

# Structures

## Master Specification

### ST-SS-C1 Transportation and Erection of Structural Members

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## Document Management

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## ST-SS-C1 Transportation and Erection of Structural Members

### 1 General

- 1.1 This Part specifies the requirements for the handling, storage, transportation and erection of structural members exceeding 4.2 m in length.
- 1.2 The transportation and erection of bridge beams shall be undertaken in accordance with the following: Worksafe Victoria: “Construction and Erection of Bridge Beams”, available from: <https://www.worksafe.vic.gov.au/>.
- 1.3 Erection of steelwork shall comply with AS/NZS 5131.

### 2 Quality Requirements

- 2.1 The Contractor shall prepare and implement a Quality Plan which, at a minimum, includes the documents, procedures and / or instructions listed below (where applicable). If not provided beforehand, this documentation shall be submitted at least 28 days prior to the commencement of transportation of the members. Provision of the documents listed in this Clause shall constitute a **Hold Point**.
- 2.2 The documents to be provided include:

#### Safety

- a) Details of safety considerations for the handling, storage, transportation and erection of the members, including cross references to the Contractor’s Safety Plan where appropriate;
- b) For bridge beams, full details of how the requirements of the following sections of the Worksafe Victoria publication: “Construction and Erection of Bridge Beams” will be addressed:
  - i) Section 5 “Handling and Storage”;
  - ii) Section 6 “Transportation”; and
  - iii) Section 7 “Erection”.
- c) A certificate from a Chartered Professional Engineer verifying that the proposed methods of transportation and handling conform the Specification and the requirements of the Work Health and Safety legislation.

#### Transportation

- d) Details of methods of transport, handling and storage; and
- e) Details of concrete strength to be achieved prior to handling and transportation.

#### Erection Equipment

- f) Details of type and capacity of lifting equipment;
- g) Details site set-up of lifting equipment, including an assessment of supporting ground conditions and minimum clearances to aerial electrical cables;
- h) Method of lifting, including an assessment of length, slope, diameter, and safe working capacity of any slings;
- i) Details of welding equipment and / or bolting equipment;
- j) Details of lighting equipment (if applicable); and
- k) Details of lifting device on member, lifting points, and measures to stabilise or brace members and prevent damage to the members.

## Erection Methodology

- l) 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 Australian Standards;
- m) Method of stabilising and / or bracing members during handling and erection;
- n) Method of positioning of bearings;
- o) Method of making adjustments for deviations from specified hog and compensating for temperature variations;
- p) Method of alignment of components;
- q) For welded steel, welding proposals, including welding procedures, temporary locating devices and order of welding;
- r) For bolted steel, bolting procedures, including method of aligning holes, method of marking bolts and method of tightening;
- s) Method and order of assembly including temporary fixing; and
- t) For prestressed concrete members, details of the anticipated hog and any measures proposed to minimise hog and ensure that hog does not affect the finished deck levels.

## 3 Program

- 3.1 The Contractor's Program shall include details of the transportation and erection of the structural members. The Contractor shall provide at least 7 days prior notice of:
  - a) transport of completed structural members to the Site; and
  - b) the day that erection of the members will commence.
- 3.2 Structural members shall not be removed from the fabrication / casting yard until a lot conformance package demonstrating compliance with the requirements of this Specification has been provided.
- 3.3 Submission of the lot conformance package and notifications shall constitute a **Hold Point**.

## 4 Survey Certificate

- 4.1 Prior to the placement of structural members, the Contractor shall provide survey certificates (refer PC-S11 "Site Surveys") stating that the location and level of all temporary and permanent works (including bearings) supporting the member complies with the Specification.
- 4.2 Provision of the documentation listed in this Clause shall constitute a **Hold Point**.

## 5 Transportation

- 5.1 At all times, structural members shall be stored, handled and transported so that the members are clean and free from damage, excessive stress or excessive deformation.
- 5.2 Where the Principal has provided a design of the structure, the Contractor cannot assume to include any allowance for stress or deflection induced during handling or erection of the members. The verification carried out by the Chartered Professional Engineer (refer Clause 2 "Quality Requirements") shall include verification of these stresses and deflections.

## 6 Erection

- 6.1 The Contractor shall place each member in position so that:
  - a) safely is not compromised;
  - b) there is no damage to the member or the structure; and

- c) 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.
- 6.2 Girders shall not be placed by crane directly onto pot, spherical, steel roller / rocker bearings. For these types of bearings, temporary supports shall be used during placement.

## 7 Hold Points

7.1 The following is a summary of Hold Points referenced in this Part:

Document Ref.	Hold Point	Response Time
2.1	Submission of quality documentation and procedures	5 Working Days
3.3	Submission of conformance package and notification of transportation / erection will commence	2 Working Days
4.2	Survey certificate	1 Working Day