









**Design, Submittal, and Construction Guidelines for Pre-fabricated Pedestrian/Bicycle  
Bridges  
November 1, 2016**

- c. All sheets (except survey sheets) shall show the initials of the individuals responsible for the design, drafting, design check, and drafting check of each sheet. Similarly, all sheets (except survey sheets) must be certified by a Professional Engineer licensed in the State of Minnesota.
- d. Each plan sheet shall contain the state project number and MnDOT bridge number.
- e. The Pre-fabricated pedestrian/bicycle bridge shall have the pay item number 2402.601 Pedestrian Bridge (Superstructure), Lump Sum. Payment for substructure materials is in the usual manner. See the MnDOT LRFD Bridge Design Manual for further information.
- f. Submit for review, the complete Division SB portion of the Special Provisions for the bridge. Refer to the following Bridge Office web site link for a template Special Provision write-up for Pre-fabricated Pedestrian/Bicycle Bridges.

<http://www.dot.state.mn.us/stateaid/bridge/docs/performancespeccleanpar.doc>

Use the Special Provision template to provide superstructure performance specification information, description of work, plan content, submittal and review requirements, and a list of pre-approved suppliers for the superstructure.

Refer to the link below for other MnDOT Special Provision boiler plates required for the Division SB Section of the Special Provisions for the bridge.

<http://www.dot.state.mn.us/bridge/pdf/sb2016.pdf>

**3. Preliminary and Final Design Plan Submittals** – Follow the proper Preliminary and Final Design Plan submittal procedures shown below, as applicable:

- a. The State Aid Bridge Unit will review and process the Design Plans for all State and/or Federally funded local pedestrian/bicycle bridge projects in accordance with their normal review and acceptance process as found on the following State Aid Bridge web site link:  
<http://www.dot.state.mn.us/stateaid/bridge/docs/pedbridgeacceptanceprocess.pdf>
- b. The MnDOT Bridge Office will review and process all Design Plans to be let by MnDOT. These projects will follow the usual review, acceptance, and processing for Trunk Highway bridge plans.

Refer to the MnDOT LRFD Bridge Design Manual for further information and requirements for plan content, submittal and review.

<http://www.dot.state.mn.us/bridge/lrfd.html>

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- c. All Local pedestrian/bicycle bridge projects crossing a Trunk Highway or on MnDOT right of way will receive a review by the MnDOT Bridge Office.
  - d. All other locally funded pedestrian/bicycle bridge projects, without State and/or Federal funds, and are outside MnDOT right of way, upon the request of the owner, will receive a courtesy review by the State Aid Bridge Unit.
4. **Design Plan Reproducibles** - After all comments and concerns have been addressed, and all revisions have been made, the owner or their consultant shall submit a final reproducible set of the Design Plan for acceptance and signature by the State Bridge Engineer. This set of plans shall contain the signature of the owner, and the owner's design consultant (when applicable). The Design Plan will then be forwarded as required for any remaining signatures and inclusion into the contract documents.

The owner of the bridge shall retain the signed original set of Design Plans after letting.

- F. **Pre-fabricated Superstructure Plans** – Pre-fabricated Superstructure plans are the certified design plans of the bridge superstructure, provided by the contractor, based on the details and the Superstructure Performance Specifications found in the Design Plan and Special Provisions. The Pre-fabricated Superstructure Plan preparation, submittal and review process is as summarized below. Note, the Special Provisions will provide a more detailed description of the entire process, including the time schedule required for plan submittal, plan review and any necessary plan revisions.

1. **Pre-fabricated Superstructure Plan Preparation** – Provide superstructure plans that are complete and comprehensive, fully detailing the superstructure and its connection to the substructure. The plans shall reflect the requirements and intentions of the Final Design Plan and the Superstructure Performance Specifications contained in the Special Provisions. The bridge fabricator shall follow the quality control/quality assurance (QC/QA) process specified for Intermediate bridge components found in Article 4.1 of the LRFD Bridge Design Manual for preparing design calculations. The bridge fabricator must have their Design Quality Management Plan (DQMP) on file and accepted by MnDOT prior to superstructure design. The DQMP shall detail the full design process including the software and/or spreadsheets used, as well as the personnel qualifications of those involved in the design and checking of the pre-fabricated superstructure. A Professional Engineer licensed in the State of Minnesota and experienced in bridge design shall certify all plan sheets. All plan sheets shall also show the initials of the individuals responsible for the design, drafting, design check, and drafting check of each sheet.

