

SUPPLEMENTAL SPECIFICATIONS

FOR

**REMOVAL OF COUNTY BRIDGE NO. 214 (1100-060)
BEAR TAVERN ROAD (C.R. 579)
OVER JACOBS CREEK**

**HOPEWELL TOWNSHIP
MERCER COUNTY, NEW JERSEY**

CONTRACT No. _____

September 2011

PREPARED FOR

**COUNTY OF MERCER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE
McDADE ADMINISTRATION BUILDING
P.O. BOX 8068
640 SOUTH BROAD STREET
TRENTON, NEW JERSEY 08650-0068**

SPECIFICATIONS

**2007 NJDOT Standard Specifications for Road and Bridge Construction shall govern for
all relevant work for this project.**

DIVISION 100 – GENERAL PROVISIONS

SECTION 101 – GENERAL INFORMATION

101.01 INTRODUCTION.

THE FOLLOWING IS ADDED:

Whenever any section, subsection, subpart or subheading is amended by such terms as changed to, deleted or added, it is construed to mean that it amends that section, subsection, subpart or subheading of the 2007 standard specifications.

101.03 TERMS.

COMMISSIONER. The intent and meaning is changed to: The Board of Chosen Freeholders, County of Mercer.

DEPARTMENT. The intent and meaning is changed to: County of Mercer.

ENGINEER. The intent and meaning is changed to: The Mercer County Engineer or his duly authorized representative.

SPECIFICATIONS. Special Provisions shall be synonymous with supplementary specifications.

STATE. The intent and meaning is changed to: County of Mercer

101.04 INQUIRIES REGARDING THE PROJECT

THE FOLLOWING IS ADDED:

Inquiries regarding the various types of work in this contract should be directed to the following representatives of the County of Mercer:

(A) Before the Award of the Contract

Mr. Basit (Sunny) Muzaffar,
Principal Engineer
Telephone (608) 306-9939
Email: bmuzaffar@mercercounty.org

SECTION 104 - SCOPE OF WORK

104.01 INTENT

THE FOLLOWING IS ADDED:

The Bear Tavern Road Bridge over Jacobs Creek has sustained significant substructure damage from Hurricane Irene prompting emergency action by the County of Mercer. Based on an inspection of the bridge, it was determined that the Bridge's substructure was compromised and in an imminent state of collapse. The findings of the inspection identified numerous Priority E deficiencies and a recommendation was made to the County for removal / dismantling of the bridge for two primary reasons; first to protect public safety and secondly, to salvage the bridge which has been deemed historically significant by the New Jersey Historic Preservation Office (SHPO). The bridge has been determined eligible for listing on both State and National Register of Historic Places. It has also been deemed a contributing element to a potential Historic District currently under consideration by the State Historic Preservation Office.

Bridge #214.2 is a historic 70-foot simply supported single span thru Pratt Truss with a timber deck and curb to curb width of approximately 16-feet. These types of structures are considered fracture critical. This structure was fabricated in 1882 by the King Iron Bridge and Manufacturing Company in Cleveland, Ohio. The structure contains a bottom chord comprised of eye bars and pins, a timber deck and is supported on full height stone masonry abutments. The structure has been rehabilitated numerous times during its life including the installation of new plates in corroded areas. The bridge was last rehabilitated in the early 2,000 which included replacement of the longitudinal steel stringers supported on top of the existing transverse floorbeams, and the timber deck. According to the 2007, 12th cycle bridge survey report, the overall condition of Bridge #214.2 is critical due to the low inventory load ratings. The timber deck is considered to be in fair condition due to missing/decayed timber planks and loose or missing anchors. The superstructure is in serious condition due to areas of severe corrosion and section losses. The truss also has several sheared or missing rivets. The structure contains one bowed floor beam and a floor beam with a missing bracket. There is a broken and missing knee brace and several cracked lateral bracing connection brackets. Based on the most recent inspection the structure is classified as structurally deficient due to low inventory ratings and the condition of the superstructure. The bridge has an extremely low structural sufficiency rating of 6.5 out of 100. Recent Bridge inspection reports are available upon request. The bridge has been closed to motor vehicle traffic since 2009.

