

Master Specification

Part ST-SS-C1

Transportation and Erection of Structural Members

September 2024



Government of South Australia
Department for Infrastructure
and Transport

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ST-SS-C1 Transportation and Erection of Structural Members

1 General

- a) This Master Specification Part specifies the requirements for the transportation (including handling and storage), and erection of structural members exceeding 4.2 m in length, including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the program requirements, as set out in section 3;
 - iii) the survey certificate requirements, as set out in section 4;
 - iv) the transportation requirements, as set out in section 5;
 - v) the erection requirements, as set out in section 6; and
 - vi) the Hold Point requirements, as set out in section 7.
- b) The transportation and erection of bridge beams must be undertaken in accordance with the Reference Documents including:
 - i) AS/NZS 5131 Structural steelwork - Fabrication and erection; and
 - ii) Worksafe Victoria: "Construction and Erection of Bridge Beams" (available from: <https://www.worksafe.vic.gov.au/>).
- c) This Master Specification Part does not apply to box beam barrier components.

2 Documentation

2.1 Construction Documentation

In addition to the requirements of PC-CN3 "Construction Management", the Construction Documentation must include the following documents, procedures and instructions for the transportation and erection of structural members (where applicable):

- a) in relation to safety:
 - i) details of safety considerations for the handling, storage, transportation, and erection of the members, including cross references to the Contractor's Work Health and Safety Management Plan where appropriate;
 - ii) for bridge beams, full details of how the requirements of Worksafe Victoria publication: "Construction and Erection of Bridge Beams" will be addressed, including the following sections:
 - A. section 5 "Handling and Storage";
 - B. section 6 "Transportation"; and
 - C. section 7 "Erection"; and
 - iii) a certificate from a Chartered Professional Engineer verifying that the proposed methods of transportation and handling conform to the requirements of the Contract Documents (including this Master Specification Part) and the requirements of all relevant work health and safety legislation;
- b) in relation to transportation, details of methods of transport, handling, and storage;
- c) in relation to erection equipment:

- i) details of type and capacity of lifting equipment;
 - ii) details of the site set-up of lifting equipment, including an assessment of supporting ground conditions and minimum clearances to aerial electrical cables;
 - iii) method of lifting, including an assessment of length, slope, diameter, and safe working capacity of any slings;
 - iv) details of welding equipment or bolting equipment;
 - v) details of lighting equipment (if applicable); and
 - vi) details of lifting device on member, lifting points, and measures to stabilise or brace members and prevent damage to the members;
- d) in relation to erection methodology:
- i) details of falsework (where applicable) and its assembly / removal, including design calculations and a certificate by a Chartered Professional Engineer stating that the falsework has been designed in accordance with the relevant Reference Documents;
 - ii) method of stabilising or bracing members during handling and erection;
 - iii) method of positioning of bearings;
 - iv) method of making adjustments for deviations from specified hog and compensating for temperature variations;
 - v) method of alignment of components;
 - vi) for welded steel, welding proposals, including welding procedures, temporary locating devices, order of welding, and weld testing;
 - vii) for bolted steel, bolting procedures, including method of aligning holes, method of marking bolts and method of tightening;
 - viii) method and order of assembly including temporary fixing; and
 - ix) for prestressed concrete members, details of the anticipated hog and any measures proposed to ensure that hog does not adversely affect the finished deck levels.

2.2 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include the survey certificate required by section 4.

3 Program

- a) The Contract Program must include details of the transportation and erection of the structural members.
- b) The Contractor must provide at least 7 days prior notice of:
 - i) transport of completed structural members to the Site; and
 - ii) the day that erection of the relevant structural members will commence.
- c) Structural members must not be removed from the fabrication / casting yard until the fabricator / pre-caster’s work lot demonstrates that the structural member complies with the requirements of this Master Specification Part.

4 Survey certificate

- a) Prior to the placement of structural members, the Contractor must provide survey certificates (refer PC-S11 “Site Surveys”) stating that the location and level of all Works and Temporary

Works (including bearings) supporting the member complies with the requirements of the Contract Documents.

- b) The survey certificates required in section 4a) must be provided as part of the Quality Management Records and will constitute a **Hold Point**. The relevant structural members must not be placed until this Hold Point has been released.

5 Transportation

- a) At all times, structural members must be stored, handled, and transported so that the members are clean and free from damage, excessive stress, or excessive deformation.
- b) Where the Principal has provided a design of the structure, the Contractor must assume that the relevant design has not included any allowance for stress or deflection induced during handling or erection of the members. The verification carried out by the Chartered Professional Engineer required by section 2.1a)iii) must include verification of these stresses and deflections.

6 Erection

In relation to the erection of structural members:

- a) the Contractor must place each member in position so that:
 - i) safety is not compromised, including ensuring the stability of the member;
 - ii) there is no damage to the member or the structure; and
 - iii) the intended permanent structural action of the member is not restrained or otherwise adversely affected by the process of erection or by movements which occur due to environmental or construction-related forces; and
- b) girders must not be placed by crane directly onto pot, spherical, or steel roller / rocker bearings. For these types of bearings, temporary supports must be used during placement.

7 Hold Points

Table ST-SS-C1 7-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table ST-SS-C1 7-1 Hold Points

| Section reference | Hold Point | Documentation or construction quality | Review period or notification period |
|-------------------|--------------------|---------------------------------------|--------------------------------------|
| 4b) | Survey certificate | Documentation | 48 hours review |