The plans shall include, but not be limited to the following;

- a. General plan, elevation, and cross section views on the first sheet/s, providing span lengths between bearing points, skews, profile grade information, and critical clearance dimensions. The first sheet shall also include pertinent design data information.
- b. Dimensioning of truss vertical spacing, truss height, stringer spacing, walkway clear width, height and spacing of handrails, safety rails, toe rails, et cetera.

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- c. Details of all timber and/or steel structural connections, the required welds, sizes of members, bearing assembly details, concrete mix numbers, concrete deck reinforcement, materials data, and painting requirements.
  - d. Bridge camber and deflection information, and complete details of all member field splices.
  - e. Complete details of the fixed and expansion bearings showing the connection of the superstructure to the substructure, including anchor bolt spacing and dimensioning necessary for proper placement on the substructures. The anchor bolts shall be detailed to avoid rebar and maintain minimum edge distances. The plans shall provide the dimensions from top of deck to bearing seat, the dimension (horizontally and along slope) from front face of abutment backwall to front face of abutment backwall, expansion joint details, cover plate details including any notches required in the backwalls, and all applied load information from the proposed bridge superstructure.
  - f. General list of weld inspection and testing requirements.
2. **Pre-fabricated Superstructure Plan Submittal and Review Process** - Upon completion of the project letting and prior to the start of any fabrication or construction, the contractor shall submit, as described below, two sets of the Pre-fabricated superstructure plans and one set of design computations to the owner/owner's consultant for review and acceptance. (Send all submittals for pedestrian/bicycle bridge projects let by MnDOT to the MnDOT Bridge Office for review and acceptance.)

For all pedestrian/bicycle bridge projects not let by MnDOT, containing State or Federal funding, the contractor, in addition to the submittal to the owner/owner's consultant, shall also submit one copy of the superstructure plans and one set of design computations to the State Aid Bridge Unit for their files and a discretionary oversight review of the project. The State Aid Bridge Unit will complete their review within the time allotted for the owner/owner's consultant's review specified in the Special Provisions. Any comments or concerns will be communicated/coordinated with the owner/owner's consultant who shall forward all comments to the contractor.

Plan reviews shall consist of, but not be limited to, a minimum of the following requirements:

- a. Review of the Pre-fabricated Superstructure Plan and design computations shall verify general compliance with the Design Plans, the Superstructure Performance Specifications and all other information contained in the Special Provisions. The review shall verify that all standard design specifications, manuals and guidelines as outlined in this memorandum have been followed. For additional guidance on review of the Pre-fabricated Superstructure Plans, see the "**Guidelines For Superstructure Plan Review For Pre-fabricated Pedestrian /Bicycle Bridges** " found at the following State Aid Bridge web site link:  
<http://www.dot.state.mn.us/stateaid/bridge/docs/postlettingplanreviewsteps.pdf>

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- b. Following the review of the Pre-fabricated Superstructure Plan and design computations, comments and concerns are returned to the contractor. After comments are addressed and plan corrections are made, the contractor shall submit a revised Pre-fabricated Superstructure Plan for review and acceptance. Upon acceptance, the reviewing engineer or his/her supervisor, who is a Professional Engineer licensed in the State of Minnesota, shall sign, date and stamp the design calculations and each sheet of the plan with notation of acceptance indicating that they have been reviewed for general compliance with the project plans and specifications. This review does not relieve the engineer of record from the responsibility of his/her design, nor relieve the contractor of his/her contractual responsibility for any errors or deviation from contract requirements.