The County has future plans to rehabilitate the truss for serviceable use; therefore it is the goal of this project to salvage historic elements of the truss including the truss and floor beam system for later use on a different site. The existing trusses are anticipated to remain as load carrying members in its rehabilitated state at a different location; however, due to the extremely poor condition of the superstructure girder, deck system and substructure, complete replacement of these elements for a replacement structure at the existing location will be required in a separate contract. Final restoration and rehabilitation measures will need review and approval by the SHPO to confirm that the proposed design adheres to *Secretary of the Interior Standards*. Simply stated, these standards require that the rehabilitation methods do not detract from the original intent and functionality of the structure and that these improvements and alterations must be discernable from the original historic elements, **therefore it is the goal of this project to preserve, avoid and minimize, to the greatest extent possible, damages to the historic Bridge elements for future reuse.**

The work to be performed under this contract shall include the removal and salvaging of County Bridge No. 214.2 Bear Tavern Road (CR 579) over the Jacobs Creek, Hopewell Township, Mercer County, New Jersey; and shall include, but is not limited to, the following major items of work:

- Preparation of Removal and Dismantling Plan of the Historic Truss for Review and Approval by the County and regulatory agencies;
- Dismantling of Historic Bridge, not including stone masonry abutments and wingwalls which will remain in place, except where loose masonry stones are present;
- Removal and stockpiling of loose masonry stones on bridge substructure at a location adjacent to the bridge site;
- Transporting and placement of the dismantled salvaged members of the superstructure of bridge to the Mercer County Maintenance Garage located at 300 Scotch Road in Ewing Township.

SECTION 105 - CONTROL OF WORK

105.05 WORKING DRAWINGS

The following is added to TABLE 105.05.1:

Demolition Analysis and Procedures
Temporary Support System

105.07 COOPERATION WITH UTILITIES.

THE FOLLOWING IS ADDED:

The corporations, companies, agencies, or municipalities owning or controlling the utilities within the project site, and the name, title, address and telephone number of their local representative will be provided upon request by the Contractor. Utility relocations are not anticipated for this project which shall be confirmed by the Contractor based on his proposed means and methods for dismantling.

WHEREVER UNDERGROUND UTILITIES ARE ENCOUNTERED, THE CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS TO PREVENT BREAKAGE AND INTERRUPTION OF SERVICE. CONSULT WITH THE UTILITY COMPANY PRIOR TO PROCEEDING WITH WORK.

THE CONTRACTOR SHALL COORDINATE, PLAN AND STAGE HIS WORK AND MAKE APPROPRIATE ALLOWANCES IN HIS BID SUCH THAT THERE ARE NO ADDITIONAL COSTS TO THE COUNTY CLAIMED AS A RESULT OF ANY INVOLVEMENT WITH THE EXISTING OVERHEAD UTILITY LINES AND THE PERMANENT RELOCATION WORK.

105.08 ENVIRONMENTAL PERMITS

THE FOLLOWING IS ADDED:

The Jacobs Creek Bridge has been determined to be eligible for listing on both State and National Register of Historic Places and therefore is considered a highly sensitive resource. The Contractor shall take the utmost care and precautions as to not damage elements of the bridge during the dismantling process. The New Jersey State Historic Preservation Office (NJSHPO) maybe present on site during the dismantling process. The Contractor's Field Supervisor shall be available to respond to questions from the NJSHPO during the dismantling process and, if necessary, temporarily cease work if questions arise that warrant clarification.

NJDEP Freshwater Wetlands and Flood Hazard permits are not anticipated at the commencement of this project. Based on the Contractor's proposed dismantling method, a determination will be made if environmental permits are required from NJDEP by the County. Environmental permits, if required will be secured by the County at a future date in accordance with N.J.A.C. 7:7A-8.1 Emergency permits.

Implement the necessary soil erosion and sediment control measures for his work including work within the Creek and its associated floodplain to prevent turbidity. Prior to the execution of work, submit in writing to the County for approval their proposed means to control sediment and erosion on the site based on the proposed work following the provisions of Section 158.

Comply with all OSHA Regulations.

SECTION 108 - PROSECUTION AND COMPLETION

108.02 COMMENCEMENT OF WORK

THE FOLLOWING IS ADDED:

Do not begin construction operations until the Contractor has supplied, and the Engineer has accepted, the preliminary schedule and other certifications, forms, schedules, and any other information required by the Contract Documents.

Comply with all local / municipal noise ordinances.

108.05.02 SAFETY PROGRAM

THE FOLLOWING IS ADDED:

The existing historic truss painting system likely contains lead. The Contractor shall take the necessary precautions for worker safety in the execution of his work. The Contractor shall also take the necessary measure to avoid or minimize impacts to the surrounding environment.

