STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
16 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0016

Paul R. LePage
GOVERNOR

David Bernhardt
COMMISSIONER

April 12, 2011
Subject: **Jefferson**
Federal Project No: BR-1708(200)X
State PIN: 017082.00
Amendment No. 2

Dear Sir/Ms:

Make the following changes to the Bid Documents:

In the Bid Book (page 1) NOTICE TO CONTRACTORS, fifth paragraph, **CHANGE** the sentence that begins; "Questions received after 12:00 noon on Monday ..." to read "**Questions received after 12:00 noon on the Thursday prior to bid date will not be answered.**" Make this change in pen and ink.

In the Bid Book (pages 131 to 136), **REMOVE** the "SPECIAL PROVION, SECTION 53,1 BRIDGE STRUCTURE DETAIL BUILD, (Lump Sum)", 7 pages dated April 8, 2011 (Replaced in Amendment #1) and **REPLACE** with the attached new "SPECIAL PROVION, SECTION 531, BRIDGE STRUCTURE DETAIL BUILD, (Lump Sum)", 7 pages dated April 12, 2011.

The following question has been received:

Question: Would a completely cast in place structure such as a rigid frame be an acceptable alternative?

Response: Yes, a cast in place concrete rigid frame is an acceptable option. Please refer the attached revised "SPECIAL PROVISION, SECTION 531, BRIDGE STRUCTURE DETAIL BUILD, (Lump Sum)".

Consider this change and information prior to submitting your bid on April 20, 2011.

Sincerely,

Scott Bickford
Contracts & Specifications Engineer

SPECIAL PROVISION
SECTION 531
BRIDGE STRUCTURE DETAIL BUILD
(Lump Sum)

DESCRIPTION

This work shall consist of the design, detailing, fabrication, delivery, and construction of a single span Bridge Structure in accordance with these Specifications, and in close conformity with the lines, grades, and dimensions shown on the Plans. This work shall include the following:

- Design, load rating, and detailing of the new bridge superstructure
- Design and detailing of the new bridge substructures and retaining walls
- Removal of the existing bridge in its entirety to bedrock
- Structural earth and rock excavation for major and minor structures
- Granular and gravel borrow
- Cast-in-place structural concrete including quality control program
- Concrete fill
- Reinforcing steel
- Structural steel
- Rock Anchors
- Shear connectors
- Bridge rail
- Membrane waterproofing
- Composite Arch Bridge System
- Hybrid-Composite Beams
- French drains
- Curing box for concrete cylinders
- Protective coating for concrete surfaces
- Bearings
- Permanent concrete transition barriers
- Buried precast structural concrete
- Precast, prestressed concrete superstructure elements
- Bridge mounted guardrail
- Bridge guardrail transitions
- Riprap
- Non-woven geotextile
- Prefabricated Bin Type Retaining Wall

*Some of the items listed above may not be applicable, depending on the structure option chosen.

DETAIL BUILD OPTIONS

All options shall have a foundation consisting of cast-in-place footings on sound bedrock. This requirement includes foundations for wingwalls.

1. Precast structural concrete arch or three-sided frame with wingwalls
2. Composite Arch Bridge System with headwalls and wingwalls
3. Cast-in-place structural concrete arch or three-sided frame with wingwalls
4. Precast, prestressed concrete superstructure on concrete abutments with wingwalls
5. Galvanized or weathering steel girders with concrete deck on concrete abutments with wingwalls
6. Prefabricated galvanized steel truss with concrete deck on concrete abutments with wingwalls
7. Prefabricated galvanized steel truss or galvanized steel girders with corrugated metal deck & bituminous fill superstructure on concrete abutments with wingwalls
8. Hybrid-Composite Beams with concrete deck on concrete abutments with wingwalls

DESIGN REQUIREMENTS

The bridge structure, including superstructure and substructure elements, shall be designed by a Professional Engineer (Engineer of Record) licensed in the State of Maine. The design shall be in accordance with the latest editions of the AASHTO LRFD Bridge Design Specifications, the MaineDOT Bridge Design Guide, MaineDOT Standard Details, MaineDOT Standard Specifications and Project specific Special Provisions.

