, cap screws, lock washers, and cotter pins shall apply except where otherwise specified herein or shown on the Plans.

B. Provide finished body high-strength bolts or high-strength turned bolts for all bolts connecting machinery parts, electrical motors, brakes, limit switches, position transmitters, and any other electrical control devices to each other or to supporting members as shown on the Plans.

C. Finished body high-strength bolts and studs shall meet the requirements of ASTM A449. Nuts shall be ASTM A563 Grade B or A. Unless otherwise shown on the Plans, holes for high-strength bolts shall not be more than 0.01 inches larger than the actual diameter of the body of the bolt. Provide 2 hardened washers complying with the requirements of ASTM F436 with each high-strength bolt. Use beveled washers to compensate for sloped interior flanges of structural shapes.

D. Turned bolts, turned cap screws and turned studs shall have turned shanks, cut threads and finished washer-faced, heavy hexagonal heads unless otherwise shown on the Plans. All finished shanks for turned bolts, turned cap screws and turned studs shall be 1/16 inch larger in diameter than the diameter of the thread which shall determine the head and nut dimensions. Turned bolts and turned studs shall meet the material requirements of ASTM A449 Grade A. The shanks of all turned bolts, turned cap screws and turned studs shall have an LC3 locational clearance fit in finished holes in accordance with ANSI B4.1.

E. Unless otherwise shown on the Plans or specified herein, the dimensions of socket head cap screws, socket flat head cap screws and socket set screws shall conform to ANSI B18.3. Provide screws made of heat treated alloy steel, cadmium plated and furnished with a self locking nylon pellet embedded in the threaded section.

F. Unless otherwise shown on the Plans or specified herein, provide set screws of the headless safety type, having threads of the course thread series, and having cup points. Do not use set screws to transmit torsion or as the fastening or stop for any equipment that contributes to the stability or operation of the Bridge.

G. All threads for bolts, nuts, and cap screws shall conform to the coarse thread series shall and shall have a Class 2 tolerance for bolts and nuts or Class 2A tolerance for bolts and Class 2B tolerance for nuts in accordance with the ANSI B1.1 “Unified Screw Threads”.

H. Coat the threads and shanks of all fasteners with anti-seize compound before assembly of the nuts to prevent corrosion or galling and to facilitate future removal.

I. Provide positive locks of an approved type for all nuts of non high strength fasteners. If double nuts are used both will be of full thickness. Use double nuts for all connections requiring occasional opening or adjustment. If lock washers are used for securing screws or nuts, provide ones made of tempered steel conforming to the SAE regular dimensions and meeting the SAE material requirements for temper and toughness.

J. High-strength bolts and nuts, if fully tensioned per AASHTO Standards, are self-locking and need no additional locking devices.

K. All cotter pins shall conform to the SAE standard dimensions and made of half-round stainless steel wire, ASTM Designation A580, Type 302.

L. Subdrilling of Machinery Components

1. Shop drill machinery components to approximately 60 percent of the final bolt diameter. Shop machine all bolt lands perpendicular to the hole. Provide machined lands that are at least 1/8 inch larger than the final hardened washer.

2. Components such as motor and brakes are typically provided by the factory with mounting holes larger than 60 percent of the final bolt size. In this case use the factory holes as a template to locate the 60 percent holes in the machinery support.

M. Subdrilling of Machinery Supports
1. Do not drill or punch machinery supports until assembled with the machinery. Designate shop or field assembly on the working drawings. Use the subdrilled holes in the machinery component as a template to locate the holes in the machinery support. Match the hole size to the subdrilled hole in the machinery component.

N. Temporary Bolts

1. Use new ASTM A325 bolts, approximately 50 percent of the final bolt size, with heavy nuts and double washers to temporarily attach machinery components to their supports. Coat the threads of the nut and bolt with a corrosion inhibiting anti-seize lubricant with a published friction coefficient of 0.15. Tighten the nuts to produce a tension equal to 50 percent of ultimate stress.

2. If adjustment beyond the clearance of the temporary bolt and subdrilled hole is required to achieve proper alignment, enlarge only the machinery support hole using the machinery component as a template.

3. In general, temporary attachment shall begin from the final drive component(s) working toward the prime mover(s).

O. Final Drilling and Reaming

1. After proper alignment is achieved, but prior to test operation of the bridge, tighten the temporary nuts to produce a tension equal to 70 percent of ultimate stress. The bridge shall be operated and all alignment criteria checked. Make the required alignment adjustments in all machinery components prior to final bolting of any machinery component.

2. If the operating loads exceed the safe working capacity of the temporary bolts, install new larger bolts to suit the load in holes 1/32 inch larger than the bolt.

3. All drills, chucks, extensions, adapters, and other tools shall be in good condition. Drill bits, reamers and spot facing tools shall be new and replaced when worn.

4. Proceed with final drilling one bolt at a time in 1/8 inch to 1/4 inch increments to within no less than 1/16 inch of the final diameter. Use cutting fluid during all stages of final drilling and reaming. Use effective means to contain the cutting fluid and chips so as not to contaminate the waterway or bridge floor. The final drill size shall be 1/32 inch less than the final hole size. Obtain the final hole size by reaming the remaining 1/32 inch of material.

5. All final drilling, reaming, and spot facing shall be done in one setup without de-energizing the magnetic drill base.

6. Magnetic drill support fixtures may be attached to the machinery supports with approval of the RE. Provide adjustable fixtures so that they can be made perpendicular to the subdrilled holes.

7. Inspect each hole for size and finish and record the results. Inspect each bolt for proper material designation markings and measure for conformance with the working drawings.

8. Coat the hole, nut threads, bolt threads, and bolt shank with a corrosion inhibiting anti-seize lubricant with a published friction coefficient of 0.15.

9. Install the bolt in the hole through the thinnest member first with a washer under both the nut and bolt head. The nut shall be tightened with a wrench to a snug fit. Inspect the connection to ensure full bearing of the bolt head and nut. If full bearing is not obtained, the non-perpendicular surface(s) shall be spot faced at least 1/8 inch larger than the washer.

10. Tighten the nuts with a calibrated torque wrench to produce a tension equal to 70 percent of ultimate bolt stress. Show the final bolt torque on the working drawings.

11. At the end of each day clean and paint all completed final connections to prevent corrosion.

P. Example for 1 inch Machinery Bolt in a Pillow Block Bearing Mounted in the Field

1. Shop drill 5/8 inch holes in the pillow block and spot face at least 2 1/4 inch for 2 inch outside diameter hardened washer.

2. Align pillow block with shims on machinery support and clamp in place.
3. Set up magnetic drill fixture perpendicular to the 5/8 inch hole(s). Set up chip and cutting fluid containment system.
4. Using the 5/8 inch holes in the pillow block as a guide, drill 5/8 inch holes through machinery support.
5. Install new anti-seize coated 1/2 inch A325 bolts with heavy nuts and double washers.
6. Tension bolts to 50 percent ultimate.
7. Complete all temporary bolting.
8. Check alignment. Adjust as required.
9. Tension bolts to 70 percent ultimate.
10. If larger 3/4 inch bolts are required due to operating load, drill 25/32 inch holes.
11. Install new anti-seize coated 3/4 inch A325 bolts with heavy nuts and double washers.
12. Tension bolts to 70 percent ultimate.
13. Operate bridge, check alignment, and adjust as required.
14. After alignment of all machinery components is accepted, set up magnetic drill fixture perpendicular to the hole(s).
15. Set up cutting fluid and chip containment system.
16. Remove one temporary bolt.
18. Energize magnetic base.
19. Drill 7/8-inch hole through pillow block and support.
20. Drill 31/32-inch hole through pillow block and support.
21. Ream hole through pillow block and support to 1 inch.
22. Measure and record hole diameter and surface finish.
23. Check bolt material designation on head and measure bolt for conformity to working drawings.
24. Coat hole, nut threads, bolt threads and bolt shank with anti-seize.
25. Install bolt through thinnest member first and snug nut with wrench.
26. Observe bolt head and nut for full bearing.
27. If full bearing does not exist, spot face or back spot face the non-perpendicular surface.
29. Tighten nut to produce 70 percent ultimate stress in the bolt.
30. Clean and paint the connection at the end of the day.

518.02.13 Lubrication Fittings, Piping and Stations
A. Fit all bearings and other surfaces requiring grease lubrication, other than open gear teeth, for high-pressure lubrication with 1/4 inch NPT standard industrial giant button head lubrication fittings. Provide adapter fittings as required for the equipment. The fittings for greasing bushed bearings shall be tapped into the bushings or connected thereto by seamless brass pipe so that grease will be discharged directly into the grease grooves for distribution. All lubrication fittings shall be conveniently located for greasing. Where shown on the Plans or specified herein, connect lubrication fittings to the points requiring lubrication from conveniently accessible lubrication stations by stainless steel tubing. Make the final connection to all components using a high-pressure flexible hose with a bursting pressure not less than 12,000 psi. Securely support all pipes and locate them so that they will be protected from damage or excessive vibration. The entire lubrication system shall be suitable for
lubrication with a 10,000 psi lever grease gun without risk of failure of any individual component. Install all lubricating equipment to the satisfaction of the RE.

B. Lubrication fittings shall be manufactured by one of the following companies, or approved equal:
   Stewart Warner Alemite Corp., Charlotte, NC
   Lincoln, Inc., St. Louis, MO
   M. Brown Fitting Specialists, Inc., New York, NY
   Auto Vehicle Parts Company, Covington KY

C. Provide 2 heavy duty, 10,000 psi grease guns with 18 inch flexible hoses and giant button head couplers.

D. Submit catalog cuts for the lubrication fittings, pipe, pipe fittings, pipe supports, flexible hoses, stations, and grease guns.

E. Provide machinery components requiring oil lubrication with means for filling, indication of level of lubricant, and draining. Provide the drain connection with a drain cock.

518.02.14 Temporary Protective Coatings

A. Apply rust-inhibiting coatings for temporary protection of machined surfaces to all such surfaces immediately after machining. The protective coating shall be as manufactured by one of the following companies, or approved equal:
   1. E.F. Houghton & Company, Valley Forge, PA
      Rust Veto 344, Cosomoline 1058
   2. Sanchez, Inc. Chicago, IL
      No-Ox-Id “A”, Special “X”
   3. A.W. Chesterton Company, Stoneham, MA
      Heavy-Duty Rust Guard
   4. Texaco, Houston, TX
      Metal Protective Oil L

518.02.15 Lubricants

A. All lubricants shall meet NJDOT Standards and the equipment manufacturer’s recommendations. In the event of a conflict the manufacturer’s recommendations shall govern.

B. Provide all lubricants for the machinery as specified herein. Provide sufficient quantities for testing, start-up, and a one year supply from final acceptance.

C. Lubrication for the wire ropes shall be the same lubrication used during fabrication and for long term storage of the ropes.

D. Lubrication for the trunnion bearings shall be supplied by the Department.

518.02.16 Paint

The field paint shall conform to the paint used for structural steel and shall be compatible with the paint system used on standard manufactured products. Match the final color with the final coat of the bridge structure, except as otherwise noted on the Plans or herein.

518.02.17 Machinery Guards

A. Provide machinery guards where shown on the Plans.

B. Construct machinery guards to comply with the applicable requirements of ANSI B15.1, Safety Standards for Mechanical Power Transmission Apparatus.
C. Unless otherwise shown on the Plans or specified herein, construct all machinery guards of stainless steel having a minimum thickness of 1/64 inch (No. 12 Gauge) and provide for their removal without requiring disassembly of any machinery component.

D. Provide machinery guards with removable hinged or bolted covers for lubrication access if the component they are encasing requires lubrication.

518.02.18 Working Drawings

A. Prepare working drawings in accordance with the latest edition of the New Jersey Department of Transportation Standards as amended herein. Follow Movable Bridge Engineering Group submission procedure for all mechanical submissions.

B. Submit all working drawings, manufacturer’s literature, certified materials documents, catalog data, and other documents related to the satisfactory fabrication, installation, and operation of any item in one group for review. Time lost because of rejection of any submittal due to incorrect or lack of information or improper coordination shall not be considered as a proper cause for a Time Extension to the total contract time nor to the achievement of any contract “Milestone”.

C. Submit to the Department a schedule and list of working drawings and related documents to include the following:

1. List of all items to be reviewed.
2. Anticipated date of delivery of documents to the Department.
3. Anticipated required date of document approval and return.
4. Requests for expedited review, with complete justification for such requests.

D. The Department will coordinate the review and render a decision on the acceptability of the proposed schedule within 30 days of receipt.

E. Obtain all necessary field dimensions to provide proper fit of the new components before preparation of working drawings for new components that must mate with the existing structure and foundation.

F. Submit all required working drawings, manufacturer’s literature, certified materials documents, catalog data, and other documents for machinery items to the Department for review within 60 days after the date of award of the Contract.

G. Submit to the Department for their approval 6 prints of all working drawings. In case of correction or rejection, resubmit 6 prints of working drawings until drawings are approved. Do not order any materials prior to the approval of the working drawings. Do not begin work until the working drawings have been approved. After approval of the working drawings, obtain the proper “Approved” stamps on all working drawings and supply the Department with up to 6 prints of the approved working drawings.

H. Show all parts completely detailed and dimensioned on working drawings. Do not use a reproduction of the Plans as base sheets for assembly or erection drawings.

I. State materials and material specifications for each part. Where ASTM or any other standard specifications are used, give the applicable numbers of such specifications.

J. Show required finish machining including grade of finish in accordance with ANSI B46.1, Surface Texture, and dimensional tolerances and allowances for specific fits in accordance with ANSI B4.1, Preferred Limits and Fits for Cylindrical Parts for all machined components.

K. The fits and finishes shall conform to the requirements of the AASHTO Standard Specifications for Movable Bridges, unless otherwise shown on the Plans or specified in this Specification.

L. Show all external dimensions and clearances necessary for installation and operation of all new bridge machinery and wire ropes on working drawings.

M. Furnish complete assembly drawings or diagrams showing each part contained therein and the manufacturer’s part number assigned to each part. The drawings or diagrams shall be sufficient to enable complete disassembly and reassembly of the assemblies described herein. In the event that any part is modified in any manner from the way it
is described or delivered by its original manufacturer, furnish a drawing which details each modification and the part shall be assigned a unique part number to ensure the furnishing or replacement parts modified in similar fashion.

N. Provide certified prints of each manufactured assembly. Certified prints are the manufacturer’s drawing of proprietary products where mounting dimensions, ratios, speeds, ratings, and any other required properties are shown and the manufacturer certifies their correctness for this specific project. In addition to identifying and describing each part, show the following:

1. Dimensions of all principal parts comprising the assembly.
2. Certified external dimensions that affect clearances and are required for installation, including tolerances.
3. Capacity and normal operating ratings.
4. Recommended lubrication, including location, lubrication fittings and provisions for adding, draining, and checking the level of lubricants.
5. Inspection openings, seals, and vents.
6. Details or description of all fasteners required to mount the assembly.
8. Name of the bridge and location.
9. Certified prints shall be signed and dated by an officer of the manufacturing company.

O. Make complete shop bills of materials for all machinery parts. If the bills are not shown on the working drawings, furnish prints of the bills for approval in the same manner as specified for the working drawings.

P. State the computed weight of each piece of machinery on the working drawings upon which it is detailed or billed.

Q. Show the final tightening torque value for each machinery bolt on the working drawings.

R. Furnish complete assembly and erection drawings. These drawings shall give part numbers, match marks, and essential dimensions for locating each part or assembled unit with respect to the bridge structure or foundation.

S. On each working drawing give a suitable title to describe the assembly or parts detailed thereon, and the complete project name and contract number identifying each drawing.

518.03 CONSTRUCTION

518.03.01 Shop Inspection and Testing

A. A designated representative of the Department will make a visual and dimensional inspection of the machinery. Give at least 10 days notice to the Department of the beginning of work at foundries, forge, and machine shops so that inspection may be provided. Do not cast, forge, machine, assemble, or test materials before the Inspector has been notified per the above.

B. Furnish all facilities for the inspection of material and workmanship in the foundries, forge, and machine shops and allow the Inspector designated by the Department free access to the premises. Work done while the Inspector has been refused access and work presented in a manner that prevents adequate inspection will automatically be rejected.

C. The Inspector will have the authority to reject materials or workmanship that does not fulfill the requirements of the Contract Documents.

D. Inspection at the foundries, forge, and machine shops is intended as a means of facilitating the work and avoiding errors. It is expressly understood that inspection does not relieve the Contractor from the responsibility with regard to imperfect material or workmanship and the necessity for replacing defective materials or workmanship that are delivered to the job site.

E. Furnish, without additional charge, material test coupons, samples or specimens as required, and all labor, testing machines, tools, and equipment necessary to prepare the specimens and to make the physical tests and chemical
analyses required by the material specification for the particular project. Furnish copies of all test reports and chemical analyses to the RE.

F. Furnish the Department with a copy of all orders covering work performed by subcontractors or suppliers.

G. The acceptance of any material or finished parts by the Inspector shall not prevent their subsequent rejection if later found to be defective. Replace rejected material and workmanship or make acceptable at no additional cost to the Department.

