1. prefabricated superstructure option (Revised 5-22-13)

Description. The contractor may elect to use a prefabricated superstructure as an alternate to the superstructure shown. The superstructure may utilize prestressed concrete beams or steel beams.

Materials.

Bridge Deck. Use Class SD Concrete for the bridge deck.

Deck Reinforcing Steel. Use the same type and grade of reinforcing steel as is shown in the plans.

Grout. Use a commercially available Structural Non-Shrink Grout or UHPC grout suitable for connections between prefabricated elements.

Steel. Use AASHTO M 270 Grade 50W steel for primary steel members.

Construction Requirements.

Ensure that all design work is done under the supervision of a professional engineer licensed in Montana.

Design the superstructure to meet AASHTO LRFD specifications and in accordance with the Montana Structures Manual.

Use the bridge rail system shown in the plans.

Maintain the same number and types of deck joints.

Limit Live Load Deflection to no more than L/800 for the Design Truck and Design Tandem with dynamic load allowance. For this calculation, use the live load distribution factors used for design of the beam.

Ensure that the bridge deck has been designed for both traffic loads and rail or barrier impact loads.

Ensure that the total depth of the superstructure, including any overlay, will allow for the entire superstructure to be above the allowable low beam elevation.

Design and construct the superstructure to provide a finished riding surface that matches the roadway grades. The concrete deck thickness may be increased, then ground to no less than the design thickness to achieve the finished profile and correct any mismatch in adjacent sections. Alternately, an asphalt overlay may be used to meet this provision. Submit a specification to the project manager for approval that outlines the procedure that will be followed to match the profile grade. If an asphalt overlay is used, include in the specification at a minimum the relevant parts of the “Bridge Concrete Deck Overlay - Asphalt” specification that is available on the MDT web site (<http://www.mdt.mt.gov/business/contracting/bridge/bridge_specials.shtml>).

For steel beams, design for fatigue by using details that are Category C or better and designed for infinite life.

Submittals.

* + - 1. Provide two sets of designs for the proposed Prefabricated Superstructure and any modifications to the bridge substructure that have been stamped and signed by the supervising engineer.
      2. Provide design information as required to either validate or alter the substructure shown.
      3. b)c) Provide a revised set of design drawings showing all changes to the bridge. Prepare the drawings using a CAD system. Submit the drawings in Adobe Acrobat Reader (.pdf) format. Include a cover letter signed by the supervising engineer transmitting the finished drawings. In addition, provide the CAD files used to detail the revisions. Upon request, the original design drawings will be made available.
      4. Provide five sets of shop drawings to the Project Manager meeting the requirements of the Standard Specifications. Shop drawings may be submitted on 11” x 17” sheets and may be furnished in Adobe Acrobat Reader (.pdf) format in lieu of hard copies.

Method of Measurement. The bridge shown on the plans will be the configuration measured or calculated for payment. No additional items will be measured as a result of the use of the Prefabricated Superstructure.

Basis of Payment. Payment will be as specified for the measured items.

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