Also, upon acceptance of the Pre-fabricated Superstructure Plan, the superstructure fabricator shall commence shop drawing submittals as described below.

- c. As part of the Pre-fabricated Superstructure Plan review, the owner/owner's consultant or the MnDOT Bridge Office, as applicable, is responsible for verifying the adequacy of the original substructure design with the proposed superstructure loads, and for certifying that the fabricator's superstructure bearing details match and fit the substructures as originally designed in the Design Plan. Approval to commence substructure construction may be given by the owner's consultant or the MnDOT Bridge Office, as applicable, if no changes to the substructure are required and the Pre-fabricated Superstructure Plan has been accepted.

If minor modifications of the substructures (e.g. bearing step dimensions vary from those on design plan but are within the plus/minus range given, or anchor bolt dimensions vary from those on the plans) are required to accommodate the pedestrian/bicycle bridge superstructure, the owner/owner's consultant or the MnDOT Bridge Office, as applicable, working in conjunction with the contractor, is responsible for providing updated substructure detail sheets clearly showing all modifications. For projects not let by MnDOT and not crossing a trunk highway, the revised detail sheets shall be submitted to the MnDOT State Aid Bridge Unit for their files prior to commencement of substructure construction.

If major modification and/or redesign of the substructures (e.g. bearing step dimensions are outside of the plus/minus range given on the design plan) is required by the Contractor to accommodate the pedestrian/bicycle bridge superstructure, the owner/owner's consultant or the MnDOT Bridge Office, as applicable, working in conjunction with the contractor, is responsible for updating, regenerating, and recertifying all substructure sheets in the Design Plan to reflect the final design that will accommodate the pedestrian/bicycle bridge superstructure plans. For projects not let by MnDOT and not crossing a trunk highway, the owner/owner's consultant shall submit revised substructure plan sheets and supporting calculations to the MnDOT State Aid Bridge Unit for review and acceptance prior to commencement of substructure construction.



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- d. The final, accepted Pre-fabricated Superstructure Plan will become the property of the owner. The owner/owner's consultant, or the MnDOT Bridge Office, as applicable, shall make copies of the plan for their permanent records and one copy for the contractor. The plans shall be made available to the public.

For projects not let by MnDOT, not crossing a trunk highway, and outside MnDOT right of way, the owner/owner's consultant shall send a copy of the reviewed and accepted Pre-fabricated Superstructure Plans to the MnDOT State Aid Bridge Unit for filing.

- G. **Shop Drawings** - After Pre-fabricated Superstructure Plans have been accepted, the contractor shall submit shop drawings for all structural metals, as required by MnDOT Specification 2471 and the guidelines specified below, to the Fabrication Methods Engineer of the MnDOT Bridge Office.

1. All MnDOT projects and all State and/or Federally funded local pedestrian/bicycle bridge projects containing structural metals require shop drawing review and fabrication inspection in conformance with the requirements of MnDOT 2471, both services being the responsibility of the owner. Fabrication inspection shall either be performed by MnDOT personnel or by a properly certified, MnDOT approved, independent inspection consultant. In any case, for all State and/or Federally funded local projects, a Laboratory Testing and Plant Inspection Services Request Form must be submitted by the owner to the District State Aid Engineer and a copy sent to the Structural Metals Unit indicating all MnDOT inspection services required and contact information for the Field Project Engineer. Fabrication of the bridge superstructure shall not commence until shop drawings have been reviewed and accepted by MnDOT or the appointed inspection consultant.
2. For projects involving only local funding, shop drawing review and fabrication inspection are recommended, but at the responsibility and discretion of the owner. He/She may request the services of MnDOT by submitting a Laboratory Testing and Plant Inspection Services Request Form or hire a properly certified independent inspection consultant.
3. The Special Provisions shall provide clarification of all the responsibilities, especially for projects involving out-of-state fabrication and inspection requirements where costs tend to be higher. A Laboratory Testing and Plant Inspection Services Request Form can be found at the following link.

<http://www.dot.state.mn.us/stateaid/other/lab-testing-plant-inspection-request.docx>