518.03.02 Delivery and Storage

A. Protection for Shipment - Coat all finished metal surfaces and unpainted metal surfaces with the rust-inhibiting preservative as soon as practicable after finishing. Excepting unfinished metal surfaces inside of gear reducers, remove this coating from all surfaces to be lubricated immediately prior to lubrication for operation and from all surfaces prior to painting after installation.

B. Handling and Shipping – Completely protect all machinery parts from weather, dirt, and all other injurious conditions during manufacture and shipment. Protect all shaft journals that are shipped disassembled from their bearings during shipment and before installation by coating them with rust-inhibiting preservative and in addition, by packing them in oil-soaked cotton waste secured in place by burlap and covered with heavy metal thimbles or heavy timber lagging securely attached. Take every precaution to ensure that journal surfaces are not damaged during shipment. Mount assembled units and large parts on skids or otherwise crate for protection during handling, shipment and storage. Bag mounting hardware and other small parts and securely attach to the assemblies with which they will be installed. Tag each assembly and part with the part number corresponding to the designation used on the approved working drawings.

C. Protection for Storage

1. Completely protect all machinery parts from weather, dirt, and all other injurious conditions while awaiting installation. The RE will approve the methods and materials used for protection. The approval shall not relieve the Contractor from full responsibility for the adequate protection of the machinery. Submit in advance an outline of the methods and materials to be used for this purpose. Do not store machinery outdoors. Protect all equipment per the manufacturer’s recommendation when stored prior to installation or activation.

2. Prior to shipment to the project site, remove gauge glasses, vents, and dipsticks from all reducers and plug the connections.

518.03.03 Construction Details

A. Rules, Regulations and Ordinances

1. Work shall comply with all applicable Federal, State, and Local rules, regulations, and ordinances. Include the cost to obtain permits and approvals of authorities and agencies having jurisdiction, as required.

2. In the event of a conflict between these Specifications and the above mentioned codes, standards, rules, regulations, and ordinances, the most stringent requirement shall apply.

B. Continuity and Coordination of Work

1. Plan the construction staging of machinery installation so that the bridge will be open for roadway and marine traffic in accordance with the requirements of the Traffic Control and Maintenance of Traffic Drawings and the Specifications.

2. Prepare and submit schedules of proposed work operations and procedures for maintaining the span balance covering each stage of construction. Submit these schedules and procedures to the RE for review and approval within 30 days of Notice-To-Proceed.

C. Measurements and Verification of Existing Structure

1. Dimensions indicated on the Plans are nominal and are intended for guidance only. Verify all dimensions of the existing structure and foundation to ensure that the new machinery and wire ropes will mount and function properly. Note all variations from the nominal dimensions on the Plans on the working drawings.
2. Verify all dimensions of the existing bridge structure and foundation relating to the new machinery and wire ropes and record them on the working drawings.

**518.03.04 Field Installation of the Main Sheaves and Bushings**

A. Submit a detailed procedure and drawings for removing the existing machinery and installing and testing the new machinery. The procedure shall be consistent with the construction staging.

B. After removal of the existing sheaves and bushings, measure each existing bearing base and final machine the new bushings to suit the existing bearing bases. This shall include, but not be limited to, the following:
   1. Bearing base diameters.
   2. Bearing base length.
   4. Location of bearing base keys and keyways.
   5. Location of bearing base holes for bushing flange bolts.
   6. Relative alignment of each pair of bearing bases.
   7. Confirm placement and fit of new bushings.

C. Assemble all parts of the machinery and erect in accordance with erection marks and match marks.

D. Install new felt packing to seal the new bearings. The new felt packing shall be provided by the Department.

E. After erection is complete and prior to the Contractor’s inspection, lubricate all machinery components with the lubricants specified herein.

F. Perform the initial application of lubrication during installation. Perform all subsequent lubrication applications required prior to turning the bridge over to the Department.

G. Prior to placing the new wire ropes, rotate each new sheave to ensure that it is free running and to properly distribute the lubrication.

**518.03.05 Field Installation of the Wire Ropes**

A. Submit a detailed procedure and drawings with rope connection pattern, rope lengths, etc. for removing the existing wire ropes and installing and testing the new wire ropes. The procedure shall be consistent with the construction staging.

B. Prior to removal of the existing wire ropes, determine the length of the existing wire ropes to within ±1inch. Compare this length to the new rope length. The variation is the stretch of the existing ropes over their 75 year service life. The counterweight jacking system must have the capacity to jack the counterweight a great enough distance to connect the new ropes.

C. Reuse the existing rope clamps and separators. Take all necessary precautions not to damage these components during removal. Replace in-kind all components damaged during removal at the Contractor’s expense.

D. Prior to removal, match mark the rope clamps and separators for location and orientation.

E. Clean and paint all surfaces of the rope clamps and separators, except contact surfaces with the ropes. Clean and immediately coat with rust inhibitor the contact surfaces with the ropes.

F. Each rope will be tagged with its measured length and rope number. Place the ropes so that the average variation is the same for each group of ropes on a sheave. This shall be reflected in the rope installation procedure.

G. During erection, take the ropes directly off their shipping reels without contacting the ground, bridge structure or any other object except deflector rollers if used for the rope installation. The Contractor’s methods shall be detailed in the rope erection procedure. Twisted ropes will be rejected. Ensure ropes are installed without twisting.

H. It is suggested that the ropes be erected in a sequence so that a single counterweight connection pin can secure the first four ropes. The second four should be connectable by a second counterweight connection pin, and so on.
I. It is suggested that after all counterweight connections are made, make the span connections.

J. It is suggested that after all pin connections are made, reinstall the rope clamps and separators.

K. After erection is complete and prior to the Contractor’s inspection, lubricate all wire ropes with the lubricants specified herein.

L. Perform the initial application of lubrication during installation. Perform all subsequent lubrication applications required prior to turning the bridge over to the Department.

518.03.06 Replace Expansion Live Load Shoe Circular Rings

A. Submit a detailed procedure for removing and replacing the circular rings. The procedure shall be consistent with the construction staging and closely coordinated with the work of resetting the southwest live load shoe strike plate.

B. The bosses of the upper and lower expansion live load shoe castings that contact the inside diameter of the circular rings have not worn evenly. Remove each pin nut and measure the bosses to determine the minimum inside diameters for the new circular rings. Each inside diameter may be different. Each new circular ring shall rotate freely around the bosses with the bridge seated and shall have no more than 1/16 inch clearance with the largest diameter of the bosses.

C. The nuts shall be reinstalled and tightened hard against the circular rings. The nuts shall then be backed off just enough to allow the lower casting to rotate freely with respect to the upper casting.

D. After free rotation is verified, a single new hole shall be drilled into the pin from one of the existing holes in each nut. A new stainless steel locking pin shall be installed through the nut into the pin and wired in place with stainless steel wire to prevent it from falling out.

518.03.07 Cleaning of Balance Chain Links

A. Submit a detailed procedure for disassembly, cleaning and reassembly of selected balance chain links. The procedure shall be consistent with the construction staging.

B. 5 balance chain links have been identified to be kinked and not articulating properly. Disassemble, clean and reassemble the improperly articulating links while the counterweights are jacked for replacement of the sheaves and ropes. The exact links to be reconditioned will be determined by the Engineer just prior to jacking the counterweights.

518.03.08 Contractor’s Inspection

A. After erection is completed, but before the bridge is operated, make a thorough inspection to ensure that all components are clean and free of obstructions, that all parts are properly aligned and adjusted, that all bolts are properly tightened, and that all components have been lubricated as specified herein.

B. Verify that field painting has been performed as specified herein. Perform touchup painting to correct all painting defects found during this inspection.

C. The Department’s Inspector will accompany the Contractor during the Contractor’s Inspection.

518.03.09 Acceptance Testing

Acceptance testing procedure must be submitted for approval. Run the bridge in normal mode for a minimum of 5 consecutive full cycles in all drive systems. During the 5 cycles, monitor the new work for any abnormal operating conditions. If during the 5 cycles abnormal conditions are found with or as a result of the new work, correct the abnormal conditions and restart the 5 cycle test.

518.03.10 Certification of Compliance

Provide certification that all materials and components furnished and installed have been tested and meet all the requirements of the Contract Documents.
518.04 MEASUREMENT AND PAYMENT

No measurement of the work will be made. Payment will be made at the Lump Sum Bid Price as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTALLATION OF MACHINERY AND WIRE ROPES</td>
<td>LUMP SUM</td>
</tr>
</tbody>
</table>

Partial payments will be made per the following schedule:

1. 10 percent upon verification of existing field dimensions and approval of all working drawings and procedures.
2. 30 percent upon completion of rope and sheave removal.
3. 30 percent upon completion of rope and sheave installation.
4. 20 percent upon completion of acceptance testing.
5. 10 percent will be held in retainage and released after final acceptance of the Project by the Department.

THE FOLLOWING SECTION IS ADDED:

SECTION 519 – BRIDGE OPERATION AND MAINTENANCE DURING CONSTRUCTION

519.01 DESCRIPTION

This Section describes the requirements for operating, maintaining, and repairing the existing bridge components from the start of construction until final Acceptance. During this period the Contractor shall operate and maintain the existing bridge uninterrupted for vehicular and marine traffic except as allowed by the Contract Documents. The Department will meet with the Contractor over the first 3 months to review operations and maintenance history. The Contractor shall maintain a log of all operation and maintenance activities and submit them to the Department on a monthly basis. Submit completed forms to the RE and Mr. Ahmad Ghorbani at the Bureau of Maintenance Engineering – Bridge Section, 1035 Parkway Avenue, Trenton, NJ 08625 for record. The sample forms are included in the attachment for Contractor’s use: see forms EL-45CER, EL-45DCER, EL-45EER and EL-45MER. In the event of an operational or bridge malfunction, notify the RE and contact Mr. Mike Davis, Manager, Bureau of Maintenance Engineering and Operations at (609) 530-5528, Mr. Roy Bill, Movable Bridge Engineering Group at (732) 625-4359, and Mr. Ahmad Ghorbani, Section Chief, Bureau of Maintenance Engineering – Bridge Section at (609) 530-3737.

Maintaining Existing Facilities: Maintain all existing electrical and mechanical components of the bridge operating system in operating condition at all times except when are permitted as indicated by the Construction Documents. This includes, but is not limited to, navigation lights, traffic signals, warning and barrier gates, roadway lights, fenders, bridge lighting and heating and any other electrical equipment necessary to conform to the above requirements. The arrangement of any temporary facilities and controls shall be approved by the RE. Lane closures shall be in accordance with the requirements listed on the maintenance of traffic plan sheets.

The maintenance shall include regular greasing, coupling seal replacement, brake adjustments, brake shoe replacement, fluid changes including proper disposal of waste grease and oil, electrical control maintenance, fire alarm system maintenance, up-keep for the Operator’s House including, but not limited to, cleaning, garbage removal, snow removal from sidewalk and stairs to provide for safe access to Operator’s House, snow removal for operation of traffic/barrier gates and also repairs to any breakdowns during the construction period. Snow plowing and salt spreading on the highway will be done by the State except as described herein. The following is a summary of typical required bridge maintenance for the movable bridge:

1. Weekly and Monthly Greasing – Trunnion bearings, 8 – require bi-weekly lubrication. All open gears and remaining bearings require bi-weekly greasing. For location of movable
components requiring greasing refer to the Machinery Lubrication Drawing in the attachment to the Specifications. As-built plans for the existing bridge are located at NJDOT, Trenton office.

2. **Electrical Maintenance** – The work shall include, but is not limited to, the following tasks:
   - Contact cleaning and tightening of connections of electrical panel components in the operator’s house.
   - CCTV system maintenance, repositioning and relocation of cameras to get a clear view of the channel for bridge openings during construction.
   - Relamping of street lights, Operator’s House lights, navigational lights, traffic signal lights and traffic/barrier gate lights as necessary.
   - Adjusting warning/barrier gate holding brakes as necessary to ensure that the gates do not lower under wind load and vibration.

3. **Emergency Call-outs** – The work shall include, but is not limited to, the following tasks:
   - Fire Alarm System located on Bridge Operator’s House needs to be maintained as required.
   - Any structural repairs such as fender repairs, steel repairs and concrete repairs.
   - Any mechanical and electrical repairs not covered under Greasing and Electrical Maintenance. Contact NJDOT Maintenance to determine available spare parts in case of emergency.

The Contractor and RE will examine all required facilities on the bridge and will note items requiring modification prior to the start of mandated maintenance.

The Contractor shall be responsible for disposal of lubrication oil, grease and hydraulic fluids in accordance with all the applicable environmental regulations.

Upon issuance of a report of non-operating items to the RE, the RE will make arrangements with the Contractor or other parties to repair any mal/non-functioning items. The contractor shall assume the full responsibility for maintenance of the bridge once these non-operating items are addressed.

Contractor’s personnel must be certified prior to operating the bridge as specified in Section 519.03.

Submit to the RE for approval, 30 days prior to assuming responsibility for operation of the bridge, an Emergency Bridge Operation Response Plan (EBORP) explaining the planned response to open the bridge in the event that the bridge fails to open. The EBORP shall detail the Contractor’s list of emergency response personnel and equipment. If the bridge fails to operate for any reason, the Contractor is required to respond to the project site with emergency personnel and equipment within 2 hours from when the bridge becomes inoperable to address emergencies. Should the Contractor fail to respond, causing the State to respond with its own forces to restore bridge operation, the Contractor agrees to pay the State the following damages:

- USCG Civil Penalty of $25,000 per day for every offense in 2009 or the cost stated in the USCG regulations at the time of the offense; PLUS
- $5,400 per every offense for mobilizing State’s forces and equipment; PLUS
- $1,125 per hour for roadway user cost if traffic detour is required; PLUS
- The Contractor shall be held liable for any lawsuits and damages assessed against the State by marine operation for its losses.

Approved EBORP shall be kept at the Operator’s House for record.
519.02 MATERIALS AND WORKMANSHIP

All electrical equipment and its installation shall conform to the requirements of the 1988 AASHTO Movable Highway Bridge Specifications with current interims, except as may be otherwise provided herein.

All work shall conform to the requirements of the current national electrical code and to any applicable local rules and ordinances. Obtain any required permits and approvals of all departments or agencies having jurisdiction.

All equipment and materials, except those designated to be reused, shall be new. All equipment, materials and workmanship shall be manufactured and erected to the satisfaction of the RE.

Coordinate all mandated lubrication of the bridge machinery with the Department and the attached Machinery Lubrication drawing. The lubrications noted on the attached drawings are those presently used by the Department and are recommended for the mandated bi-weekly, monthly, and yearly greasing required for the bridge.

519.03 BRIDGE OPERATING PERSONNEL

During the reconstruction period the Contractor shall provide trained bridge operators 24 hours a day, every day, for on demand operation of the bridge except for the 6 week period of time the bridge is closed to navigation. The bridge shall be continuously staffed with 1 bridge operator, 2 gate tenders and 1 spare operator/gate tender.

Provide 16 employees for training as bridge operators (operators must have the ability to speak, write, and communicate in English). The basic qualifications of a bridge operator is the ability to seat the bridge safely without causing damage to the bridge structure by using eye-hand coordination to operate semi-automatic and manual controls. The individual must have good communicative skills, as they will be required to operate marine band radios to transmit and receive messages from mariners, as well as communicate with the general public and law enforcement agencies. The individual must have the ability to use sound judgment and good common sense when dealing with day-to-day situations that arise.

Provide names and resumes of these operators to the Department and the USCG for approval prior to beginning training. Bridge opening time for construction and test purposes shall be limited to certain hours for training and testing as directed by the Department. The Contractor shall have available on call at the bridge a person who is knowledgeable as to the bridge workings and be able to perform electrical trouble shooting.

During the initial week of employment, all new operators will be instructed with the normal operating procedure by the Department’s Chief Bridge Operator. Once they are ready to be certified, the Department will observe their performance and certify their ability to correctly operate the structure. The sample form used for certification of the Operator is included in the attachment “Bridge Operator’s Certification”. Once Operators are certified to operate the bridge by the Department, the complete certification form shall be submitted to the Department and one copy shall be kept at the Bridge Operator’s Room for record. Operators shall not be allowed to operate the bridge unless certified by the Department. It is the Contractor’s responsibility to provide adequate training and get operators certified. Normally, 1 week of training is required prior to certifying an operator for safe operation of the bridge. The Department will pay for 1 week of training for each operator. If an operator leaves during employment or after receiving the training, the Department will not pay for any additional training required to train additional operators.

519.04 MEASUREMENT AND PAYMENT

Bridge Operators will be measured for each Month. Measurement will include all operators required for each month. No separate measurement will be made for each operator.

Greasing will be measured for each Month
Electrical Maintenance will be measured for each Month
Emergency call-outs will not be measured for payment.

Payment will be made under the following:

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRIDGE OPERATOR</td>
<td>MONTH</td>
</tr>
<tr>
<td>GREASING</td>
<td>MONTH</td>
</tr>
<tr>
<td>ELECTRICAL MAINTENANCE</td>
<td>MONTH</td>
</tr>
</tbody>
</table>

N.J. ROUTE 7 OVER HACKENSACK RIVER (WITTPENN BRIDGE)
INTERIM PRIORITY REPAIRS
CONTRACT NO. 098000
Payment for Bridge Operators per month includes all operators required for each month. Separate payment will not be made for up-keep of the Operator’s House. Up-keep shall include, but is not limited to, cleaning, garbage removal, snow removal from sidewalk and stairs to provide for safe access to Operator’s House and snow removal for operation of barrier/traffic gates. All costs thereof shall be included in the pay item BRIDGE OPERATOR.