108.06 NIGHT OPERATIONS

THIS SECTION IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING:

Night-time work hours are prohibited.

108.07 TRAFFIC CONTROL

THE FOLLOWING IS ADDED:

Provide to the County in writing his proposed traffic control and maintenance and protection of traffic plan for review and approval by the County. Coordinate and receive approval from the municipal Traffic Safety Officer regarding roadway / lane closures.

Properly secure the construction site during non-working hours including the placement of fixed barriers and placement of barricaded and drums to the satisfaction of the County.

Upon completion of the project, in consultation with the County, provide a means to restrict vehicular access to the bridge site area from the adjoining approach roadways, which will include, but not be limited to the placement of concrete median barriers, barricades and drums. Traffic Control devices will be provided by the County.

108.10 CONTRACT TIME

The entire work of the project shall be completed in 30 calendar days from one (1) day after the award of Contract.

SECTION 109 – MEASUREMENT AND PAYMENT

Basis of Payment for all project items of work shall be one lump sum cost.

DIVISION 200 – EARTHWORK

SECTION 201 – CLEARING SITE

201.01 DESCRIPTION

THE FOLLOWING IS ADDED:

This section includes the removal of an historic bridge, including the superstructure and portions of the substructure, and the salvage of the existing trusses and existing substructure stone masonry.

201.03 CONSTRUCTION

201.03.02 Clearing Site, Bridge and Clearing Site, Structure

THE FOLLOWING IS ADDED:

Include the following for demolition of the existing bridge carrying County Route 579 over Jacobs Creek:

1. Conduct a survey upon award of contract prior to any demolition work to document and verify all of the details of the existing structure. Develop a general plan and elevation view of the existing bridge, truss elevations and necessary details to completely reconstruct the existing bridge. Tag each member and correlate to the plans developed. Take photographs of all components and their connections and correlate the photographs to a photo log and show the location of the photo on a plan and elevation of the bridge.
2. Remove and dispose of existing timber deck and longitudinal steel stringers in a manner that is consistent with any applicable laws and regulations and the Specifications,
3. Remove and salvage the existing steel truss members, floorbeams, hanger connections for the floorbeams, all connections, bearings and any portals, bracing or lateral support members. Transport all salvaged materials to the County Maintenance Garage located at 300 Scotch Road, Ewing Township, New Jersey at a location determined by the County. Salvage existing pins at truss connections to the extent possible, but it is recognized that pins may be damaged in the removal operation.
4. Remove and dispose of existing bridge guard railing assemblies in a manner that is consistent with any applicable laws and regulations and the Specifications.
5. Remove and salvage all loose substructure masonry stones that may be deemed a safety hazard to a location specified by the County in the vicinity of the bridge once the superstructure has been removed and relocated. Final on-site stockpile location will be identified by the County.
6. Design, construct, maintain during construction, and remove upon completion of all work a temporary support structure system to permit the existing bridge to be safely removed and the members specified to be salvaged to be removed intact without damage to the integrity of the members. Analyze all existing members to verify that the truss and floor system will remain stable and not exceed allowable stress limits for the method of temporary support and the sequence of removal proposed by the Contractor.
7. Dispose of all material and all else necessary therefore and incidental thereto to complete the work associated with the removal and relocation of the truss bridge in accordance with the Specifications in a manner that is consistent with any applicable laws and regulations.
8. Submit working drawings as described below.

Remove all debris, resulting from the removal of the bridge that may fall onto the bed of the brook, to the satisfaction of the Engineer. If, in the opinion of the Engineer, the debris accumulating during the demolition is seriously impeding the natural flow of water through the bridge, immediately begin the removal of the debris. Continue removal until the natural flow of the brook has been restored, to the satisfaction of the Engineer. Dispose of all materials to be removed off the site of the work in a manner that is consistent with any applicable laws and regulations, to the satisfaction of the Engineer.

Salvage all loose masonry stones from the portions of abutment seats, breastwalls and wingwalls and relocate and store them adjacent to the structure on the approach at a location approved by the Engineer for reuse in the future. Leave in place existing masonry stones that are securely embedded in the existing embankment if deemed safe by the Engineer. Conduct a survey with the Engineer to determine masonry stones that need to be removed and relocated to a specified adjacent location adjacent to the bridge site. The Engineer shall be the sole judge as to which masonry stones are to remain.