The geotechnical design shall follow the recommendations of the *Geotechnical Design Report for the Replacement of Davis #2 Bridge Over Davis Stream, Jefferson, Maine* (Soils Report No. 2011-02) as appropriate for the Bridge Structure option chosen above, and be in accordance with the AASHTO LRFD Bridge Design Specifications and the MaineDOT Bridge Design Guide.

The bridge design, in its entirety, shall be independently checked by a Professional Engineer (different than the Engineer of Record) licensed in the State of Maine.

All design options shall be load rated in accordance with the AASHTO manual for bridge Evaluation, latest edition by the LRFR method. Gusset plates for steel trusses shall be load rated per the latest FHWA guidance. Each design option shall be rated based on the HL-93 live load

and the HL-93 modified live load. The live load rating computations shall include a completed MaineDOT Summary of Rating Form based on the rating factors for the HL-93 live load only. The MaineDOT Summary of Rating Form may be accessed at the following MaineDOT web address: http://www.maine.gov.mdot/comprehensive-list-projects/projects-information.php

The bridge shall be designed for a modified HL-93 live load. The modification to the HL-93 loading shall be an increase in the truck live load by 25% for the Strength I load combination only; all other load combinations shall use the standard HL-93 live load.

The clear span of the bridge structure shall be centered over the stream and be a minimum of 30 feet with a maximum skew of 20˚. The bridge travel way width shall consist of one 14 foot lane clear. There shall be a normal crown on the bridge with two percent cross slopes. The vertical alignment and finished grades shown in the Plans shall not be modified. The elevation of the bottom of the structure over the water (bottom of girders, truss, precast, or composite elements) at the center of the bridge shall be equal to or higher than 150.4 feet (NAVD88). The total open area under the bridge from streambed shall be greater than or equal to 280 square feet.

If a bridge structure with a span longer than the specified minimum is proposed, in all cases, construction of the bridge shall stay within the temporary construction limits and the finished bridge structure shall be within the proposed right-of-way limits. These limits are shown on the right-of-way plan.

The top of footings shall be at or above the Q1.1 elevation. The Contractor may use concrete fill directly on bedrock in order to create a level surface under the required footings. If this option is used, the concrete fill surface shall be intentionally roughened.

If wingwalls are used in the bridge design proposed by the Contractor, they shall be founded on cast-in-place concrete footings on sound bedrock as described in the project documents. The wingwalls shall be constructed of cast-in-place concrete, or shall consist of any concrete proprietary wall system on MaineDOT's pre-approved list.

Requirements specific to bridge structure options 1 – 3:

The typical approach section shown in the Plans shall carry over the bridge structure with the exception that the sideslopes shall have a 12 inch layer of Stone Ditch Protection in place of Loam, Mulch, and Seed. The berm offset from face of rail shall be two feet, thereby matching the typical approach section.

Each option shall have a headwall on each end of the buried structure (upstream and downstream) to retain the road embankment.

Requirements specific to bridge structure options 4 - 8:

The bridge rail and its attachment to the deck overhang shall satisfy crash testing requirements to confirm that they meet the structural and geometric requirements of TL-2 (AASHTO LRFD or NCHRP Report 350). In addition, if the bridge rail selected consists of steel parts, those parts shall be galvanized in accordance with Supplemental Specification Section 506. Bridge transitions shall be either MaineDOT bridge transitions or any other transitions satisfying the requirements of TL-2.

Precast concrete superstructures shall have a 3 inch bituminous wearing surface with a high performance waterproofing membrane from the approved products list.

Cast-in-place concrete bridge decks may use a 1 inch integral concrete wearing surface in lieu of a bituminous wearing surface and waterproofing membrane. The extra inch of concrete on the deck shall be included in the design as dead load, but shall not be included as part of the slab cross-sectional properties. If used, the concrete wearing surface shall be treated with protective coating for concrete surfaces and have a tined or grooved finish.

If used, superstructure steel end diaphragm plates supporting and/or in contact with soil shall be a minimum of ½" in thickness and galvanized in accordance with Supplemental Specification Section 506.

The concrete abutment on the cast in place concrete footing shall be either full height cast in place concrete or Prefabricated Concrete Modular Gravity Wall with a cast in place concrete stub abutment located behind the Prefabricated Concrete Modular Gravity Wall.