Payment for greasing per month includes the cost for all greasings as specified herein and all incidental items associated with this greasing/lubrication work.

Payment for electrical maintenance includes labor cost associated with the electrical maintenance work as specified herein. Material cost required for this work will be paid under item EMERGENCY CALL-OUTS.

The price bid for EMERGENCY CALL-OUTS shall be a fixed price lump sum (FPLS) in the amount of $30,000. This pre-entered amount is not to be altered in any manner by the bidder. Should the amount shown be altered, the altered figures shall be discarded and the pre-entered price and amount will be used to determine the total amount bid for this contract. This FPLS shall constitute an allowance against which the Contractor shall be paid. Payment for EMERGENCY CALL-OUTS will be made on the basis of actual costs calculated under the provisions under subsection 109.03. FORCE ACCOUNT PAYMENT for all repairs.

Separate payment will not be made for providing the EBORP as required in Subsection 519.01 of this specification. All costs associated with this item of work shall be included in related pay items.

THE FOLLOWING SECTION IS ADDED:

SECTION 520 – SPAN BALANCE

520.01 DESCRIPTION

520.01.01 General
A. Determine the balance condition of the bridge prior to the start of construction using the strain gauge balance method.
B. Weigh the span and counterweights during rope replacement and make balance adjustments to achieve the desired condition of balance.
C. Determine the final balance condition of the bridge after completion of construction and make balance adjustments to achieve the desired condition of balance.

520.02 MATERIALS

520.02.01 General
A. All materials shall be as called for on the Plans and as specified herein. All materials shall meet the requirements of material specifications listed under Subpart 520.02.02 Codes and Standards.
B. The current issue of all material specifications and standards shall be those in effect on the date of the bid for this project.
C. Provide materials for Span Balance which are new, clean, and free of defects.

520.02.02 Codes and Standards
Work under this Section shall comply with, but not be limited to, all applicable requirements of the following codes and standards. The abbreviations used in this Specification are as follows:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials, Standard Specifications for Movable Bridges</td>
</tr>
<tr>
<td>AGMA</td>
<td>American Gear Manufacturers Association</td>
</tr>
</tbody>
</table>

N.J. ROUTE 7 OVER HACKENSACK RIVER (WITTPENN BRIDGE)
INTERIM PRIORITY REPAIRS
CONTRACT NO. 098000
520.02.03 Qualifications

A. Products used in the work under this Section shall be produced by manufacturers regularly engaged in the manufacture of the specified products.

B. The Contractor and all subcontractors shall use an adequate number of skilled, trained, and experienced personnel for the testing and adjustment of the span balance. Personnel shall be thoroughly familiar with the specified requirements and methods for the proper execution of the work.

520.02.04 Product Substitutions

A. The terms “approved equal”, “of equal quality”, and “or equal” which appear on the Plans and in this Specification are intended to allow the Contractor to substitute other manufacturer’s products of equal or greater quality and rating for those specified. Supply at no additional cost to the Department, test reports, samples, specifications or other data as necessary to confirm that the Contractor’s proposed products are equal to those named in these Specifications or on the Plans.

B. Prior to ordering any substitute product, obtain in writing the Department’s approval of the equivalence of the substitute product. The acceptance of substitute products is at the sole discretion of the Department who will establish the basis for equivalence and will review the quality of the materials and products described in detail on the submitted working drawings and product data.

C. The Department will indicate “Approved”, “Approved as Noted”, “Revise and Resubmit”, or “Rejected” for the substitute material. Upon return of a rejected working drawing, resubmit the working drawings with the product as specified. Additional review time required for alternate products shall be considered in the Contractor’s schedule and shall not be a cause for a delay.

D. The Department’s approval of any substitute product will not relieve the Contractor of the responsibility for the proper operation or functioning of that product.

E. If any departures from the Plans or these Specifications are deemed necessary by the Contractor, submit details of such departures and the reasons therefore as soon as practical to the Department for review. Make no such departures without prior approval by the Department.

520.02.05 Material Substitutions

Alternative materials may be requested in writing. The request must provide complete data justifying the suitability of the alternate materials and must be approved by the Department prior to initiating manufacture or construction. Additional review time required for alternate materials shall be considered in the Contractor’s schedule and shall not be a cause for a delay.

520.02.06 Balance Blocks

Provide new concrete balance blocks as shown on the Plans.

520.02.07 Drawings

A. Prepare the working drawings as specified in the latest edition of the New Jersey Department of Transportation Standards as amended herein. Follow Movable Bridge Engineering Group submittal procedure for all mechanical submittals.
B. Submit all working drawings, manufacturer’s literature, certified materials documents, catalog data, and other documents related to the satisfactory fabrication, installation, and operation of any item in one group for review. Time lost because of rejection of any submittal due to incorrect or lack of information or improper coordination shall not be considered as a proper cause for a time extension to the total contract time nor to the achievement of any contract “milestone”.

C. Submit to the RE a schedule and list of working drawings and related documents to include the following:
   1. List of all items to be reviewed.
   2. Anticipated date of delivery of documents to the RE.
   3. Anticipated required date of document approval and return.
   4. Requests for expedited review with complete justification for such requests.

D. The Department will coordinate the review and render a decision on the acceptability of the proposed schedule within 30 days of receipt.

E. Obtain all necessary field dimensions to provide proper fit of the new components before preparation of working drawings for new components that must mate with the existing structure and foundation. Survey all counterweight pockets to determine their exact content and submit the survey results for review.

F. Submit all required working drawings, manufacturer’s literature, certified materials documents, catalog data, and other documents to the Department for review within 60 days after the date of award of the Contract.

G. Submit to the Department for their approval 6 prints of all working drawings. In case of correction or rejection, resubmit 6 prints of working drawings until drawings are approved. Do not order any materials prior to the approval of the working drawings. Do not proceed with work until the working drawings are approved. After approval of the working drawings, obtain the proper “Approved” stamps on all working drawings and supply the Department with up to 6 prints of the approved working drawings. Follow Movable Bridge Engineering Group submittal procedure.

H. Show all parts completely detailed and dimensioned on working drawings. Do not use a reproduction of the Plans as base sheets for assembly or erection drawings.

I. State materials and material specifications for each part. Where ASTM or any other standard specifications are used, give the applicable numbers of such specifications.

J. Show required finish machining including grade of finish according to ANSI B46.1 Surface Texture, and dimensional tolerances and allowances for specific fits according to ANSI B4.1 Preferred Limits and Fits for Cylindrical Parts for all machined components.

K. The fits and finishes shall be according to the requirements of the AASHTO Standard Specification for Movable Bridges, unless shown otherwise on the Plans or specified herein.

L. Show all external dimensions and clearances necessary for installation and operation of all supplied components on working drawings.

M. Furnish certified prints of each manufactured assembly. Certified prints are the manufacturer’s drawing of proprietary products where mounting dimensions, ratios, speeds, ratings, and other required properties are shown and the manufacturer certifies their correctness for this specific project. In addition to identifying and describing each part, show the following:
   1. Dimensions of all principal parts comprising the assembly.
   2. Certified external dimensions that affect clearances and are required for installation including tolerances.
   3. Capacity and normal operating ratings.
   4. Recommended lubrication, including location, lubrication fittings, and provisions for adding, draining, and checking the level of lubricants.
   5. Inspection of openings, seals, and vents.
   6. Details or descriptions of all fasteners required to mount the assembly.
8. Name and location of the bridge.
9. Certified prints shall be signed and dated by an officer of the manufacturing company.

N. Make complete shop bills of materials for all machinery parts. If the bills are not shown on the working drawings, furnish prints of the bills for approval in the same manner as specified for the working drawings.

O. State the computed weight of each piece of machinery on the working drawings upon which it is detailed or billed.

P. Show the final tightening torque value for each machinery fastener on the working drawings.

Q. Give each working drawing a suitable title to describe the assembly or parts detailed thereon and the complete project name and contract number identifying each drawing.

520.03 CONSTRUCTION

520.03.01 Preliminary Span Balance

A. Prior to the start of construction, determine the balance condition of the bridge using the dynamic strain gauge technique. Provide information on the number and placement of balance blocks in each counterweight pocket.

B. Employ the services of an established testing company experienced in performing dynamic strain gauge testing of movable bridges. Such experience shall be demonstrated by identifying a minimum of 6 movable bridges including at least 2 span drive vertical lift bridges for which the testing company has provided complete dynamic strain gauge testing and reporting. Reports submitted by the testing company shall be signed and sealed by a New Jersey Registered Professional Engineer with strain gauge testing experience on movable bridges. The Department will approve the testing company selected by the Contractor for this work.

C. The approved testing company shall provide the required strain gauges, cabling, transmission equipment, data acquisition equipment, and strip chart recorders and produce fully documented reports detailing the results of the testing.

D. The approved testing company shall submit the following items to the Department for approval:
   1. A complete description of all strain gauges, test equipment and methods to be used including all equipment calibration records.
   2. Location plan of span drive machinery showing the proposed location of the strain gauges, amplifiers, cable or radio links, data acquisition equipment and all associated cabling and other equipment.
   3. Details of the method of transmission of signals from the shafting to the data acquisition system.
   4. Elementary wiring diagrams of the interconnection of strain gauges, amplifiers, data acquisition equipment, and strip chart recorders.
   5. Description of electrical and mechanical factors including sample calculations for obtaining shaft torque from measured strains, span imbalance, curve fitting, bridge friction, and correction factors for the influence of the balance chains.

E. Mount adhesive bond foil or weldable strain gauge rosettes on the shafts driving the 2 drum pinions. The areas of the shafts where the gauges are to be mounted shall be sufficiently cleaned to bare metal and precisely measured prior to attaching the strain gauges.

F. Connect the gauge leads on each shaft to a suitable data acquisition system that can amplify, condition, and record the signals.

G. Connect an event marker to sensors on the instrumented shaft such that increments of shaft revolutions are recorded. Interpret each increment as span height utilizing the gear ratios and operating drum diameters of the machinery.

H. Record the strain in both driving shafts versus span height simultaneously during a complete opening and closing cycle to a suitable scale. The readings for both shafts shall be at the same strain scale and chart speed during the same bridge operation.
I. Test and record a minimum of 4 complete opening and closing cycles.

J. Numerically convert to torque the strains induced in the shafts for at least 100 points at equal height intervals along the strain plots for both opening and closing. Process this data to give a curve or torque for the full travel of the lift span versus height that has been corrected for friction.

K. Submit copies per Movable Bridge Engineering Group submittal procedure of a full report documenting the results of the strain gauge tests. The report shall include the following:

1. Description of test procedure and equipment used with calibration reports.
2. Span drive diagram showing location at which strain gauges and even markers were attached with all applicable gear ratios and drum diameters.
3. Photocopies of the original strip charts for both opening and closing for all tests.
4. Description of relationships and sample calculations for obtaining shaft torque from strains, span imbalance, span friction, and curve fitting.
5. Fitted curves of torque versus span height during opening and closing for all tests.
6. Curve of shaft torque versus span height corrected for friction.
7. Discussion of data accuracy and probably error.
8. Bind the reports in heavy plastic covers. Include an introductory section incorporating the name of the bridge, the shafts tested, the date of the testing, and the weather conditions during testing.

520.03.02 Weigh Span and Counterweights

A. Independently weight the lift span and counterweights with the ropes removed to determine the bridge balance. Submit the results to the RE.

B. Provide calibrated jacking equipment and temporary support systems for weighing the lift span and counterweights.

C. Submit working drawings and erection procedures for weighing the lift span and counterweights. The working drawings and erection procedures shall be signed and sealed by a New Jersey Registered Professional Engineer.

D. Complete all work affecting the weight of the lift span and counterweights prior to weighing the lift span and counterweights.

E. The original Plans for the bridge give a lift span weight of 2,514,000 pounds. All equipment and materials supplies shall be capable of supporting at least 2 times the anticipated loads.

F. The desired condition of balance is 3,500 pounds, (+/- 250 pounds), span heavy at each corner with the bridge seated.

G. Based on the results of the preliminary strain gauge, testing, and actual weighing of the lift span and counterweights, submit calculations for weight adjustments to bring the bridge to the desired balance condition. Consider the effect of the new ropes, sockets, and pins as well as the balance chains in the calculations. Show the proposed amount and location of all weight adjustments. The calculations shall be signed and sealed by a New Jersey Registered Professional Engineer.

H. After approval of the adjustment calculations, make the necessary adjustments to bring the bridge to the desired balance condition.

520.03.03 Final Span Balance

A. After completion of all work affecting the bridge balance, retest the span balance using the dynamic strain gauge test technique. The testing and reporting requirements shall be the same as in the preliminary span balance.

B. Based on the final balance test results, make the necessary balance adjustments to bring the bridge to the desired balance condition.

C. If adjustments are made, the bridge will be retested using the strain gauge test technique.
D. Continue adjustments are retests at the Contractor’s expense until the test results show that the bridge is in the desired balance condition.

F. Submit final balance report.

520.04 MEASUREMENT AND PAYMENT

No measurement of the work will be made. Payment will be made at the lump sum bid price as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN BALANCE</td>
<td>LUMP SUM</td>
</tr>
</tbody>
</table>

Partial payments will be made per the following schedule:

1. 15 percent upon approval of the preliminary span balance report.
2. 50 percent upon approval of the results of the actual lift span and counterweight weigh measurements.
3. 25 percent upon approval of the final span balance report.
4. 10 percent shall be held in retainage and released after final acceptance of the Project by the Department.

THE FOLLOWING SECTION IS ADDED:

SECTION 521 – TOWER STAIRS

521.01 DESCRIPTION

521.01.01 General

This Section includes the fabrication, transportation and installation of the following metal fabrications:

A. Removal of existing miscellaneous steel for the installation of stairs. Prepare existing steel surfaces for new framing connections.

B. Modify existing handrails and other miscellaneous facilities to suit interface connections at new stairs.

C. Bearing and connection plates.

D. Expansion bolts and anchor bolts.

E. Shelf, connection angles, and bent plates.

F. Miscellaneous framing and supports for the following:
   1. Stairs and framing
   2. Hand railing system
   3. Chain link fence and gate
   4. Hoists and support for hoist
   5. Staging structure as required
   6. Supports for lighting

521.01.01 Codes and Standards

Work under this Section shall comply with, but not be limited to, all applicable requirements of the following codes and standards. The abbreviations used in this Specification are as follows:
521.02 MATERIALS

521.02.01 Ferrous Metals

A. Metal Surfaces: For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

1. Design, detail, and fabricate metals as specified in this specification, as shown on the Plans and existing plans, and according to the AWS “Structural Welding Code” D1.1 and D1.2, the AISC specification and the ALCOA specification.

2. Rolled steel shapes: ASTM A 36

3. Steel pipe: ASTM A 53, type E or S, grade B; or ASTM A 501

4. Structural tubing: ASTM A 501

5. Anchor bolts: ASTM A 307, grade A or ASTM A 36, galvanized

6. Unfinished threaded fasteners: ASTM A 307, grade A

7. High Strength Bolts for stair framing: ASTM A 325, type 1, slip critical

8. Nuts: ASTM A 563

9. Washers: ASTM F 436

10. Weld electrodes: E70XX per AWS

11. Galvanizing: ASTM A 123

12. Non-shrink grouts: Five Star Non-shrink Cementitious Grout or approved equal for bearing plates

B. Steel Plates, Shapes, and Bars: ASTM A 36. For exterior installations and where indicated provide tubing with hot-dip galvanized coating per ASTM A 53.

C. Welding Rods and Bare Electrodes: Select according to the AWS specification for the metal to be welded.


521.02.02 Aluminum


521.02.03 Fasteners

A. Connection angles and plates at existing steel surfaces: ASTM A 36
B. Plain washers: Round, carbon steel, ANSI B18.22.1
C. Lock washers: Helical, spring type, carbon steel, ANSI B18.21.1
D. Machine screws: ANSI B18.6.3 (ANSI B18.6.7M)
E. Lag bolts: ANSI B18.2.1 (ANSI B18.2.3.8M)
F. Expansion anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
   1. Carbon steel components zinc-plated to comply with ASTM B633, class Fe/Zn 5.
   2. Group 1 alloy 304 or 316 stainless-steel bolts and nuts complying with ASTM F 593 and ASTM F 594.

521.02.04 Grout

A. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for exterior applications.
B. Products: Subject to compliance with requirements, provide the following or approved equal:
   No shrink, Nonmetallic Grouts: Five Star Grout; Five Star Products or equal.

521.02.05 Fabrication

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements. Work to dimensions indicated or accepted on working drawings using accepted details of fabrication and support. Use type of materials indicated for various components of each metal fabrication.
B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
C. Shear and punch metals cleanly and accurately. Remove burrs.
D. Ease exposed edges to a radius of approximately 1/32-inch. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
E. Remove sharp or rough areas on exposed traffic surfaces.
F. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
G. Provide for anchorage of type indicated and coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
H. Shop Assembly: Preassemble items in the shop to the greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
I. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

J. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.

521.02.06 Shelf and Relieving Angles
A. Fabricate shelf and relieving angles from steel angles of sizes indicated and for attachment to framing. Provide slotted holes to receive 3/4-inch bolts, spaced not more than 6 inches from ends and not more than 24 inches on center.