A. Structural Considerations. Develop a demolition plan that utilizes one of two concepts:

1. Provide adequate temporary supports from either above the deck (hanging the existing floorbeams from the longitudinal temporary supports seated behind the existing abutments) or below the existing superstructure (with temporary supports in the river bed). For supports in the river bed, obtain all necessary environmental approvals, and take full responsibility for the integrity of the supports in the event of potential storm damage. No claims will be considered or allowed for any damage to the Contractor's method of temporary support due to any reason whatsoever, including storm damage, flooding or any other event.
2. Lift the superstructure off of the existing supports and transport it to an adjacent site approved by the Engineer. Adequately analyze the existing structure for the support conditions and loading during transport, and provide any necessary temporary supports or existing member supplements as necessary. Once relocated, catalogue and disassemble the existing structure as described above for transport to a storage facility selected by the County.

Analyze the existing structure for the support conditions and loadings developed for the chosen demolition plan. Include evaluation of any section loss of existing members. Review the latest inspection report and analysis of the existing bridge available from the County, and perform an inspection to supplement section loss information to reflect current conditions. Submit analysis prior to beginning work.

Prior to the commencement of work on the historic truss bridge, submit a proposed dismantling plan for review and approval by the County. Include a structural stability analysis for the proposed dismantling procedure and any falsework for temporary support of the bridge during the removal process. The plan and analysis shall be signed and sealed by a Professional Engineer licensed in New Jersey.

For alternatives using temporary supports above and/or below the deck, submit calculations showing the adequacy of the proposed temporary foundation/shoring system upon which the temporary structures will bear, with consideration given to the geotechnical conditions extant.

The design characteristics and structural behavior of this single span iron and steel pin connected Pratt thru truss structure is unique from other types of trusses. This superstructure was fabricated and erected by the King Iron Bridge and Manufacturing Company of Cleveland, Ohio in 1882. Special consideration shall be taken into the dismantling of this structure to avoid any action that may result in a configuration which can easily become unstable on the main or secondary members. The design of the temporary shoring and bracing system shall take into account all necessary provisions needed to safely dismantle this truss bridge.

B. Working Drawings.

Provide the following deliverables prior to any dismantling of the Structure.

1. Detailed method for removal of the bridge and measures to protect the historic integrity of the structure and minimize harm to the bridge components during the demolition process, specifically the truss, bracing members, portals and the floorbeams (the girders and timber decks are not original members and can be disposed of). Submit removal methods and procedures for review by regulatory agencies (including the State Historic Preservation Office), the Engineer and the County for review and approval. Consider work access and safety in the Contractor's methods.
2. Perform a detailed inspection of the bridge prior to work and consider structural defects of the truss that may affect the stability of the structure during the removal process. Submit results of the inspection as well as complete plans and details of existing conditions. Make a lead base paint assessment prior to any removal of members and comply with all requirements of the Standard Specifications for the methods used. Submit a safety and containment plan dealing with the possibility of lead paint on the structure.
3. Perform a survey of the pin elevations of all panel points of the existing structure prior to any work on the bridge in order to confirm the existing truss cambers. Submit a record of the information to the Engineer for use in future re-assembly.
4. Submit detailed working drawings and design calculations of the falsework to support the structure during the dismantling of the superstructure. The falsework must be designed to safely carry the loads transferred from the trusses and be in place to support the trusses completely prior to beginning the operations. Supplemental supports must be provided throughout disassembly operations when the trusses are unstable. Submit a step-by-step removal sequence, and consider the effects of the removal sequence on the structure for both stability and stress levels.
5. Utilize permanent die mark and dog tags to catalogue all steel members that are to be relocated as to their exact location as described above.
6. Submit a plan for transporting salvaged elements of the bridge to the nearby facility the County has selected. Keep in mind there is a load posted bridge on Jacobs Creek Road to the east of the site. Include in this transport plan impacts to traffic during the demolition

process (i.e. roadway and lane closures). Provide traffic control requirements to the County for approval.

7. Provide a Utility Plan to consider utility conflicts that may arise during the demolition process. Assume responsibility for all utility coordination during the removal process.
8. Provide a work schedule and anticipated completion of work date.

C. Product Delivery, Storage and Handling.

Delivery, storage, and handling shall be in accordance with AASHTO Standard Specifications for Highway Bridges, Division II, Section 16 and the following:

1. Deliver and store all materials above grade on wood blocking; members shall be well supported and be level to avoid warping. When stacking, stickers shall be placed between members so that air circulates around all four (4) sides of each member.
2. Protect all materials from damage due to excessive handling, traffic and the like.
3. Use non-marring slings when handling.
4. Provide protection from the weather in the storage location selected by the County including adequately secured tarps.

