

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISIONS FOR
STRUCTURAL STEEL ERECTION
SUM-8-0199 L/R (PID NO. 91710)**

October 28, 2021 – Revised March 21, 2023 (Prebid Addendum 3)

ODOT Standard Specifications for structural steel erection are amended by the following additions and revisions. This special provision shall prevail over the Standard Specifications in case of a conflict.

- 01 DESCRIPTION**
- 02 DETAILED STRUCTURAL STEEL ERECTION AND LAUNCHING SEQUENCE (DSSELS)**
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01 DESCRIPTION

This work shall consist of field erection and incremental launch installation of the structural steel framing system for the left and right bridges. The framing system shall be field erected in a launching pit, constructed behind the forward abutment and shall be launched in a span by span increments. This item shall include the construction of the launching pits as detailed in the plans and installing all necessary launching equipment in the pit, abutments and pier tops, and any other construction equipment and material needed to complete the installation. The installation shall be deemed complete when:

1. all temporary lateral bracing and any temporary structures are removed from the framing system,
2. all connection holes in the girders, resulted from connecting temporary structure are filled with fully stressed A325 bolts of the same size as the holes,
3. all launching equipment including nose, tail, kingpost, reaction beam, rollers on pier tops and abutments, and all temporary structures in the launching pit are removed,
4. all girder extensions used to field splice the nose and the tail to the girder system are cut with a plasma cutter and the ends grinded smooth,
5. all bolt holes in pier tops and abutments used to secure the rollers and any temporary structures are filled with Non-Shrink, Non-Metallic Grout, in accordance with 705.20 of ODOT's Construction & Material Specifications (C&MS).

6. the framing system for both bridges are in their final position and have been placed on the permanent bearings.

02 DETAILED STRUCTURAL STEEL ERECTION AND LAUNCHING SEQUENCE (DSSELS)

The construction plans include a suggested launching sequence, procedure and equipment for the erection of the framing system. The procedure shown in the plans is a suggested sequence only and the contractor is not obligated to follow that particular sequence. The contractor shall retain the services of a registered professional engineer to develop a detailed structural steel erection and launching sequence plan (DSSELS), which shall include a three-dimensional finite element model, using commercially-available software, to simulate the contractor's proposed bridge launching sequence and verify the design of the structural steel framing system, launching components and temporary bracing, as shown in the plans, are adequate for the contractor's proposed means and methods regardless of whether the contractor chooses to follow the plans or propose an alternative sequence.

All design computations shall be prepared in accordance with section 501.05 of the C&MS and shall be performed and checked by two different individuals, both shall be registered professional engineers (PE) licensed in the state of Ohio with experience in complex bridge erection. Computations shall be sealed by one of the individuals and submitted to the Department for review and approval 180 days prior to beginning construction. The design computations shall include, but not be limited to, finite element model input and output files, graphic representation of the model, structural calculations, plans, methods, procedures, list of the launching equipment, its specifications and any associated equipment to be utilized for the steel erection.

The contractor shall not commence any work prior to the written approval of the Department.

The final approved DSSELS shall prevail over the Standard or Supplemental Specifications where there is conflict.

The proposed DSSELS plan shall include, but not be limited to the following:

1. Location, fabrication and installation procedures for all launching equipment, and materials.
2. Methods and procedures for steel placement including:
 - a. Detailed erection sequence.
 - b. Method of the structural steel framing assembly.
 - c. Locations, design calculations and details for any temporary supports for the framing system during assembly and as it is being launched.
 - d. Sequence and procedure for removing the launching equipment and transferring the loads to permanent bearings.
3. Factors of safety for all applicable equipment and procedures to be used as approved by the Engineer. These factors of safety shall be specified by the structural engineer preparing the design computations.
4. Design calculations shall include, but not be limited to the following:

- a. The expected bearing, shear, compression and tensile stresses as may be produced within the pre-assembled structural steel and launching equipment caused by the launching operations.
 - b. Minimum and maximum vertical, axial and transverse reactions at all supports that will occur during launching and verification that these reactions are within the values shown in the plans.
5. The submitted and approved DSSELS shall ensure that the erection sequence is coordinated with the steel layout to ensure proper fit-up.

03 CONSTRUCTION REQUIREMENTS

1. The Contractor is completely responsible for protection of the structural integrity of the steel framing system from fabrication to the completion and final acceptance of the bridge by the Engineer. Any damage sustained shall be repaired or replaced by the Contractor to the satisfaction of the Engineer at no additional cost to the Department.
2. The Contractor shall be solely responsible to ensure that the steel framing system, launching equipment and any temporary structures and bracing are adequately designed for the launching operation.
3. if the contractor elects to change the launching scheme from that included in the plans, he shall be solely responsible for checking the loads on all the permanent substructures and foundations to ensure that these loads are still within the capacity of these structures,
4. All launching equipment shall be furnished and installed by the Contractor.
5. Once the DSSELS is approved no changes shall be allowed, unless written request is submitted to the Engineer and approved in writing.
6. Upon completion of construction operations and Engineer approval of final placement of the steel framing system, all equipment shall be removed and the site conditions restored to the satisfaction of the Engineer.

04 MEASUREMENT AND PAYMENT

1. Item 503 - Structural Excavation, Misc.: Launching Pit
Method of Measurement – The Department will measure this item on a lump sum basis. It shall include all labor, material and equipment to construct the temporary walls and launching pit, except for the wire-faced temporary walls shown in the plans which shall be paid for under Item 867, in accordance with the contract plans and design requirements specified in the contract plans. A lump sum total shall be paid for the Northbound bridge and A lump sum total shall be paid for the Southbound bridge.

Basis of Payment - The Department will pay for accepted quantities at the contract prices for Item 503 - Structural Excavation, Misc.: Launching Pit.

2. Item 503 - Structural Excavation, Misc.: Receiving Pit

Method of Measurement - The Department will measure this item on a lump sum basis. It shall include all labor, material and equipment to construct the temporary walls and receiving pit, except for the wire-faced temporary walls shown in the plans which shall be paid for under Item 867, in accordance with the contract plans and design requirements specified in the contract plans.

Basis of Payment - The Department will pay for accepted quantities at the contract prices for Item 503 - Structural Excavation, Misc.: Receiving Pit. A lump sum total shall be paid for the Northbound bridge and A lump sum total shall be paid for the Southbound bridge.

3. Item 513 - Structural Steel, Misc.: Structural Steel Erection Equipment

Method of Measurement - The Department will measure this item on a lump sum basis. It shall include all labor, material and equipment to furnish and erect the launching nose, launching tail, kingpost, stay cables, temporary bracing, launching rollers, and any other temporary material and equipment necessary.

Basis of Payment - The Department will pay for accepted quantities at the contract prices for Item 513 - Structural Steel, Misc.: Structural Steel Erection Equipment. A lump sum total shall be paid for the Northbound bridge and A lump sum total shall be paid for the Southbound bridge.

4. Item 513 - Structural Steel Members, Hybrid Girder, Level Six (6) Fabrication, As Per Plan

Method of measurement - The Department will measure this item on the basis of the number of pounds, in accordance with C&MS 513.29.

Basis of Payment - The Department will pay for the accepted quantities at the contract prices for Item 513 - Structural Steel Members, Hybrid Girder, Level (Six) 6 Fabrication, As Per Plan, in accordance with C&MS 513.30.