B. Paint all steel according to Section 554 after connections are complete.

521.02.07 Miscellaneous Framing and Supports
A. Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the work.

B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Paint all steel according to Section 554 after connections are complete.

521.02.08 Finishes
A. Comply with AAMA “Metal Finishes Manual” for recommendations relative to applying and designing finishes.

B. Finish metal fabrications after assembly.

521.02.09 Steel Finishes
A. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces as specified below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:

   Exteriors (SSPC Zone 1B): SSPC-SP 6 “Commercial Blast Cleaning”.

B. Apply shop primer to uncoated surfaces of metal fabrications except those with galvanized finishes or those to be embedded in concrete, sprayed-on fireproofing, or masonry. Painting shall be in accordance with the organic system specified in Section 554.

C. Stripe paint corners, crevices, bolts, welds, and sharp edges.

D. Aluminum surfaces to be placed in contact with steel shall be given 1 coat of zinc chromate primer or equivalent according to MIL specifications.

521.02.10 Aluminum Finishes
A. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

B. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical finish: etched, medium matte; Anodic Coating: Architectural Class I clear coating 0.7 mil or thicker) according to AAMA 607.1.

521.03 CONSTRUCTION

521.03.01 Submittals
A. Submit project data for surface finishes, prefabricated miscellaneous metals, cast nosings, treads, plate, landing gratings, galvanizing and grout.
B. Submit working drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Provide templates for anchors and bolts specified for installation under other Sections.

Provide required details for the fabrication, shop assemblies, and field installation of the members as shown on the Plans.

1. Show member sizes and their lengths.
2. Include details of cuts, copes, connections, cambers, drilling, fabrication, and erection tolerances and other pertinent data.
4. Include sizes, types, and lengths of connection bolts.
5. Provide erection bolts and nuts.
6. Mark total weight on shop assembled members.

C. Mill Test Reports: Submit certified copies of reports for analysis and tests required by referenced ASTM specifications. Include test reports for electrodes used in fabrication and mechanical tests for high strength threaded fasteners, shear connectors, unfinished bolts and nuts, and structural steel primer paints.

D. Manufacturer’s Specifications and Installation Recommendations: Submit certified copies of manufacturer’s specifications and installation recommendations.

E. Welding Records and Data:

1. Prior to the start of work requiring welding, submit a welding procedure and the procedure for prequalifying welders. For all procedures other than those set forth in AWS D1.1 submit a copy of procedure qualification test records.
2. Submit a certified copy of qualification test record for each welder, welding operator, and tacker who will be employed in the work.
3. Submit descriptive data for field welding equipment including type and electrical power requirements.

F. Submit samples representative of the materials and finished products as requested by the RE.

G. Submit welder certificates signed by the Contractor certifying that welders comply with requirements specified under Section 521.03.02 Quality Assurance.

H. Submit qualification data for firms and persons specified in Section 521.03.02 Quality Assurance to demonstrate their capabilities and experience. Include a list of completed projects with project name, address, names of Architects and Owners, and other information specified.

521.03.02 Quality Assurance

A. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance and with sufficient production capacity to produce required units without delaying the Work.


1. Prepare working drawings under the supervision of a licensed Professional Engineer registered in the State of New Jersey. Professional Engineer shall check and seal drawings prior to submittal.
2. Submit welding and repair welding procedures and prepare qualification test records. All welding procedure qualifications and welder performance qualifications shall be according to AWS D1.1.
3. Fabrication Qualification: Engage a firm experienced in fabricating structural steel similar to that indicated for this Project with a record of successful in-service performance as well as sufficient production capacity to fabricate structural steel without delaying the work. The fabricator shall participate in the AISC, Quality
Certification Program and be designed an AISC – Certified Plant as STD, Standard for Steel Building Structures.

521.03.03 Project Conditions
Field Measurements: Prior to fabrication, check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements. Show recorded measurements on final working drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

521.03.04 Maintenance
Maintain all materials, products, and equipment in a manner that is acceptable to the manufacturer and will not cause the warranty to be voided.

521.03.05 Preparation
A. Coordinate and provide anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages. Coordinate delivery of such items to the Project site.
B. Center nosings on tread widths with noses flush with riser faces and tread surfaces.

521.03.06 Installation
A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include fasteners for connectors as required.
B. Cutting, Fitting, and Placement: Perform cutting, drilling and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation with edges and surfaces level, plumb, true, and free of rack; measure from established lines and levels.
C. Provide temporary bracing or anchorages in existing structures for items that are to be built into the existing structures or similar construction.
D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dipped galvanized after fabrication and are intended for bolted or screwed field connections.
E. Field Welding: Comply with the following requirements:
   1. Field welding shall be as specified in the Standard Specifications and these Special Provisions.
   2. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   3. Obtain fusion without undercut or overlap.
   4. Remove welding flux immediately.
   5. At exposed connections finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.
F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

521.03.07 Setting Loose Plates
B. Set loose leveling and bearing plates on wedges or other adjustable devices. After the bearing members have been positioned and made plumb tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.
1. Use no shrink, nonmetallic grout in exposed locations.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

521.03.08 Adjusting and Cleaning

Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Paint exposed areas with same material as used for shop painting according to Section 554 requirements for touching up shop-painted surfaces.

521.03.09 Fabrication and Shipping

A. Use field connections with high strength bolted slip critical type connections for beam, brackets, stringers, bracing, equipment support and connections. Fabricate metals as specified in this specification, as shown on the Plans existing plans and according to AWS “Structural Welding Code” D1.1, the AISC specification and the ALCOA specification.

B. Miscellaneous:
1. Plates and Angles: Shop attach plates and angles to members if field condition allow.
2. Connections: Design compact connections with minimum size gusset plates. Where practical, shop connect gusset plates to steel members.
3. Shearing, Cutting and Coping: Shearing accurately and clean the cuts without drawn, ragged, or split edges. Fabricate all copes, blocks, and other re-entrant cuts with 1/2-inch minimum radius fillet.
4. Shop Assembly: Provide maximum shop assembly for all materials including but not limited to stiffeners.
5. Sharp Edges: Round off all structural steel sharp edges to hold paint more effectively.
7. Materials Straightened in the Shop: Make straight all rolled materials before being laid off or worked in any way. If straightening or flattening is necessary, use methods that will not injure the materials. After punching and before assembling, straighten the material if required by the inspector. Sharp kinks and bends may be cause for rejection.
8. Finish: Fabricate shearing and clipping neatly and accurately. Finish neatly all portions of the work exposed to view.

C. Welding:
1. Welding shall be according to the AISC Specification, the ALCOA specification, and the AWS D1.1 Structural Welding Code. Welders, welding operators and weld procedures shall be qualified according to AWS D1.1 and D1.2. Welding electrodes shall be AWS low hydrogen Class E70 for manual shielded for flux cored arc welding for steel. Aluminum welding shall conform to AWS D1.2 Structural Welding Code.
2. Welding details, qualifications, and procedures for built-up girders and cover plates on columns and beams, as required, shall be according to AWS “Structural Welding Code”. Make web and flange splices pre-qualified butt welded joints. Make splices of different thickness plates tapered transition joints. Radiograph butt welds.
3. Perform fillet welds to full size and of proper profile for the full length as shown on the Plans. Make butt welds full penetration. Follow preheat requirements of the welding specifications. Examine welds carefully to insure that there are no slag inclusions, crates, cracks or undercuts according to AWS Specifications. Remove defects by chipping or grinding and then re-weld. Care shall be taken in assembling and fitting. Control welding to minimize shrinkage stresses and distortion. Clamp or otherwise hold connection angles to ensure close contact with beam webs during welding. Perform finished work with good quality and a neat appearance without warpage.
4. Welding electrodes E7018 shall be used for field welds for steel. All welding shall be performed and inspected according to the requirements of AWS D1.1.

D. Bolting:
1. Make field connections slip critical type joints assembled with high-strength bolts according to the AISC Specification for Structural Joints using ASTM A 325 or A 490 bolts.

2. Use ASTM A 325 heavy hexagon structural bolts furnished with heavy semi-finished hexagon nuts of dimensions according to the ANSI Standard B18.2.2. Use 1 hardened washer per bolt.

3. Provide bolts for connections to existing steel and for connections to members provided by others.

4. Contact surfaces of joints shall be masked and free of paint until after connections are tightened. Paint after installation.

5. Field drill all bolting of new steel to existing steel. Provide all fill plates, shim plates, and wedges necessary for bolting to existing members.

521.03.10 Erection

A. Surveys: Establish permanent benchmarks necessary for the erection of structural steel. Check elevations of concrete surfaces, locations of anchor bolts, and similar items before erection proceeds and report discrepancies to the RE. Do not proceed with erection until corrections have been made or until compensating adjustments to structural steel work have been agreed upon with the RE. A copy of the final survey shall be submitted to the RE at the completion of steel erection.

B. Anchor Bolts:

1. Provide and install templates and other devices as needed for the setting of bolts and other anchors which are to receive structural steel.

2. Install anchor bolts in templates and secure these templates to the forms for concrete after the installation of reinforcing steel.

C. Setting Bases and Bearing Plates:

1. Clean concrete bearing surfaces free from bond-reducing materials and then roughen to improve bond to surface. Clean the bottom surface of bearing plates.

2. Set bearing plates for structural members in their proper positions and secure them with wedges or threaded fasteners.

D. Assembly:

1. Clean the bearing surfaces and other surfaces that will be in permanent contact before assembly.

2. Set structural frames accurately to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before fastening. Make splices only where indicated.

3. Provide temporary shoring and bracing members with connection of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made.

4. Perform adjustments to compensate for discrepancies in elevations and alignment before permanently fastening. Report immediately, to the RE, all errors in fabrication or deformations resulting from the handling or transportation that prevent the proper erection and fitting of parts and submit corrective action proposal.

5. Establish required leveling and plumbing measurements at the mean operating temperature of the structure. Make allowances for the difference between temperature at time of erection and the mean temperature at which the structure will be when completed and in service.

6. Tighten anchor bolts after the supporting members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with the edge of the base or bearing plate prior to grouting. Nuts on anchor bolts under base plates may be used in lieu of wedges or shims.

E. Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete the work.

F. Touch-up:
1. After erection, clean chips, skips, and abrasions where paint has been removed, damaged or burned. Clean field bolts and field welds and coat as specified under shop painting.

2. Clean areas where galvanized surfaces have been damaged as a result of handling and erection or where field welding or bolting has occurred. Coat these areas with a field applied galvanizing compound approved by supplier of the original coating.

521.03.11 Rehabilitation of Existing Steel Structures

A. Partial Removal and Disposal of Miscellaneous Existing Structural Steel: In connection with the removal of portions of the existing structure and the framing and fitting of new and existing structural steel work, remove and dispose of portions of the existing structural steel ladders and walkways. Steel removed and not reused and waste steel resulting from the remodeling of steel and iron shall, except where otherwise provided, become the property of the Contractor and be disposed of.

B. Remodeling Existing Steel and Connections:

1. Remodel certain portions of the steel work of the existing miscellaneous structure generally as shown on the Plans. Make all necessary working drawings and field measurements for the remodeling work. Such work includes, among other things, cutting steel shapes and bolted members, reaming, replacing members, framing onto existing steel, welding, countersinking and drilling holes (round or slotted), reaming and countersinking existing holes, removing existing rivets or bolts and replacing with new high strength bolts, plugging welded holes and removing and re-erecting steel of the existing structure. Unused holes in steel to be encased in concrete need not be plug welded.

2. Where existing rivets or bolts are in physical interference with new holes to be drilled in the field, remove the rivets or bolts and drill the new material in the field using the existing holes as a template. Hole can be reamed for installation of next size larger bolt if needed. Where the existing rivet or bolt location is not to be reused, fill the open hole with a bolt.

3. Do not use flame cutting methods for the removal of existing steel where steel which is to remain in the structure might be damaged. In such cases, remove the steel by sawing or other method approved by the RE. When permitted cut the edge of the member straight and make the distance from the center of the bolt to the cut edge not less than 1 1/2 times the diameter of the bolt plus 3/8-inch.

C. Field Bolted Connections to Existing Steel:

1. Replace existing bolts or rivets with ASTM A 325 high strength bolts.

2. Install high strength bolts as specified in these Specifications. Use at least 2 washers, 1 under each head and nut. Take all necessary field measurements to determine proper grip lengths.

3. Schedule bolt replacement so that the dead and live loads are on the member being worked on. Remove existing rivets or bolts alternately with a maximum of 10 percent of the rivets or bolts being removed at one time.

4. Schedule steel repairs so that the dead and live loads are on the member being repaired.

5. Subpunch or Subdrill all field bolted connections to existing steel and ream to size at assembly or drilled from the solid. Oversize holes may be used if approved by the RE but every effort shall be made to fit the work with a minimum of mismatch. Do not bend or twist steel.

6. Replace all existing rivets or bolts which have been removed for the purpose of performing the repair work with new high strength bolts. Field drill holes 1/16-inch larger than the nominal diameter of the bolts used.

7. If reaming is required to dress up the bolt holes, and if after reaming the holes exceed the tolerances required for the next larger diameter bolt, install a larger diameter bolt at that location.

8. Do not make field cutting with welding torch.

9. No bolts shall be reused.

10. Paint all bolts and unpainted steel in a joint with primer immediately after a connection is tested and accepted.
11. When new metals are connected to existing steel, clean the surfaces of existing steel to bright metal in accordance with Steel Structures Painting Council Specification SSPC-SP2 “Hand Tool Cleaning” or better. If welding to existing steel is needed, provide steel coupon analysis of existing member for verification of weldability. Preheat steel according to AWS D1.1 and D1.2 for welding.

12. Provide shim or fill plates as required to suit field conditions.

521.03.12 Testing

Perform nondestructive testing using magnetic particle testing method according to AWS D1.1 for 10 percent of shop welds. Provide AWS certified welding inspector to interpret results. Correct all deficiencies according to AWS D1.1 at no additional cost to the Department.

521.03.13 Inspection

A. Inspect field assembled bolted and shop bolted construction according to the Specification for Structural Joints using ASTM A 325 or A 490 bolts.
B. Inspect and test field welds by method selected from AWS D1.1.
C. Inspect self drilling anchors.

521.04 MEASUREMENT AND PAYMENT

No measurement of the work will be made. Payment will be made at the Lump Sum Bid Price as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOWER STAIRS</td>
<td>LUMP SUM</td>
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</tbody>
</table>

The modifications on both existing towers and the installation of the new stairs, platforms, railings and hoists will be paid at the contract lump sum price for “Tower Stairs” which price shall include furnishing, fabricating, transporting, erecting, shop surface preparation and priming, field surface preparation, cutting, grinding, inspecting, sealing, shimming and all materials, equipment, tools and labor incidental thereto. No separate payment will be made for the field measuring, cutting, grinding, surface preparation, prime and finish coats of paint on existing and new steel and removal of existing steel needed to complete the work.
DIVISION 550 – STRUCTURE REHABILITATION

SECTION 551 – BRIDGE DECK REHABILITATION

551.01 DESCRIPTION
THE FIRST PARAGRAPH IS CHANGED TO THE FOLLOWING:

This Section describes the requirements for repairing existing concrete bridge decks, concrete bridge sidewalks, and concrete bridge curbs including the removal of existing asphalt, concrete surface course, and existing waterproofing membrane as specified in sections 401, and 507.

551.03.01 Repair of Concrete Deck
THE SECTION HEADING IS CHANGED TO THE FOLLOWING:

551.03.01 Repair of Concrete Deck and Sidewalk
THE FIRST PARAGRAPH IS CHANGED TO THE FOLLOWING:

A. Deck and Sidewalk Condition Survey. The RE will perform the deck and sidewalk condition survey before scarification, if scheduled, and after the removal of any existing HMA overlay, existing concrete surface course and waterproofing membrane. Submit written notice to the RE at least 15 days before the work site is available for a deck and sidewalk condition survey. The Department will schedule surveys during daylight hours unless the working time is restricted in the Contract. The RE will perform surveys only if the ambient temperature has been above 40 °F for at least 72 hours before the beginning of the survey and only if the deck is dry. The RE will use the data obtained to determine the repair type and limits.

THE FIRST SENTENCE OF THE SECOND PARAGRAPH IS CHANGED TO THE FOLLOWING:

B. Sawcut and Removal. When Type B1 or C1 deck repair (with or without concrete surface course) and bridge sidewalk repair are specified, sawcut and removal is required. Provide temporary shielding, as specified in 201.03.03 to prevent debris from falling below the deck.

THE FIRST SENTENCE OF THE FIFTH PARAGRAPH IS CHANGED TO THE FOLLOWING:

1. Repair of Concrete Deck, Type B1. For Type B1 deck repair with or without concrete surface course, remove asphalt and delaminated, deteriorated, and designated deck concrete to a minimum depth of 1 inch below the bottom of the top layer of existing reinforcement steel to a maximum depth of 50 percent of the thickness of the existing concrete deck. Sawcut and remove the existing asphalt pavement overlay and concrete surface course (if existing) as specified in section 401. Sawcutting, removal, and replacement of concrete as well as sealing joints are included in the item REPAIR OF CONCRETE DECK, TYPE B1. Remove deck to sound concrete as directed by the RE in order to achieve the limits of repair. Collect the concrete and asphalt and reuse as specified in section 202.03.07.A except no separate measurement will be made for disposal or reuse.