MATERIALS

Material requirements are covered in the MaineDOT Standard Specifications, Project specific Special Provisions, and Bridge Design Guide and apply to all work included within this Special Provision with additional Project specific requirements listed below:

Buy America **IS** applicable to this project.

Structural Steel

- Steel corrugated decking shall have a minimum thickness of 5 gauge and shall be galvanized in accordance with ASTM A653
- Anchor rods and nuts shall conform to the requirements of ASTM F1554 and shall be hot-dip galvanized
- Fasteners shall be galvanized in accordance with ASTM A153

Structural Concrete

- Precast concrete shall be class P
  Note: The maximum permeability for precast shall be 3000 coulombs
- Wearing surface concrete shall be Class A
- Curb and transition barrier concrete shall be Class LP
- All other concrete shall be Class A unless otherwise noted
- All steel hardware shall be galvanized per ASTM A153

Backfill material shall meet the requirements of Standard Specification 703.19, Granular Borrow, Material for Underwater Backfill, unless otherwise noted.

SUBMITTALS

The Contractor shall submit to the Department a formal design package submittal at the 50% design development stage containing plans that show the type of bridge structure to be constructed and an overall layout of the bridge including a plan, profile, and typical section drawing. The Department shall have up to five business days to return comments on the 50% submittal. All comments by the Department shall be addressed by the Contractor with written verification of resolution from the Department prior to the final submittal.

The final submittal shall be submitted by the Contractor to the Department electronically and shall include the final Design Drawings, Design Computations, Load Rating Computations, including MaineDOT Load Rating form, and Design Check Computations for the bridge. The Department shall have up to five business days to return comments on the final submittal. **All comments by the Department on the final submittal shall be addressed by the Contractor and verified by written approval from the Department prior to fabrication.** The Design Computations and Load Rating Computations shall be signed and sealed by the Engineer of Record and the Engineer reponsible for the design check. The Design Drawings shall be signed and sealed by the Engineer of Record.

Upon completion of construction, the Contractor shall submit an electronic submission of as-built drawings signed and sealed by the Engineer of Record with any field changes or alterations noted. If any field changes or alterations do occur and will affect the bridge structure load capacity, the load rating shall be updated.

CONSTRUCTION REQUIREMENTS

All included work shall meet the applicable sections of the Standard Specifications, Project specific Special Provisions, and Standard Details as well as the following:

Protective Coating for Concrete Surfaces shall be applied to the following areas (where applicable dependent on the structure type chosen):

- All exposed surfaces of concrete curbs
- Fascias down to the drip notch
- All exposed surfaces of Concrete Transition Barriers
- Concrete wearing surfaces
- Concrete barrier railing
- Top of abutment backwalls and to one foot below the top of backwalls on the back side
- All exposed surfaces of concrete headwalls
- All exposed surfaces of buried precast end sections
- All exposed surfaces of buried cast-in-place end sections

METHOD OF MEASUREMENT

The accepted Bridge Structure will be measured by lump sum for the complete removal of the existing bridge and the design, detailing, fabrication, delivery, and construction of the new Bridge Structure.

If bridge structure options 1, 2, or 3 is chosen, the following items needed as part of the roadway section, only over the top of the bridge structure, shall be included:

- Aggregate Subbase Course - Gravel
- Hot Mix Asphalt
- Guardrail
- Stone Ditch Protection

BASIS OF PAYMENT

The accepted Bridge Structure will be paid for at the contract lump sum price for the pay item listed below. Such payment shall be full compensation for the removal of the existing bridge, design, detailing, fabrication, delivery, and construction of one of the options listed under **Detail Build Options**, and all of the applicable items listed under **Description** required for that option. The individual items shall be governed by their respective Specifications and Special Provisions. See also **Method of Measurement** for items included in bridge structure options 1 through 3.

The Lump Sum will be payable in installments as follows:

Upon removal of the existing bridge	10%	
Upon acceptance of the design plans, computations, and load rating		10%
Completion of footings and abutments	20%	
Erection of superstructure or buried structure		40%

Completion of deck or roadway section over buried structure	10%
Upon acceptance of Bridge Structure	5%
Upon acceptance of As-Built plans	5%

Payment will be made under:

Pay Item		Pay Unit
531.51	Bridge Structure – Detail Build	Lump Sum