

SUPPLEMENTAL SPECIFICATION

SECTION 545 - PREFABRICATED MULTI-MODAL BRIDGE

545.01 DESCRIPTION. This work shall consist of designing, furnishing and installing a prefabricated steel and/or timber bridge superstructure in accordance with these specifications and the design shown on the Plans.

For purposes of this section a Prefabricated Multi-Modal Bridge is defined as a structure capable of carrying the design loads required by the Contract documents.

545.02 MATERIALS. Materials and certifications shall meet the requirements of the subsections of Division 700, Materials, which are listed for Section 506 Structural Steel and Section 522 Lumber and Timber, as appropriate.

Where the Plans specify unpainted structural steel, square and rectangular structural steel tubing shall conform to the requirements of ASTM A 847.

The minimum thickness of any structural steel shall be 5 mm ( $\frac{1}{4}$  inch).

Exceptions, additions, or changes to materials shall only be as specified on the Plans, in the Special Provisions for a specific project or as directed by the Engineer.

545.03 DESIGN & FABRICATION REQUIREMENTS. The prefabricated bridge superstructure shall meet the requirements of the latest Edition of the AASHTO Standard Specifications for Bridges, including current interim specifications, the latest AASHTO Guide Specification for Design of Pedestrian Bridges and the latest AASHTO Guide for the Development of Bicycle Facilities.

The design live load shall be as specified for pedestrian and bicycle loadings in the above referenced AASHTO documents, or as indicated on the Plans.

Bridge railing shall meet the requirements of bicycle and pedestrian geometry and loading as specified in AASHTO Standard Specifications for Bridges, Division I, Section 2, with the exception of bridge railing height. Bridge railing height shall be as described in the AASHTO Guide for the Development of Bicycle Facilities or as indicated on the Plans.

Fatigue, as covered in AASHTO Standard Specifications for Bridges, Division I, Section 10.3, need not be considered.

The structure shall conform to the clear span and clear width shown on the Plans.

Fabrication shall be performed in accordance with the latest edition of AASHTO Standard Specifications for Highway Bridges, ANSI/AASHTO/AWS D1.5, ANSI/AWS D1.1 and interim specifications in effect on the date of the Contract. Welded tubular connections shall be designed and welded in accordance with ANSI/AWS D1.1. Decking shall be treated structural lumber securely fastened at each support point along its length unless otherwise specified on the Plans.

Final bridge camber, measured at the midpoint of the structure, shall be 1% of the total superstructure length and shall approximate a circular curve, unless otherwise specified on the Plans.

545.04 DRAWINGS & QUALITY CONTROL. The prefabricated bridge superstructure shall be designed, fabricated and supplied by firms with a minimum of five years experience with pre-engineered bridges.

The Fabricator shall submit calculations, fabrication drawings, welding procedures, structural deck design and details, substructure modification design and details, specifications and fabrication schedule to the Structures Engineer for approval at least four weeks prior to beginning fabrication. The fabrication drawings shall be prepared and provided in accordance with Subsection 105.03, Plans and Working Drawings.

Plans and calculations shall be signed, stamped, and dated by a qualified Professional Engineer (Structural or Civil) registered in the State of Vermont.

The Contractor shall submit to the Structures Engineer the design and calculations of necessary modifications to the bridge substructure, the bearing device design, the anchor bolt design and pattern, and any other modifications necessary to install the furnished superstructure on the substructure. These designs and calculations shall be signed, stamped and dated by a Professional Engineer qualified as indicated above. A copy of these shall also be provided to the Resident Engineer.

545.04A STRUCTURAL STEEL.

All Structural Steel shall be fabricated in accordance with the Standard Specifications for Construction, Section 506 Structural Steel.

All structural steel furnished under this Specification shall be produced at a fabrication plant that maintains a current AISC Certification Category for Simple Steel Bridge Structures (Sbr).

545.04B TIMBER.

All Lumber and Timber shall be fabricated in accordance with the Standard Specifications for Construction, Section 522 Lumber and Timber.

All glued laminated timber furnished under this Specification shall be fabricated by an AITC licensed laminator and shall comply with AITC A190.1.

545.05 DELIVERY AND ERECTION. Handling, delivery and erection shall be conducted in strict accordance with written directions, which shall be provided by the Fabricator. A copy of these directions shall be provided to the Resident Engineer for informational purposes no later than the date that delivery to the project begins.

545.06 METHOD OF MEASUREMENT. The quantity of Prefabricated Multi-Modal Bridge to be measured for payment will be on a unit basis for each prefabricated bridge superstructure of the specified type installed at the specified location and accepted.

The structural deck, bearings, anchor bolts and railings are included in the unit measured for Prefabricated Multi-Modal Bridge.

545.07 BASIS OF PAYMENT. The accepted quantity of Prefabricated Multi-Modal Bridge will be paid for at the Contract lump sum price for each, which price shall be full compensation for designing, fabricating, furnishing, handling, delivering and erecting the superstructure; for designing and detailing modifications to the substructure as required to accommodate the superstructure; for installing the new bridge superstructure at the designated location; and for furnishing all necessary labor, materials, equipment and incidentals necessary to complete the work.

When all components of the bridge have been delivered to the project and necessary certifications provided, 50% of the Contract lump sum price will be paid. When the bridge is completely erected at the location indicated on the plans and is accepted by the Engineer the remaining 50% will be paid.

Payment will be made under:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
545.20 Prefabricated Multi-Modal Bridge	LUMP SUM