THE FIRST SENTENCE OF THE SIXTH PARAGRAPH IS CHANGED TO THE FOLLOWING:

2. Repair of Concrete Deck, Type C1. For Type C1 deck repair with or without concrete surface course, remove asphalt and delaminated, deteriorated, and designated deck concrete for the full depth of the existing deck. Sawcut and remove the existing asphalt pavement overlay and concrete surface course (if existing) as specified in sections 401. Sawcutting, removal, and replacement of concrete as well as sealing joints are included in the item REPAIR OF CONCRETE DECK, TYPE C1. Remove deck to sound concrete as directed by the RE in order to achieve the limits of repairs. Collect the concrete and asphalt and reuse as specified in section 202.03.07.A except no separate measurement will be made for disposal or reuse.

THE FOLLOWING IS ADDED AFTER THE SIXTH PARAGRAPH:
3. **Bridge Sidewalk and Curb Repair.** For partial depth repair of concrete curb, sawcut and remove delaminated, deteriorated, and designated curb concrete to a minimum depth of 1 inch below the bottom of the top layer of existing reinforcement steel to a maximum depth of 50 percent of the thickness of the existing concrete bridge sidewalk curb. The RE may require the Contractor to remove sound concrete to achieve the limits of the designated repairs. For full depth repair of concrete bridge sidewalk, sawcut and remove delaminated, deteriorated, and designated sidewalk slab concrete for the full depth of the existing sidewalk slab up to supporting beams for one way slabs. The RE may require the Contractor to remove sound concrete to achieve the limits of the designated repairs. Collect the concrete and reuse as specified in 202.03.07.A except no separate measurement will be made for disposal or reuse.

THE EIGHTH PARAGRAPH IS CHANGED TO THE FOLLOWING:

D. **Patching.** The Contractor shall use Class A concrete or Type IA quick-setting patch material, whichever is specified. For type C1 deck repair and bridge sidewalk and curb repair, provide forms for placing the patch material.

### 551.04 MEASUREMENT AND PAYMENT
THE FOLLOWING PAY ITEMS ARE ADDED:

<table>
<thead>
<tr>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repair of Concrete Bridge Sidewalk</td>
<td>Square Foot</td>
</tr>
<tr>
<td>Repair of Concrete Deck, Type B1</td>
<td>Square Foot</td>
</tr>
<tr>
<td>Repair of Concrete Deck, Type C1</td>
<td>Square Foot</td>
</tr>
</tbody>
</table>

THE FIRST PARAGRAPH IS CHANGED TO THE FOLLOWING:

At bridge deck repair areas outlined as either Repair of Concrete Deck, Type B1 or C1 (with or without concrete surface course), the Department will make final payment for each outlined area for only one of the 2 repair types as determined by the final depth as measured in the field and as shown on the Plans regardless of original designation or preparatory work for another repair type.

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The Department will measure and make payment for the item by square foot area bounded by the sawcuts in the deck or sidewalk slab for removal of concrete.

The Department will not measure and make payment for sawcutting, milling, removal, disposal, sealing joints, cleaning, repairing rebars, scarification, concrete surface course, supplementary rebars, mortar slurry, temporary shielding, temporary scaffolding and any other related items necessary to complete the work.

### SECTION 554 – PAINTING EXISTING BRIDGES

554.03.02 **Cleaning and Painting**

A. **Protection of Environment, Structure, Person, and Property.**

THE SECOND PARAGRAPH IS CHANGED TO THE FOLLOWING:

The Contractor is hereby advised that the existing paint systems on the bridges include red lead or basic lead silica chromate paint or both red lead and basic silica chromate paint as components. A pollution control system will be required wherever spot painting is needed.

E. **Paint Application**

3. **Preparing the Surface**

THE SECOND PARAGRAPH IS CHANGED TO THE FOLLOWING:

When full depth deck repair or replacement is specified, apply a prime coat to the top surfaces of top flanges or existing steel girders excluding the shear connectors and to fascia beams that are to be re-encased.
554.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The Contract quantity for NEAR-WHITE BLAST CLEANING AND PAINTING shall be based on an estimated 1,000 square feet of spot painting if and where directed as specified in Section 109.01. The Department will make payment for the cost based on the actual square footage designated by the RE.

All cleaning and painting required as part of the structural steel repair work will be paid for under the respective repair work pay item.
DIVISION 600 – MISCELLANEOUS CONSTRUCTION

SECTION 605 – FENCE

605.03.01 Chain-Link Fence
THE FOLLOWING IS ADDED TO THE END OF THE FIRST PARAGRAPH:

Survey the site and prepare working drawings as per field conditions.

THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

Prior to installing new chain link fence along the existing bridge railing and on the existing sidewalk, remove and relocate any obstructions. Drill holes in existing sidewalk slab for fence post anchors.

Provide a steel rod anchoring system at steel support brackets as shown on the Plans. Install pipe sleeves between the top of steel support brackets and the bottom of fence post base plates as required for the installation of steel rod anchoring system.

605.04 MEASUREMENT AND PAYMENT
THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The Department will not make separate measurement and payment for necessary field surveys, design, removal and relocating existing conduits, working drawings, drilling holes, installing anchor rods, pipe sleeves, and other incidental items required to construct “Chain-Link Fence, Aluminum-Coated Steel, 6’-9” High”.
SECTION 703 – HIGHWAY LIGHTING

703.03 CONSTRUCTION
THE FOLLOWING IS ADDED:

Maintain up to date as-built drawings of the highway lighting system and temporary highway lighting system. Place copies of the as-built drawings in a plastic pocket mounted inside the meter cabinet, and provide a copy to the RE.

If the highway lighting system or temporary highway lighting system fails or becomes damaged, repair and restore the system to normal operation. Begin repair of the signal system within 2 hours of receiving notice of damage or malfunction from the Department, State police, or local authorities. Ensure workers assigned to such repair work continuously until the lighting system is restored to normal operation.

For each response to a system failure or damage, fill out a Contractor Maintenance Emergency Call Record (Form EL-11C) and place it in a plastic pocket mounted inside the cabinet door of each controller cabinet.

If the Contractor fails to respond to a failure or damage notification and begin work within 2 hours of notification, or does not continue to work until the lighting system is restored to normal operation, the Department, in the interest of safety, will respond with its own forces to restore normal operation. If the Department mobilizes its forces to effect repairs, the Contractor agrees to pay the Department a sum of $3000 for costs of mobilizing its forces and equipment. In addition, the Contractor must pay the Department the actual cost of material used for the repair and pay the actual costs of police traffic protection.

703.04 MEASUREMENT AND PAYMENT
THE FOLLOWING IS ADDED TO THE END OF THIS SECTION:

The payment for the work associated with maintaining the highway lighting system is included under Section 519 – Electrical Maintenance.
STATE OF NEW JERSEY EQUAL EMPLOYMENT OPPORTUNITY
FOR CONTRACTS FUNDED BY WHOLLY STATE FUNDS

The provisions of N.J.S.A. 10:2-1 through 10:2-4 and N.J.S.A. 10:5-31 et seq. (P.L. 1975, c. 127, as amended and supplemented) dealing with discrimination in employment on public contracts, and the rules and regulations promulgated pursuant thereunto, are hereby made a part of this contract and are binding upon the Contractor.

Noncompliance by the Contractor with the requirements of the Affirmative Action Program for Equal Employment Opportunity may be cause for delaying or withholding monthly and final payments pending corrective and appropriate measures by the Contractor to the satisfaction of the Department.

During the performance of this contract, the contractor agrees as follows:

a. The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, sex, affectional or sexual orientation. The contractor will take affirmative action to ensure that such applicants are recruited and employed, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status or sex. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause;

b. The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, sex, affectional or sexual orientation;

c. The contractor or subcontractor, where applicable, will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer advising the labor union or workers’ representative of the contractor’s commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

d. The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer pursuant to P.L. 1975, c.127, as amended and supplemented from time to time.

e. When hiring workers in each construction trade, the contractor or subcontractor agrees to attempt in good faith to employ minority and female workers in each construction trade consistent with the applicable employment goal prescribed by N.J.A.C. 17:27-7.3; provided,
however, that the Affirmative Action Office may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B, and C, as long as the Affirmative Action Office is satisfied that the contractor is employing workers provided by a union which provides evidence, according to standards prescribed by the Affirmative Action Office, that its percentage of active “card carrying” members who are minority and female workers is equal to or greater than the applicable employment goal prescribed by N.J.A.C. 17:27-7.3, promulgated by the Treasurer pursuant to P.L. 1975, c. 127, as amended and supplemented from time to time. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and according to the rules promulgated by the Treasurer pursuant to P.L. 1975, c.127, as supplemented and amended from time to time. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five days prior to the commencement of construction work, the contractor or subcontractor agrees directly to attempt to hire minority and female workers consistent with the applicable employment goal. If the contractor’s or subcontractor’s prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and female workers consistent with the applicable employment goal, the contractor or subcontractor agrees to be prepared to hire minority and female workers directly, consistent with the applicable employment goal, by complying with the hiring procedures prescribed under (B) below; and the contractor or subcontractor further agrees to immediately take said action if it determines or is so notified by the Affirmative Action Office that the union is not referring minority and female workers consistent with the applicable employment goal.

(B) If the hiring of a workforce consistent with the employment goal has not or cannot be achieved for each construction trade by adhering to the procedures of (b) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions consistent with the applicable county employment goals:

(1) To notify the Public Agency Compliance Officer, Affirmative Action Office, and at least one approved minority referral organization of its manpower needs, and request referral of minority and female workers;

(2) To notify any minority and female workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request the local construction trade union, if the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, to refer minority and female workers to fill job openings;
(4) To leave standing requests for additional referral to minority and female workers with the local construction trade union, if the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area until such time as the workforce is consistent with the employment goal;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, to assure, consistent with the applicable State and Federal statutes and court decisions, that sufficient minority and female employees remain on the site consistent with the employment goal; and to employ any minority and female workers so laid off by the contractor on any other construction site in the area on which its workforce composition is not consistent with an employment goal established pursuant to rules implementing P.L. 1975, c. 127;

(6) To adhere to the following procedure when minority and female workers apply or are referred to the contractor or subcontractor:

(i) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required, the contractor or subcontractor shall determine the qualifications of such individuals and if the contractor’s or subcontractor’s workforce in each construction trade is not consistent with the applicable employment goal, it shall employ such persons which satisfy appropriate qualification standards; provided however, that a contractor or subcontractor shall determine that the individual at least possesses the skills and experience recognized by any worker’s skills and experience classification determination which may have been made by a Public Agency Compliance Officer, union, apprentice program or a referral agency, provided the referral agency is acceptable to the Affirmative Action Office and provided further, that, if necessary, the contractor or subcontractor shall hire minority and female workers who qualify as trainees pursuant to these regulations. All of the requirements of this paragraph, however, are limited by the provisions of (C) below.

(ii) If the contractor’s or subcontractor’s workforce is consistent with the applicable employment goal, the name of said female or minority group individual shall be maintained on a waiting list for the first consideration, in the event the contractor’s or subcontractor’s workforce is no longer consistent with the applicable employment goal.

(iii) If, for any reason, said contractor or subcontractor determines that a minority individual or a female is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing with the reasons for the determination, maintain a copy in its files, and send a copy to the Public Agency Compliance Officer and to the Affirmative Action Office.

(7) To keep a complete and accurate record of all requests made for the referral of
workers in any trade covered by the contract and on forms made available by the
Affirmative Action Office and shall be submitted promptly to that office upon request.

(C) The contractor or subcontractor agrees that nothing contained in (B) preceding provision
shall preclude the contractor or subcontractor from complying with the hiring hall or
apprenticeship provisions in any applicable collective bargaining agreement or hiring hall
arrangement, and, where required by custom or agreement, it shall send journeymen and
trainees to the union for referral, or to the apprenticeship program for admission,
pursuant to such agreement or arrangement: provided, however, that where the practices
of a union or apprenticeship program will result in the exclusion of minorities and
females or the failure to refer minorities and females consistent with the county
employment goal, the contractor or subcontractor shall consider for employment persons
referred pursuant to said provisions (B) without regard to such agreement or
arrangement; provided further, however, that the contractor or subcontractor shall not be
required to employ female and minority advanced trainees and trainees in numbers which
result in the employment of advanced trainees and trainees as a percentage of the total
workforce for the construction trade, which percentage significantly exceeds the
apprentice to journey worker ratio specified in the applicable collective bargaining
agreement, or in the absence of a collective bargaining agreement, exceeds the ratio
established by practice in the area for said construction trade. Also, the contractor or
subcontractor agrees that, in implementing the procedures of the preceding provisions (B)
it shall, where applicable, employ minority and female workers residing within the
geographical jurisdiction of the union.

(D) The contractor agrees to complete an Initial Project Manning Report on forms provided
by the Affirmative Action Office or in the form prescribed by the public agency and
submit a copy of said form no later than 3 days after signing a construction contract;
provided, however, that the public agency may extend in a particular case the allowable
time for submitting the form to no more than 14 days; and to submit a copy of the
Monthly Project Manning Report once a month (by the seventh work day of each month)
thereafter for the duration of this contract to the Affirmative Action Office and to the
Public Agency Compliance Officer. The contractor agrees to cooperate with the public
agency in the payment of budgeted funds, as is necessary, for on-the-job and off-the-job
programs for outreach and training of minority and female trainees employed on the
construction projects.

(E) The contractor and its subcontractors shall furnish such reports or other documents to the
Affirmative Action Office as may be requested by the office from time to time in order to
carry out the purposes of these regulations, and public agencies shall furnish such
information as may be requested by the Affirmative Action Office for conducting a
compliance investigation pursuant to Subchapter 10 of the Administrative Code (NJAC
17:27).
PAYROLL REQUIREMENTS FOR 100% STATE PROJECTS

1. Each contractor and subcontractor shall furnish the Resident Engineer with payroll reports for each week of contract work. Such reports shall be submitted within 7 days of the date of payment covered thereby and shall contain the following information:

   A. Each employee’s full name, address, and social security number. The employee’s full name, and social security number need only appear on the first payroll on which his name appears. The employee’s address need only be shown on the first submitted payroll on which his name appears; unless a change of address necessitates a submittal to reflect the new address.

   B. Each employee’s specific work classification (s).

   C. Entries indicating each employee’s basis hourly wage rate(s) and, where applicable, the overtime hourly wage rate(s). Any fringe benefits paid to the employee in cash must be indicated.

   D. Each employee’s daily and weekly hours worked in each classification, including actual overtime hours worked (not adjusted).

   E. Each employee’s gross wage.

   F. The itemized deductions made.

   G. The net wages paid.

2. Each contractor or subcontractor shall furnish a statement each week to the Resident Engineer with respect to the wages paid each of its employees engaged in contract work covered by the New Jersey Prevailing Wage Act during the preceding weekly payroll period. The statement shall be executed by the contractor or subcontractor or by an authorized officer or employee of the contractor or subcontractors who supervises the payment of wages. Contractors and subcontractors must use the certification set forth on New Jersey Department of Transportation Form FA-7 “Statement of Compliance,” or the same certification set forth on (1) U.S. Department of Labor Form WH-348, (2) the reverse side of U. S. Department of Labor Form WH-347, or (3) any form with identical wording.
AMERICANS WITH DISABILITIES ACT

100% STATE FUNDED CONTRACTS

Equal Opportunity For Individuals With Disabilities.

The CONTRACTOR and the STATE do hereby agree that the provisions of Title II of the American With Disabilities Act of 1990 (the “ACT”) (42 U.S.C. Section 12101 et seq.), which prohibits discrimination on the basis of disability by public entities in all services, programs, and activities provided or made available by public entities, and the rules and regulations promulgated pursuant thereunto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the STATE pursuant to this contract, the CONTRACTOR, agrees that the performance shall be in strict compliance with the Act. In the event that the CONTRACTOR, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the CONTRACTOR shall defend the STATE in any action or administrative proceeding commenced pursuant to this Act. The CONTRACTOR shall indemnify, protect, and save harmless the STATE, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The CONTRACTOR shall, at its own expense, appear, defend, and pay any and all charges for legal services and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the STATE’S grievance procedure, the CONTRACTOR agrees to abide by any decision of the STATE which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the STATE or if the STATE incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the CONTRACTOR shall satisfy and discharge the same at its own expense.

The STATE shall, as soon as practicable after a claim has been made against it, give written notice thereof to the CONTRACTOR along with full and complete particulars of the claim. If any action or administrative proceeding is brought against the STATE or any of its agents, servants, and employees, the STATE shall expeditiously forward or have forwarded to the CONTRACTOR every demand, complaint, notice, summons, pleading, or other process received by the STATE or its representatives.

It is expressly agreed and understood that any approval by the STATE of the services provided by the CONTRACTOR pursuant to this contract will not relieve the CONTRACTOR of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the STATE pursuant to this paragraph.