201.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED TO THIS SUBSECTION:

No separate payment shall be made for any work involved in the demolition or salvaging of the existing bridge; all costs therefore shall be included in the Lump Sum price bid.

All costs for temporary structural supports, jacking, bracing and restraints, or any other item required to demolish and salvage the existing bridge as described on the plans and specifications required for performing the various items of work shall be included in the lump sum price bid.

The cost of the dismantling plan and analysis shall be included in the lump sum price bid.

All costs of field verification, inspection, and all work required to free existing expansion bearings from the locked condition shall be included in the lump sum price bid.

The cost associated with surveying the existing pin elevations in place shall be included in the lump sum price bid.

All costs associated with the removal and relocation of the truss members shall be included in the lump sum price bid.

SUPPLEMENTAL SPECIFICATIONS

FOR

**CLEANING AND PAINTING OF COUNTY BRIDGE NO.
214 (1100-060)
BEAR TAVERN ROAD (C.R. 579)
OVER JACOBS CREEK**

**HOPEWELL TOWNSHIP
MERCER COUNTY, NEW JERSEY**

CONTRACT No. _____

September 2011

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**COUNTY OF MERCER
DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE
McDADE ADMINISTRATION BUILDING
P.O. BOX 8068
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ENGINEER. The intent and meaning is changed to: The Mercer County Engineer or his duly authorized representative.

SPECIFICATIONS. Special Provisions shall be synonymous with supplementary specifications.

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101.04 INQUIRIES REGARDING THE PROJECT

THE FOLLOWING IS ADDED:

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(A) Before the Award of the Contract

Mr. Basit (Sunny) Muzaffar,
Principal Engineer
Telephone (608) 306-9939
Email: bmuzaffar@mercercounty.org

SECTION 104 - SCOPE OF WORK

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The County has future plans to rehabilitate the truss for serviceable use; therefore it is the goal of this project to salvage historic elements of the truss including the truss and floor beam system for later use on a different site. The existing trusses are anticipated to remain as load carrying members in its rehabilitated state at a different location; however, due to the extremely poor condition of the superstructure girder, deck system and substructure, complete replacement of these elements for a replacement structure at the existing location will be required in a separate contract. Final restoration and rehabilitation measures will need review and approval by the SHPO to confirm that the proposed design adheres to *Secretary of the Interior Standards*. Simply stated, these standards require that the rehabilitation methods do not detract from the original intent and functionality of the structure and that these improvements and alterations must be discernable from the original historic elements, **therefore it is the goal of this project to preserve, avoid and minimize, to the greatest extent possible, damages to the historic Bridge elements for future reuse.**

The work to be performed under this contract will include cleaning and prime coat painting of County Bridge No. 214.2 Bear Tavern Road (CR 579) over the Jacobs Creek, Hopewell Township, Mercer County, New Jersey; and will also include transporting and placement of the dismantled salvaged members of the superstructure of bridge to the Mercer County Maintenance Garage located at 300 Scotch Road in Ewing Township.

DIVISION 500 – BRIDGES AND STRUCTURES

SECTION 554 – PAINTING EXISTING BRIDGES

554.01 DESCRIPTION

THE FOLLOWING IS ADDED:

This section describes the requirement for cleaning and painting metal surfaces on existing bridges using the primer coat only for the organic zinc paint system, shipping, and coupon testing of existing members.

Coupon Testing will include extraction of two (2) coupon samples at location and size to be directed by the Engineer. This work will also include Mechanical testing and chemical analysis per coupon will include tensile properties, yield elongation, chemical analysis, CE, and weldability.

554.02.01 MATERIALS

THE SECOND PARAGRAPH IS DELETED AND REPLACED WITH THE FOLLOWING:

Use the primer coat only for the organic zinc paint system.

554.04 MEASUREMENT AND PAYMENT

THE FOLLOWING IS ADDED:

No separate payment will be made for POLLUTION CONTROL SYSTEM. All cost will be included in pay item NEAR-WHITE BLAST CLEANING AND PAINTING.

No separate payment will be made for shipping bridge components to and from the storage yard. All cost will be included in pay item NEAR-WHITE BLAST CLEANING AND PAINTING.

No separate payment will be made for coupon testing. All cost will be included in pay item NEAR-WHITE BLAST CLEANING AND PAINTING.