It is further agreed and understood that the STATE assumes no obligation to indemnify or save harmless the CONTRACTOR, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the CONTRACTOR expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the CONTRACTOR’S obligations assumed in this Agreement, nor shall they be construed to relieve the CONTRACTOR from any liability, nor preclude the STATE from taking any other actions available to it under any other provisions of this Agreement or otherwise at law.
EQUAL EMPLOYMENT OPPORTUNITY SPECIAL PROVISIONS
CONSTRUCTION CONTRACTS FUNDED BY WHOLLY STATE FUNDS

I. GENERAL


Noncompliance by the Contractor with the requirements of the Affirmative Action program for Equal Employment Opportunity may be cause for delaying or withholding monthly and final payments pending corrective and appropriate measures by the Contractor to the satisfaction of the Department.

The Contractor will cooperate with the state agencies in carrying out its Equal Employment Opportunity obligations and in their review of its activities under the contract.

The Contractor and all its subcontractors, not including material suppliers, holding subcontracts of $2,500 or more, will comply with the following minimum specific requirement activities of Equal Opportunity and Affirmative Action set forth in these special provisions. The Contractor will include these requirements in every subcontract of $2,500 or more with such modification of language in the provisions of such contracts as is necessary to make them binding on the subcontractor.

II. EQUAL EMPLOYMENT OPPORTUNITY POLICY

The Contractor agrees that it will accept and implement during the performance of this contract as its operating policy the following statement which is designed to further the provision of Equal Employment Opportunity to all persons without regard to their race, color, religion, sex, age, creed, ancestry, marital status, or national origin, and to promote the full realization of Equal Employment Opportunity through a positive continuing program:

It is the policy of this company that it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, creed, ancestry, martial status or national origin and that it will take Affirmative Action to ensure that applicants are recruited and employed and that employees are treated during employment without regard to their race, color, religion, sex, age, creed, ancestry, marital status, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre apprenticeship, and/or on-the-job training.
III. EQUAL EMPLOYMENT OPPORTUNITY OFFICER

The Contractor will designate and make known to the Department contracting officers an Equal Employment Opportunity Officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of Equal Employment Opportunity and who must be assigned adequate authority and responsibility to do so.

IV. DISSEMINATION OF POLICY

A. All members of the Contractor’s staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, will be made fully cognizant of, and will implement, the Contractor’s Equal Employment Opportunity Policy and contractual responsibilities to provide Equal Employment Opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

1. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every 6 months, at which time the Contractor’s Equal Employment Opportunity Policy and its implementation will be reviewed and explained. The EEO Officer or other knowledgeable company official will conduct the meetings.

2. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official covering all major aspects of the Contractor’s Equal Employment Opportunity obligations within 30 days following their reporting for duty with the Contractor.

3. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate company official in the Contractor’s Procedures for locating and hiring minority group employees.

B. In order to make the Contractor’s Equal Employment Opportunity Policy known to all employees, prospective employees and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the Contractor will take the following actions:

1. Notices and posters setting forth in the Contractor’s Equal Employment Opportunity policy, as set forth in Section 2 of these Equal Employment Opportunity Special Provisions will be placed in conspicuous places readily accessible to employees, applicants for employment and potential employees.
2. The Contractor’s Equal Employment Opportunity Policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

V. RECRUITMENT

A. In all solicitations and advertisements for employees placed by or on behalf of the Contractor, the Contractor will state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, creed, ancestry, marital status or national origin. All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

B. The Contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, state employment agencies, schools, colleges and minority group organizations. To meet this requirement, the Contractor will, through his EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the Contractor for employment consideration.

C. In the event the Contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the Contractor’s compliance with Equal Employment Opportunity contract provisions. (The US Department of Labor has held that where implementations of such agreements have the effect of discriminating against minorities or women, or obligates the Contractor to do the same; such implementation violates Executive Order 11246, as amended).

D. In the event that the process of referrals established by such a bargaining agreement fails to provide the Contractor with a sufficient number of minority referrals within the time period set forth in such an agreement, the Contractor shall comply with the provisions of “Section 9 Unions” of the EEO Special Provisions.

VI. ESTABLISHMENT OF GOALS FOR CONSTRUCTION CONTRACTORS

A. The New Jersey Department of Transportation has established, pursuant to N.J.A.C. 17:27-7.3, the minority and female goals for each construction contractor and subcontractor based on availability statistics as reported by the New Jersey Department of Labor, Division of Planning and Research, in its report, EEO Tabulation - Detailed Occupations as follows:
MINORITY AND FEMALE EMPLOYMENT GOAL OBLIGATIONS FOR
CONSTRUCTION CONTRACTORS AND SUBCONTRACTORS

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>MINORITY %</th>
<th>FEMALE%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>20</td>
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<tr>
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<td>6.9</td>
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<td>6.9</td>
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The Affirmative Action Office has interpreted Section 7.3 of the State of New Jersey Affirmative Action Regulations as applicable to work hour goals for minority and female participation.

If a project is located in more than one county, the minority work hour goal will be determined by the county which serves as the primary source of hiring or, if workers are obtained equally from one or more counties, the single minority goal shall be the average of the individual goal for the affected counties.

B. The State Affirmative Action office may designate a regional goal for minority membership for a union that has regional jurisdiction. No regional goals shall apply to this project unless specifically designated elsewhere herein.

C. When hiring workers in the construction trade, the Contractor and/or subcontractor agree to attempt, in good faith, to employ minority workers in each construction trade, consistent with the applicable county or, in special cases, regional goals.

D. It is understood that the goals are not quotas. If the Contractor or subcontractor has attempted, in good faith, to satisfy the applicable goals, he will have
complied with his obligations under these EEO Special Provisions. It is further understood that if the Contractor shall fail to attain the goals applicable to this project, it will be the Contractor’s obligation to establish to the satisfaction of the Department of Transportation that it has made a good faith effort to satisfy such goals. The Contractor or subcontractor agrees that a good faith effort to achieve the goals set forth in these special provisions shall include compliance with the following procedures:

1. Requests shall be made by the Contractor or subcontractor to each union or collective bargaining unit with which the Contractor or subcontractor has a referral agreement or arrangement for the referral of minority workers to fill job openings. Requests shall also be made for assurances for the referral of minority workers to fill job openings. Requests shall also be made for assurances from such unions or collective bargaining units that they will cooperate with the Contractor or subcontractor in fulfilling the Affirmative Action obligations of the Contractor or subcontractor under this contract. Such requests shall be made prior to the commencement of construction under the contract.

2. The contractor and its subcontractors shall comply with Section 9, Unions of these EEO Special Provisions and, in particular, with Section 9, Paragraph D, if the referral process established in any collective bargaining arrangement is failing to provide the Contractor or subcontractor with a sufficient number of minority referrals.

3. The Contractor and its subcontractors shall notify the Department’s Compliance Officer, the Affirmative Action Office of the Department of Treasury and at least one approved minority referral organization of the Contractor’s or subcontractors manpower needs and of the Contractor’s or subcontractor’s desire for assistance in attaining the goals set forth herein. The notifications should include a request for referral of minority and female workers.

4. The Contractor and its subcontractors shall notify the Department’s Compliance Officer and the Affirmative Action Office of the Department of Treasury in the event that a union or collective bargaining unit is not making sufficient minority referrals to enable the Contractor or subcontractor to attain the work goals for the Project.

5. The Contractor and its subcontractors shall make standing requests to all local construction unions, the state training and employment service and other approved referral sources for additional referrals of minority and female workers until such time as the project work force is consistent with the work hour goals for the project.

6. The Contractor and its subcontractors shall make standing requests to all local construction unions, the state training and employment service and other approved referral sources for additional referrals of minority and
female workers until such time as the project work force is consistent with the work hour goals for the project.

7. In the event that it is necessary to lay off some of the workers in a given trade on the construction site, the Contractor and its subcontractors shall ensure that fair layoff practices are followed regarding minority, female and other workers.

8. The Contractor and its subcontractors shall comply with the other requirements of these EEO Special Provisions.

VII. PERSONNEL ACTIONS

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, age, creed, ancestry, marital status or national origin. The following procedures shall be followed:

A. The Contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

B. The Contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

C. The Contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the Contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

D. The Contractor will promptly investigate all complaints of alleged discrimination made to the Contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the Contractor will inform every complainant of all of his avenues of appeal.

VIII. TRAINING AND PROMOTION

The Contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

Consistent with the Contractor’s work force requirements and as permissible under State regulations, the Contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs, for the geographical area of
contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The Contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

The Contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

IX. UNIONS

If the Contractor relies in whole or in part upon unions as a source of employees, the Contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the Contractor either directly or through a Contractor’s association acting, as agent will include the procedures set forth below:

A. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers’ representative of the Contractor’s commitments under both the law against discrimination and this contract and shall post copies of the notice in conspicuous places readily accessible to employees and applicants for employment. Further, the notice will request assurance from the union or worker’s representative that such union or worker’s representative will cooperate with the Contractor in complying with the Contractor’s Equal Employment Opportunity and Affirmative Action obligations.

B. The Contractor will use their best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

C. The Contractor will use their best efforts to incorporate an Equal Employment Opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, or national origin.

D. The Contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the Contractor, the Contractor shall so certify to the Department and shall set forth what efforts have been made to obtain such information.

E. In the event the union is unable to provide the Contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective
bargaining agreement, the Contractor will, through independent recruitment 
efforts, fill the employment vacancies without regard to race, color, religion, sex, 
or national origin, making full efforts to obtain qualified and/or qualifiable 
minority group persons and women. (The US Department of Labor has held that 
it shall be no excuse that the union with which the Contractor has a collective 
bargaining agreement providing for exclusive referral failed to refer minority 
employees). In the event the union referral practice prevents the Contractor from 
meeting the obligations pursuant to Executive Order 11246, as amended, and 
these Special Provisions, such Contractor shall immediately notify the 
Department.

X. SUBCONTRACTING

A. The Contractor will use his best efforts to solicit bids from and to utilize minority 
group and female subcontractors or subcontractors with meaningful minority 
group and female representation among their employees. Contractors may use 
lists of minority owned and female owned construction firms as issued by the 
Department.

B. The Contractor will use his best efforts to ensure subcontractor compliance with 
their Equal Employment Opportunity obligations.

XI. RECORDS AND REPORTS

A. The Contractor will keep such records as are necessary to determine compliance 
with the Contractor’s Equal Employment Opportunity obligations. The records 
kept by the Contractor will be designed to indicate:

1. The work hours of minority and non-minority group members and women 
employed in each work classification on the project.

2. The progress and efforts being made in cooperation with unions to increase 
employment opportunities for minorities and women (applicable only to 
Contractors who rely in whole or in part on unions as a source of their 
work force).

3. The progress and efforts being made in locating, hiring, training, 
qualifying, and upgrading minority and female employees, and

4. The progress and efforts being made in securing the services of minority 
group and female subcontractors or subcontractors with meaningful 
minority and female representation among their employees.

B. All such records must be retained for a period of 3 years following completion of 
The contract work and shall be available at reasonable times and places for 
inspection by authorized representatives of the Department.

C. The Contractor shall submit monthly reports to the Department after construction
begins for the duration of the project, indicating the work hours of minority, women, and non minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on a form supplied by the Department.

XII. SPECIAL CONTRACT PROVISIONS FOR INVESTIGATING, REPORTING AND RESOLVING EMPLOYMENT DISCRIMINATION AND SEXUAL HARASSMENT COMPLAINTS

The Contractor hereby agrees to the following requirements in order to implement fully the nondiscrimination provisions of the Supplemental Specifications:

The Contractor agrees that in instances when it receives from any person working on the project site a verbal or written complaint of employment discrimination, prohibited under N.J.S.A. 10:5-1 et seq., 10:2-1 et seq., 42 U.S.C. 2000 (d) et seq., 42 U.S.C. 2000(e) et seq. And Executive Order 11246, it shall take the following actions:

1. Within one (1) working day commence an investigation of the complaint, which will include but not be limited to interviewing the complaint, the respondent, and all possible witnesses to the alleged act or acts of discrimination or sexual harassment.

2. Prepare and keep for its use and file a detailed written investigation report which includes the following information:
   
   a) Investigatory activities and findings.
   
   b) Dates and parties involved and activities involved in resolving the complaint.
   
   c) Resolution and corrective action taken if discrimination or sexual harassment is found to have taken place.
   
   d) A signed copy of resolution of complaint by complainant and contractor.

   In addition to keeping in its files the above-noted detailed written investigative report, the contractor shall keep for possible future review by the Department all other records, including, but not limited to, interview memos and statements.

3. Upon the request of the Department provides to the Department within ten (10) calendar days a copy of its detailed written investigative report and all other records on the complaint investigation and resolution.

4. Take appropriate disciplinary actions against any contractor employee, official or agent who has committed acts of discrimination or sexual harassment against any contractor employee or person working on the project. If the person committing
the discrimination is a subcontractor employee, then the contractor is required to attempt to effectuate corrective and/or disciplinary action by the subcontractor in order to establish compliance with project’s contract requirements.

5. Take appropriate disciplinary action against any contractor employee, official or agent who retaliates, coerces or intimidates any complainant and/or person who provides information or assistance to any instigation of complaints of discrimination or sexual harassment. If the person retaliating, coercing or intimidating a complainant or other person assisting in an investigation is a subcontractor’s employee, then the contractor is required to attempt to effectuate corrective and/or disciplinary action taken by the subcontractor in order to establish compliance with the project’s contract requirements.

6. Ensure to the maximum extent possible that the privacy interests of all persons who give confidential information in aid of the contractor’s employment discrimination investigation are protected.

7. In conjunction with the above requirements, the contractor herein agrees to develop and post a written sexual harassment policy for its workforce.

The contractor also agrees that its failure to comply with the above requirements may be cause for the New Jersey Department of Transportation to institute against the contractor any and all enforcement proceedings and/or sanctions authorized by the contract or by state and/or federal law.
SMALL BUSINESS ENTERPRISE UTILIZATION ATTACHMENT

100% STATE-FUNDED CONTRACTS

I. UTILIZATION OF SMALL BUSINESS ENTERPRISE (SBE) BUSINESSES AS CONTRACTORS, MATERIAL SUPPLIERS AND EQUIPMENT LESSORS.

The New Jersey Department of Transportation advises each contractor or subcontractor that failure to carry out the requirements set forth in this attachment shall constitute a breach of contract and, after notification to the applicable State agency, may result in termination of the agreement or contract by the Department or such remedy as the Department deems appropriate. Requirements set forth in this section shall also be included in all subcontract agreements in accordance with State of New Jersey requirements.

II. POLICY

It is the policy of the New Jersey Department of Transportation that Small Business Enterprises, as defined in N.J.A.C. 12A:10A-1.2 et seq., and N.J.A.C. 17:14-1.2 et seq., shall have the maximum opportunity to participate in the performance of contracts financed wholly with 100% state funds.

III. CONTRACTOR’S SMALL BUSINESS OBLIGATION

The New Jersey Department of Transportation and its Contractor agree to ensure that Small Business Enterprises (SBE), as defined in N.J.A.C. 12A:10A-1.2 et seq., and N.J.A.C. 17:14-1.2 et seq., have maximum opportunity to participate in the performance of contracts and subcontracts financed wholly with 100% state funds. In this regard, the New Jersey Department of Transportation and all Contractors shall take all necessary and reasonable steps to ensure that Small Business Enterprises are utilized on, compete for, and perform on NJDOT construction contracts. The New Jersey Department of Transportation and its Contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of State-funded contracts.

IV. COMPLIANCE

To signify and affirm compliance with the provisions of this attachment, the bidder shall complete the Schedule of Small Business Participation “Form A” included in the Proposal and all forms and documents required in Sections VII and VIII of these provisions which will be made a part of the resulting contract.

V. SMALL BUSINESS GOALS FOR THIS PROJECT

NOTE: SUBCONTRACTING GOALS ARE NOT APPLICABLE IF THE PRIME CONTRACTOR IS A REGISTERED SMALL BUSINESS ENTERPRISE (SBE) FIRM.

A. This project includes a goal of awarding 16% percent of the total contract value to subcontractors qualifying as SMALL BUSINESSES in amounts as follows:

1. ___% to businesses registered in the category of gross revenues that do not exceed $1 million; and
2. ___% to businesses registered in the category of having gross revenues exceeding $1 million consistent with the applicable annual revenue standards established at 13 C.F.R. 121.201; and
3. ___16% to businesses in either category
B. Only Small Business Enterprises registered prior to the date of bid, or prospective Small Business Enterprises that have submitted to the New Jersey Commerce and Economic Growth Commission on or before the day of bid, a completed “State of New Jersey Small Business Vendor Registration Form” and all the required support documentation, will be considered in determining whether the contractor has met the established goals for the project. Early submission of required documentation is encouraged.

C. If a prospective Small Business Enterprise fails to meet the eligibility standards for participation the department’s Small Business Program, the contractor shall, prior to the award, make reasonable outreach efforts to replace that ineligible subcontractor with a registered Small Business whose participation is sufficient to meet the goal for the contract.

D. Prospective Small Businesses whose registration applications are denied or rejected by the New Jersey Commerce and Growth Commission are ineligible for participation on the project to meet Small Business goals, regardless of any pending appeal action in progress.

E. A directory of registered Small Businesses Enterprise firms is available upon request to the New Jersey Commerce and Growth Commission or the New Jersey Department of Transportation, Division of Civil Rights/Affirmative Action. The directory is to be used as a source of information only and does not relieve the Contractor of their responsibility to seek out Small Businesses Enterprises not listed.

VI. COUNTING SMALL BUSINESS ENTERPRISE PARTICIPATION

A. Each Small Business Enterprise (SBE) is subject to a registration procedure to ensure their SBE eligibility prior to the award of contract. In order to facilitate this process, it is advisable for the bidder to furnish the names of proposed SBEs to the Department before bid opening. Once a firm is determined to be a bona fide SBE by the New Jersey Commerce and Growth Commission, the total dollar value of the contract awarded to the SBE is counted toward the applicable goal.

B. The Contractor may count toward its SBE goal only expenditures to SBEs that perform a commercially useful function in the work of a contract. A SBE is considered to perform a commercially useful function when it is responsible for execution of a distinct element of the work of a contract and carrying out its responsibility by actually performing, managing and supervising the work involved. To determine whether a SBE is performing a commercially useful function, the Contractor shall evaluate the amount of work subcontracted, industry practice and other relevant factors.

C. If an SBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, or the SBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, you must presume that it is not performing a commercially useful function.

D. If a Contractor is part of a Joint Venture and one or more of the Sole Proprietorships, Partnerships, Limited Liability companies or Corporations comprising the Joint Venture is a registered SBE, the actual payments made to the Joint Venture for work performed by the SBE member, will be applied toward the goal. Payments made to the Joint Venture for work performed by a non-small business firm will not be applied toward the applicable goal.

E. If the Contractor is a registered SBE, payments made to the Contractor for work performed by the Contractor will be applied toward the SBE goal. Payments made to the Contractor for work performed by non-SBE’s will not be applied toward the goal.
F. When a SBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted towards the SBE goals only if the SBE’s subcontractor is also a SBE. Work that a SBE subcontracts to a non-SBE firm does not count toward the assigned goal.

VII. SUBMISSION OF CONTRACTOR’S AFFIRMATIVE ACTION PLANS

A. Contractors are required to submit annually on their due date, their firm’s Affirmative Action Program to the Division of Civil Rights/Affirmative Action. Contractors must have an approved Affirmative Action Program in the Division of Civil Rights/Affirmative Action no later than seven (7) State business days after receipt of bids. No recommendations to award will be made without an approved Affirmative Action Program on file in the Division of Civil Rights/Affirmative Action.

B. The Annual Affirmative Action Program will include, but is not limited to the following:

1. The name of the company’s Liaison Officer who will administer the Small Business Enterprise Program.

2. An explanation of the affirmative action methods used in seeking out and considering Small Business Enterprises as subcontractors, material suppliers or equipment lessors.

3. An explanation of affirmative action methods which will be used in seeking out future Small Business Enterprises as subcontractors, material suppliers or equipment lessors after the award of the contract and for the duration of said project.

C. The following shall be submitted either with the bid or to the Division of Civil Rights/Affirmative Action no later than seven (7) state business days after the receipt of bids.

1. SBE “FORM A” - Schedule of SBE Participation. The Contractor shall list all SBEs that will participate in the contract including scope of work, actual dollar amount and percent of total contract to be performed. This form should be submitted only if the goal level established for the contract have been met or exceeded;

   Note: If a change occurs to the Contractor’s original Form A submission which was previously approved by the Division of Civil Rights/Affirmative Action, a Revised Form A must be submitted naming the replacement Small Business Enterprise subcontractors. A written explanation should be included with the submission of the revised Form A.

2. Request for Exemption - In the event the Contractor is unable to meet the specified goal level, that Contractor must submit a written request for a partial or full exemption from the SBE goal. This request shall include the names of all SBE firms that the contractor will utilize on the contract and shall describe the specific work to be performed by each SBE together with the actual dollar amount of that work. Additionally, this request must address the Contractor’s efforts to make Reasonable Outreach Efforts as enumerated in Section VIII.

3. SBE “FORM B” - Affidavit of Small Business Enterprise. Each proposed SBE not listed in the NJ Commerce and Economic Growth Commission Directory must submit “Form B” attesting to its validity as an SBE. (All firms must be registered by the Commission prior to award of the contract.)

4. Additional Information - The Department in its sole discretion may request additional information from the Contractor prior to award of the contract in order to evaluate the Contractor’s compliance with the SBE requirements of the bid proposal. Such information must be provided within the time limits established by the department. The
Contractor shall, prior to the award of the contract, submit a completed SBE “Form A”, even if it has been granted an exemption from the SBE goal.

VIII. REASONABLE OUTREACH EFFORTS

If a Contractor fails to meet the goal for Small Business Enterprise participation, the Contractor shall document its reasonable outreach efforts to meet the SBE goal. Reasonable outreach shall include, but not be limited to the following:

A. Attendance at a pre-bid meeting, if any, scheduled by the Department to inform SBE’s of subcontracting opportunities under a given solicitation.

B. Advertisement in general circulation media, trade association publications, and small business enterprise-focus media for at least 20 days before bids are due. If 20 days are not available, publication for a shorter reasonable time is acceptable.

C. Written notification to SBE’s that their interest in the contract is solicited;

D. Efforts made to select portions of the work proposed to be performed by SBEs in order to increase the likelihood of achieving the stated goal;

E. Efforts made to negotiate with SBE’s for specific sub-bids including at a minimum
   1. The names, addresses and telephone numbers of SBE’s that were contacted;
   2. A description of the information provided to SBE’s regarding the plans and specifications for portions of the work to be performed; and
   3. A statement of why additional agreements with SBE’s were not reached;

F. Information regarding each SBE the bidder contacted and rejected as unqualified and the reasons for the bidder’s conclusion;

G. Efforts made to assist the SBE in obtaining bonding or insurance required by the Bidder or the Department.

IX. ADMINISTRATIVE RECONSIDERATION

A. If the Division of Civil Rights/Affirmative Action determines that the apparent successful bidder has failed to make reasonable outreach efforts to meet the requirements of this section, the Department must, before awarding the contract, provide the bidder an opportunity for administrative reconsideration.

B. As part of this reconsideration, the bidder will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. NJDOT will send the bidder a written decision on reconsideration, explaining the basis for finding that the bidder did or did not meet the SBE goal or make an adequate good faith effort to do so.

C. Within seven (7) State business days of being informed by the Division of Civil Rights/Affirmative Action that it is not a responsible bidder because it has not made or documented sufficient outreach efforts to SBEs, a bidder may make a request in writing to the Director, Division of Procurement, PO Box 605, Trenton, New Jersey, 08625-0605; Telephone (609) 530-6355. The Director, Division of Procurement, does not participate in the initial determination of whether reasonable outreach was performed by the Contractor.
X. **RESPONSIBILITY AFTER AWARD OF THE CONTRACT**

If at any time following the award of contract, the Contractor intends to sublet any portion(s) of the work under said contract, or intends to purchase material or lease equipment not contemplated during preparation of bids, said Contractor shall take affirmative action:

A. To notify the Resident Engineer, in writing, of the type and approximate value of the Contractor intends to accomplish by such subcontract, purchase order or lease.

B. To signify and affirm compliance with the provisions of this Section, the Contractor shall submit the Post-Award SBE Certification Form to the Regional Supervising Engineer with his application to sublet or prior to purchasing material or leasing equipment. Post Award SBE forms may be obtained from the Resident Engineer.

C. To give small business enterprise firms equal consideration with non-small business firms in negotiation for any subcontracts, purchase orders or leases.

XI. **CONSENT BY DEPARTMENT TO SUBLETTING**

A. The Department will not approve any subcontracts proposed by the Contractor unless and until said contractor has complied with the terms of this SBE Utilization Attachment.

B. The Contractor shall provide the Resident Engineer with a listing of firms, organizations or enterprises to be used as subcontractors on the proposed project. Such listing shall clearly delineate which firms are classified as SBEs.

C. Notification of a subcontractor’s termination shall be sent to the Department by the Contractor through the Resident Engineer.

XII. **CONCILIATION**

In cases of alleged discrimination regarding these and all equal employment opportunity provisions and guidelines, investigations and conciliation will be undertaken by the Division of Civil Rights/Affirmative Action, New Jersey Department of Transportation.

XIII. **DOCUMENTATION**

A. Records and Reports

The Contractor shall keep such records as are necessary to determine compliance with its Small Business Enterprise Utilization obligations. The records kept by the Contractor will be designed to indicate:

1. The names of the small business enterprise subcontractors, equipment lessors and material suppliers contacted for work on this project.

2. The type of work to be done, materials to be utilized or services to be performed other than by the prime contractor on the project.

3. The actual dollar amount of work awarded to SBE’s.

4. The progress and efforts being made in seeking out and utilizing Small Business Enterprise firms. This would include solicitations, quotes and bids regarding project work items, supplies, leases, etc.
5. Documentation of all correspondence, contacts, telephone calls, etc, to obtain the services of Small Business Enterprise firms on this project.

B. The contractor shall submit reports, as required by the Department, on those contracts and other business transactions executed with Small Business Enterprise firms in such form and manner as may be prescribed by the Department.

C. All such records must be maintained for a period of three (3) years following acceptance of final payment and will be available for inspection by the Department.

XIV. PAYMENT TO SUBCONTRACTORS

The Contractor agrees to pay its subcontractors in accordance with the Specifications.

XV. SANCTIONS

Failure of a Contractor to comply with these provisions may result in bid rejection, reduced classification, suspension, debarment, or the institution of other appropriate action by the New Jersey Department of Transportation.
MINORITY/FEMALE OUTREACH AND TRAINING PROGRAM FOR WHOLLY STATE FUNDED PROJECTS

I. A pay item entitled “Training Reimbursement” paid lump sum has been added to this contract in conformance with PL 1975, c. 127, and applicable regulations and policies. The pay item reflects the fact that one-half of one percent of the total project cost of each state-funded contract of $1,000,000 or more must be available for the provision of on-the-job/off-the-job training for eligible trainees.

The lump sum amount will be used to reimburse the contractor for on-the-job/off-the-job training costs incurred during the life of the contract, provided that:

A) The training is required because of the contractor’s failure to meet the contract’s minority and female hiring goals.

B) Only minority and/or female trainees actually employed on the project are provided with training.

C) Training funds are not used to pay the salary of any trainee.

D) Off-the-job training programs are designed to increase the skills of trainees in a particular trade or craft or skills relating to contracting work or related academic or remedial education programs.

E) Training is provided by the State, regional or local public or private training institutions, agencies or organizations that have been approved by the Department of Treasury’s Affirmative Action Office.

II. The contractor is responsible for arranging the training at a site or sites approved, in advance, by the Department. Payment for such training is contingent on the contractor’s satisfaction of each of the following conditions:

A) The contractor must establish, to the satisfaction of the Department, that it has made a good faith effort necessary to ensure compliance with the contract’s minority/female hiring goals.

B) The contractor must submit to the Department a list of minority and/or female employees to be included in the training.

C) The contractor must submit to the Department a written description of the training program it proposes to utilize during the course of the project and has received approval of this program. The proposed program must have received Department approval prior to the commencement of any training for which reimbursement will be sought.

D) The contractor must submit, on a monthly basis, documentation of the training provided and of the costs incurred. The documentation shall include applications, invoices, billings and other pertinent materials provided by an approved training agency.

E) The contractor must maintain all records of applications, invoices, billings, accounting and other documentation of costs incurred and shall make such records available at its offices for audit by the Department at all reasonable times during the contract period and for three years from the date of final payment.
BRIDGE MAINTENANCE

AND

OPERATIONS FORMS
COMMUNICATIONS SYSTEM

The following were evaluated for proper operation, regular movement, focus, mounting, applied tension, vibration, overheating, wear, rust, noise, carbon deposits, loose terminations, dirt accumulation, insulation, grounding, bonding, weather tightness, safety, and signs of distress:

3=Operational/Needs Minor Work  2=Operational/Needs Major Work  
1=Non Operational  S=Satisfactory  N=Not Applicable

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ATTACH DETAILED EXPLANATION OF WORK NEEDED
**DRIVE CONTROL SYSTEM**

The following were evaluated for smooth operation, uniform & regular movement, mounting, applied tension, vibration, overheating, wear, rust, noise, carbon deposits, loose terminations, dirt accumulation, insulation, grounding, bonding, current/voltage/kilowatt reading, interlocks, weather tightness, safety, and signs of distress:

3=Operational/Needs Minor Work  2=Operational/Needs Major Work  
1=Non Operational  S=Satisfactory  N=Not Applicable

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ATTACH DETAILED EXPLANATION OF WORK NEEDED
ELECTRICAL

The following were evaluated for smooth operation, uniform & regular movement, mounting, applied tension, vibration, overheating, wear, rust, noise, carbon deposits, loose terminations, dirt accumulation, insulation, grounding, bonding, current/voltage/kilowatt reading, interlocks, weather tightness, safety, and signs of distress:

3=Operational/Needs Minor Work  2=Operational/Needs Major Work  
1=Non Operational  S=Satisfactory  N=Not Applicable

<table>
<thead>
<tr>
<th>TRAFFIC SIGNALS/GONGS</th>
<th>HORN</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING/BARRIER GATES</td>
<td>SERVICE/EMERGENCY LIGHTING</td>
</tr>
<tr>
<td>SMOKE DETECTION/ROOM HEATING</td>
<td>SOUND POWERED PHONES</td>
</tr>
<tr>
<td>SWITCHES/PUSHBUTTONS</td>
<td>WIRING</td>
</tr>
<tr>
<td>NAVIGATION LIGHTING</td>
<td>CIRCUIT BREAKERS/FUSES</td>
</tr>
<tr>
<td>PANEL BOARDS/SAFETY SWITCHES</td>
<td>RELAYS/TIMERS</td>
</tr>
<tr>
<td>RACEWAYS/CONDUIT/FITTINGS/BOXES</td>
<td>INSULATORS</td>
</tr>
<tr>
<td>ENCLOSURES</td>
<td>TRANSFER SWITCHES</td>
</tr>
<tr>
<td>CONTACTORS/STARTERS/OVERLOADS</td>
<td>LIGHTNING PROTECTION</td>
</tr>
<tr>
<td>RESISTORS</td>
<td>ELEVATORS</td>
</tr>
<tr>
<td>TRANSFORMERS</td>
<td>BRAKE MOTOR(S)</td>
</tr>
<tr>
<td>LIMIT SWITCHES</td>
<td>GENERATOR</td>
</tr>
<tr>
<td>DRIVE MOTORS</td>
<td>BLOCK HEATERS</td>
</tr>
<tr>
<td>LOCK MOTOR(S)</td>
<td>LOUVER MOTOR(S)</td>
</tr>
<tr>
<td>BATTERIES/BATTERY CHARGER(S)</td>
<td></td>
</tr>
</tbody>
</table>

ATTACH DETAILED EXPLANATION OF WORK NEEDED
MECHANICAL

The following were evaluated for smooth operation, uniform & regular movement, synchronization, interlock, mounting, overheating, vibration, wear, rust, noise, slippage, engagement, applied tension, lubrication, oil levels, oil contamination, dirt accumulation, fluid pressure, leakage, alignment, clearances, chordal thickness, backlash, air pressure, weather tightness, safety, and signs of distress:

3=Operational/Needs Minor Work  2=Operational/Needs Major Work  
1=Non Operational  S=Satisfactory  N=Not Applicable

<table>
<thead>
<tr>
<th>OPEN GEARING</th>
<th>ENCLOSED GEARING</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACHINERY SUPPORTS &amp; FRAME</td>
<td>BEARINGS</td>
</tr>
<tr>
<td>SHAFTS</td>
<td>KEYS, KEY WAYS, SPLINES, SHRINK FITS</td>
</tr>
<tr>
<td>COUPLINGS</td>
<td>FASTENERS/MOUNTINGS</td>
</tr>
<tr>
<td>AUXILIARY DRIVE</td>
<td>BRAKES</td>
</tr>
<tr>
<td>TRUUNION ASSEMBLIES</td>
<td>SPAN LOCKS</td>
</tr>
<tr>
<td>SHEAVE WHEEL ASSEMBLIES</td>
<td>CURVED RACKS</td>
</tr>
<tr>
<td>SPAN GUIDES</td>
<td>BUMPER BLOCKS</td>
</tr>
<tr>
<td>LIVE LOAD SHOES/STRIKE PLATES</td>
<td>BUFFERS</td>
</tr>
<tr>
<td>WIRE ROPES AND SOCKETS</td>
<td>TENSION ADJUSTING DEVICES</td>
</tr>
<tr>
<td>COUNTERWEIGHT/BALANCE CHAINS</td>
<td>SPAN LEVELING DEVICES</td>
</tr>
<tr>
<td>CENTERING DEVICES</td>
<td>WEDGE MACHINERY</td>
</tr>
<tr>
<td>LATCH BAR MACHINERY</td>
<td>RING GEAR</td>
</tr>
<tr>
<td>CENTER BEARING</td>
<td>BALANCE WHEELS AND TRACK</td>
</tr>
<tr>
<td>SPAN BALANCE</td>
<td>ENGINE/GENERATOR</td>
</tr>
</tbody>
</table>

ATTACH EXPLANATION OF WORK NEEDED
Bridge Operator's Certification

Date of Certification: __________

Type of Certification: □ Initial □ Recertification

Title: □ Bridge Operator □ Bridge Operator Trainee

This will confirm that ___________________________ has been cross-trained in the operation of the ___________________________ effective ________________.

He/She received instruction in the following modes of operation.

□ Normal Operation (Electric) □ Diesel Generator (Primary Backup)

□ auxillary Diesel Engine (Direct Drive)

The following standards were attained/unattained during the course of training.

<table>
<thead>
<tr>
<th>ATTAINED</th>
<th>UNATTAINED</th>
<th>STANDARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>1. Has the ability to perform this operation without direct supervision.</td>
</tr>
<tr>
<td>□</td>
<td>□</td>
<td>2. Has demonstrated physical ability and sufficient Eye-Hand coordination necessary to open and seat this structure without causing damage to the bridge.</td>
</tr>
<tr>
<td>□</td>
<td>□</td>
<td>3. Has the ability to follow sequential directions.</td>
</tr>
<tr>
<td>□</td>
<td>□</td>
<td>4. Demonstrates confidence in his/her ability to perform under normal and/or emergency axillary conditions.</td>
</tr>
</tbody>
</table>

INSTRUCTED BY: ___________________________

Chief Bridge Operator

Date: __________

This is to verify that I have personally observed the above-captioned employee perform the operation of this structure on the modes of operation specified.

Accordingly, I hereby certify ___________________________ as a qualified operator on this structure.

__________________________
Area Supervisor, Bridge Operations

Page 6 of 6

Date
WORK ON ITS RIGHT OF WAY

FOR

CONSOLIDATED RAIL CORPORATION

OF

SPECIFIC REQUIREMENTS
a waiver of subrogation in favor of Comrail.

2. Automotive Liability Insurance

A waiver of subrogation in favor of Comrail shall be included in all policies of insurance issued by any one insurer, and for all policies issued by any one insurer, a combination of all such policies shall not be less than $25,000,000 combined single limit for bodily injury and property damage for Comrail. Comrail shall be named as an additional insured under this insurance.

3. Workers' Compensation / Employers' Liability Insurance

Comrail shall be included as an additional insured under this insurance. In the event of bodily injury or property damage to any one occurrence, and for all occurrences, a combination of all such policies shall not be less than $25,000,000 combined single limit for bodily injury and property damage for Comrail.

In addition to any other forms of insurance or bonds required under the laws of any State or Contract of Construction, any construction project must be licensed with the Department of Transportation and the appropriate state agencies. The sponsor of the project shall be ultimately responsible for assuring that all aspects of the project are completed in a timely manner. Any changes or modifications to the project shall be approved by the sponsor prior to any work being performed.

INSURANCE

Representative to proceed with the work, Comrail and the sponsor is executed, and the sponsor receives permission from Comrail's representative to proceed with any construction work. Construction cannot begin until a formal agreement is reached and written into a contract to be executed by Comrail, the sponsor, and the appropriate state agencies. The contract shall be shown clearly on any plans for the project and approved by Comrail. The contract shall be shown clearly on any plans for the project and approved by Comrail. The contract shall be shown clearly on any plans for the project and approved by Comrail.

No entry on Comrail property shall be permitted without the proper authorization by Comrail.

RIGHT OF ENTRY ON COMRAIL PROPERTY

Work on the right of way or other property of Comrail, the following terms and conditions shall apply to any project which requires performance of construction, consulting, or subcontractors, etc., sponsor received information these sections shall mean the sponsor, its employees, its agents, and subcontractors fully comply with the specifications contained herein. The terms and conditions of the project shall be ultimately responsible for assuring that all aspects of the project are completed in a timely manner. Any changes or modifications to the project shall be approved by the sponsor prior to any work being performed.
The Sponsor shall conduct the work in such a manner as to safeguard the operations, facilities, equipment and property of Contractor. If work affecting the above items shall be subject to the supervision of Contractor, approval of Contractor shall be obtained prior to the commencement of such work. Any other changes made or services furnished by Contractor with or without the approval of Contractor as work progresses shall be subject to the supervision of Contractor. Any changes are to be made within thirty (30) days prior to the commencement of such work or within thirty (30) days prior to the commencement of such work, whichever is later. Any changes made after the commencement of such work shall be subject to the supervision of Contractor.

Protection of Railroad Operations

Any changes made or services furnished by Contractor with or without the approval of Contractor as work progresses shall be subject to the supervision of Contractor. Any changes made after the commencement of such work shall be subject to the supervision of Contractor.

Changes in Railroad Facilities

Railroad Corporation, P.O. Box 4146, Philadelphia, PA 19101-1406.

Railroad Corporation, P.O. Box 4146, Philadelphia, PA 19101-1406.

Preferential Treatment, Priority of Notice Should be Given to Insurance Company. Any changes made or services furnished by Contractor with or without the approval of Contractor as work progresses shall be subject to the supervision of Contractor. Any changes made after the commencement of such work shall be subject to the supervision of Contractor.

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The site work is to be commenced. Controll shall assign, at the sole cost and expense of the contractor, in advance of the commencement, the site for the work. When work is assigned, the contractor shall commence work on the site as soon as reasonably possible. The contractor shall furnish all necessary labor, materials, and equipment as required for the performance of the work. The contractor shall be responsible for the coordination of work on the site with other construction projects on the site. The contractor shall be responsible for the coordination of work on the site with other construction projects on the site. The contractor shall be responsible for the coordination of work on the site with other construction projects on the site.

All work and materials shall be performed in accordance with the plans and specifications of the architect and engineer. The architect and engineer shall be responsible for the coordination of work with the rest of the construction project. The architect and engineer shall be responsible for the coordination of work with the rest of the construction project. The architect and engineer shall be responsible for the coordination of work with the rest of the construction project.

In the event of any conflict between the plans and specifications of the architect and engineer, the architect and engineer shall have the final authority. The architect and engineer shall have the final authority. The architect and engineer shall have the final authority.

The architect and engineer shall be responsible for the coordination of work with the rest of the construction project. The architect and engineer shall have the final authority. The architect and engineer shall have the final authority.

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weeks before the crossing is required and addressed to:

crossing required. Application for the crossing shall be made to Comrail at least twelve (12)
signing agreement for each track. The sponsor shall not be required to apply for and execute the
Deed of Agreement for a Permanent Grade Crossing of Comrail's tracks, the sponsor
sponsoring or otherwise for a temporary grade crossing of Comrail's tracks, the sponsor

Under most circumstances, a grade crossing of our track will not be permitted. Should the

TEMPORARY GRADE CROSSING

Comrail certifies that all railroad bills against them, if any, have been paid in full.
shall not be paid by the sponsor to the contractor, sub-contractor, consultant or agent, until
Comrail in accordance with any provision of these special requirements. Final contract agreement
If it is a requirement that the sponsor shall reimburse Comrail in full for work undertaken by

PAYOUT OF RAILROAD SERVICES

shall be supplied at the sole cost and expense of the sponsor.
shall be supplied at the sole cost and expense of the sponsor.

RAILROAD ENGINEERING AND INSPECTION

expenditures, and applicable taxes, shall be charged to the sponsor at actual cost to Comrail plus transportation costs, handling
expenditures, and applicable taxes, shall be charged to the sponsor at actual cost to Comrail plus transportation costs, handling

The sponsor shall be responsible for damage to Comrail facilities or property arising out of the
The sponsor shall be responsible for damage to Comrail facilities or property arising out of the

However, remove the sponsor from liability for payment of damages caused by their operations.

The sponsoring of qualified or inspectors of the taking of other precautionary measures shall not,

The minimum hours per day for railroad employees engaged in railroad service shall be eight (8)

The overtime rate will be charged for all time in excess of eight (8) hours. Preference are

No contractor of Comrail may remain on duty longer than twelve (12) hours in any
No contractor of Comrail may remain on duty longer than twelve (12) hours in any

Twenty-four (24) hour period. No contractor of Comrail may remain on duty longer than twelve (12) hours in any
Twenty-four (24) hour period. No contractor of Comrail may remain on duty longer than twelve (12) hours in any

The railroad hours per day for railroad employees engaged in railroad service shall be eight (8)
The railroad hours per day for railroad employees engaged in railroad service shall be eight (8)

CF-6 REV 2-97
c. Use K (air test earth pressure) for design of all piles and the back excavations.

b. 1.2" (2.7cm) maximum deflection for sheet pile line (0.1" (3.0mm) for sheet pile line from concrete of the nearest track.

The nearest track.

a. 1.2" (1.7cm) maximum deflection for sheet pile line (0.1" (3.1mm) from concrete of the nearest track.

(4) DEFLECTION DESIGN CRITERIA IS AS FOLLOWS:

(1) K2, R2 (see Commercial Drawings)

The horizontal distance due to the live load surcharge at any point on the sheet pile wall is calculated by the formula:

 PB = (2/3)sin (P + cos 2C)

Where:

- PB = Power (1.2)
- P = Peak (2.0)
- C = Coefficient

(2) The vertical distance due to列车 load shall be calculated by the formula:

 PB = 8.3 X 2.0 X 1828 / 0000 1' X 1' X 1' X 1'

(3) The ultimate forces shall be determined by the ultimate vertical and horizontal forces caused by the earth, backfill, and soil.

(4) The ultimate forces are to be included in the design and construction procedures.

SHEETING AND SHORING REQUIREMENTS

(1) Fences for all piles, columns, walls, or other piles shall be located and designed so that permanent and temporary facilities adjacent to Commercial tracks:

(2) Where excavation or construction of the above mentioned facilities is within the theoretical sheet pile line, shall not be closer than ten (10) feet (3.0m) from the centerline of the nearest track.

(3) Fences shall be extended from the centerline of the nearest track to an important area of drilling and shoreline for support of adjacent track and to protect the excavation.

(4) Fences shall be extended to the centerline of the nearest track.

(5) Fences shall be extended to the back excavations for support of adjacent track and to protect the excavation.

PHILADELPHIA, PENNSYLVANIA 19101-1412

CONSOLIDATED RAIL CORPORATION

201 N Market Street - 12B

CE-6 REV 2-97
(72) hours in advance of the work. No changes will be acceptable after that time.

(1) Consult all representatives must be present at the time the entire sheathing and sheathing is received by the area engineer.

(16) (a) If the submission is 10 copies of the submission are to be sent to all representatives. The sponsor is

(15) Where physical conditions of design impose insurmountable restrictions requiring the placing

(14) Of membranes or any modifications

(13) Of the work to be performed will be submitted to the representatives so that they may be properly

(12) The work to be performed will be submitted to the representatives so that they may be properly

(11) Any excision of the area sheathing or color shall be covered and tampered with

(10) The work to be performed will be submitted to the representatives so that they may be properly

(9) The work to be performed will be submitted to the representatives so that they may be properly

(8) The work to be performed will be submitted to the representatives so that they may be properly

(7) The work to be performed will be submitted to the representatives so that they may be properly

(6) The work to be performed will be submitted to the representatives so that they may be properly

(5) The work to be performed will be submitted to the representatives so that they may be properly

(4) The work to be performed will be submitted to the representatives so that they may be properly

(3) The work to be performed will be submitted to the representatives so that they may be properly

(2) The work to be performed will be submitted to the representatives so that they may be properly

(1) The work to be performed will be submitted to the representatives so that they may be properly
Erection, Hoisting and Demolition Requirements

(1) A plan showing the location of cranes, horizontally and vertically, operating within.

(2) An Earthwork Plan showing the location of all trenches and other depressions,

(3) A complete set of elevation drawings, including the location of all cranes, hoisting equipment, and boom positioning is to be shown. The location of all trenches and other depressions is to be shown.

(4) If the sponsor can prove to the Panel that plans do not exist and weights must be calculated from field measurements, the field measurements are to be made under the supervision of the sponsor.

(5) If the procedure involves the cutting of steel or the bolting of joints which would affect other material, then it will be included in the plans.

(6) A location plan showing all opposition points as far as possible, adjacent structures, etc., must be provided to show the proposed lines that are clear of these obstructions.

(7) A diagonal sheet shall be prepared indicating the type, size, and arrangement of shacks, shackles, or other components included in the elevation drawings, with each component being clearly identified.

(8) A complete procedure is to be included, indicating the order of this and any repositioning of components.

(9) Demolition procedure, including the choice of cranes, and any repositioning of equipment or components.

(10) All suspension parts must be shown as well as a schedule for the entire procedure.

(11) A schedule of the various stages must be shown as well as a schedule for the entire procedure.

(12) All suspension parts must be shown as well as a schedule for the entire procedure.

(13) All suspension parts must be shown as well as a schedule for the entire procedure.

(14) All suspension parts must be shown as well as a schedule for the entire procedure.

(15) All suspension parts must be shown as well as a schedule for the entire procedure.
1. Maintaining the existing drainage and providing for future drainage improvements is of

2. Drainage plans must be included with the general plans submitted to the

3. Local topography and determining the location of the structures which might be

4. Plans for bridges must show dimensions of all structures which might be

5. The permanent clearances should be coordinated with the methods of construction so that

6. Bridge structures shall provide sufficient lateral and vertical clearance for navigation and

7. The location of these tracks shall be determined by inquiry to County

8. The profile of the top of rail should be examined to determine if the track is in a safe or

9. Vertical and horizontal clearances must be adjusted so that the sight distance to railroad

10. All proposed temporary clearances which are less than those listed above must be

11. Clearances are subject to the requirements of the State in which the construction

12. Approval of plans must be included with the general plans submitted to the

Clearances

All grades should be located so that they do net interfere with drainage. Where special

Sec. 6.4 (m) for curves. See Central Standard Plan 4874±J,.'&;

These clearances shall be twenty (20) feet (6.1 m) from the lateral right of way. All structures located less than twenty (20) feet

The minimum horizontal clearance measured from the centerline of track to the nearest

The minimum vertical clearance above the top of the

Overgrade Bridge Requirements

CE-6 REV 2-97
Specifications for Wire, Casing and Cable Occupations will govern.

1) In areas where underground utilities may be affected, Consult CE-8, "Specifications for Wire, Casing and Cable Occupations" will govern.

2) In areas where power or communication lines will be affected, Consult CE-4 for "Specifications for Power and Communication" will govern.

REFERENCES

Submittal these plans from ultimate responsibility for a satisfactory plan

4) The approval of drainage and erosion control plans will not relieve the sponsor

3) Existing ditch ditches must be maintained at all times during the construction period. After the construction has been completed all erosion and situation must be removed and the ditch must be restored.

2) The general plans for the bridge should indicate the proposed methods of erosion control

1) Erosion control on a sound property adjacent to the ditch must have a slope of 2:1.

Erosion Control

(6) Additional erosion may require the installation of a pipe or pipes, new ditch or

(5) No supports or other deep drains, roadbeds, drainage ditches, catch basins, inlets or outlets are

(4) Ditches and culverts must be sized to accommodate all increased runoff due to the

(3) Drains and culverts must be sized to accommodate all increased runoff due to the

(2) The bridge foundation must have a slope of 2:1. The abutments should consist of a prepared sub-base and/or fill material.

(1) Where the embankment material and to reduce the erosion of the subgrade material by

Drainage water. The pavement shall consist of a prepared sub-base and/or fill material.

Erosion Control

(6) Additional erosion may require the installation of a pipe or pipes, new ditch or

(5) No supports or other deep drains, roadbeds, drainage ditches, catch basins, inlets or outlets are

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(1) Where the embankment material and to reduce the erosion of the subgrade material by

Drainage water. The pavement shall consist of a prepared sub-base and/or fill material.
1. Steel sheet piling for track support is not required for temporary sheet piling adjacent to track.

2. Steel sheet piling, driven prior to excavation, is required when excavation is within the theoretical embankment line. Sheet piling shall be used in this area.

3. All sheet piling is to be designed for an E-80 loading.

Lateral pressure caused by the railroad loading.

The Boussinesq analysis is to be used to determine the theoretical embankment line.

For excavation outside the theoretical railroad embankment line, shaking in accordance with OSHA requirements is not required.
LATERAL PRESSURE DUE TO STRIP LOAD

\[ P = \text{ANGLE IN RADIANS} \]

\[ \theta = \text{ANGLE IN DEGREES} \]

\[ q = \text{STRIP LOAD SURCHARGE} \]

\[ p_n = \text{PRESSURE AT ANY GIVEN POINT} \]

\[ p_n = \left( \frac{2q}{m} \right) \left( \theta - \sin \theta \cos 2\theta \right) \]

Diagram showing the lateral pressure diagram with annotations and calculations.
BALLAST SECTIONS
AND ROADBED
TYPICAL

V DIRECTION

Extension

4 TRACKS
Rain water runoff must not be deposited onto the railroad right of way. Deck drains and scuppers are prohibited between the track ditches. Lowest points on bridge with loads arranged to create maximum deflection.

Minimum vertical clearances above top of high rail must agree with Conrail standard plan 7005-11, a separate agreement, or state statutes.

- 10'-0" minimum (20'-0" on outside of curves)
- 10'-0" clear roadway

Piers and approach spans

Rain water runoff must not be deposited onto the railroad right of way. Deck drains and scuppers are prohibited between the track ditches. Lowest points on bridge with loads arranged to create maximum deflection.

Minimum vertical clearances above top of high rail must agree with Conrail standard plan 7005-11, a separate agreement, or state statutes.

- 20'-0" on tangents (20'-0" on outside of curves)
- 10'-0" clear roadway

Abutments

Drainage pipe - 24" minimum diameter

Filter fabric

18" x 18"
AND 6" T
WITH FIL