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ERECTION OF PRECAST CONCRETE MEMBERS (NOT PRETENSIONED)

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FOREWORD

RMS COPYRIGHT AND USE OF THIS DOCUMENT

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When this document forms part of a deed

This document should be read with all the documents forming the Project Deed.

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BASE SPECIFICATION

This document is based on Specification RMS B153 Edition 1 Revision 4.
RMS SPECIFICATION D&C B153

ERECTION OF PRECAST CONCRETE MEMBERS
(NOT PRETENSIONED)

1 GENERAL

1.1 SCOPE

This Specification sets out the requirements for the erection of non-prestressed precast concrete members, such as wing walls, kerbs, parapets, noise barriers, approach slabs, earth retention units, etc, associated with bridge works.

This Specification does not apply to piles.

Erection of precast concrete safety barriers must comply with Specification RMS D&C R132.

1.2 STRUCTURE OF THIS SPECIFICATION

This Specification includes a series of annexures that detail additional requirements.

1.2.1 (Not Used)

1.2.2 Schedules of HOLD POINTS and Identified Records

The schedules in Annexure B153/C list the HOLD POINTS that must be observed. Refer to Specification RMS D&C Q6 for the definition of HOLD POINTS.

The records listed in Annexure B153/C are Identified Records for the purposes of RMS D&C Q6 Annexure Q/E.

1.2.3 Planning Documents

The PROJECT QUALITY PLAN must include each of the documents and requirements listed in Annexure B153/D and must be implemented.

1.2.4 Referenced Documents and Abbreviations

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 2350). For convenience, the full titles are given in Annexure B153/M.

1.3 DEFINITIONS

“The terms “you” and “your” mean “the Contractor” and “the Contractor’s” respectively.”

The following definitions apply to this Specification:

“Erection”. The process whereby precast concrete members are lifted, aligned, and placed in their final positions as shown on the Design Documentation drawings. It includes all temporary supporting
and bracing measures required to keep the member stable at all times until it takes up the correct final position in the permanent structure.

“R.C. Girders”. Precast reinforced concrete members forming part of the bridge superstructure, spaced at intervals as shown on the Design Documentation drawings.

“R.C. Planks”. Precast reinforced concrete members which are placed side by side in the span to form, together with a cast-in-place concrete topping, a completed deck as shown on the Design Documentation drawings (Note: For erection of pre-tensioned precast concrete girders and planks, refer to Specification RMS D&C B150).

“Engineer”. A Chartered Professional Engineer with membership of Engineers Australia (or equivalent) practising in the field of structural engineering and who is experienced in the type of work for which certification of the structural adequacy and compliance with specifications is required. An equivalent to membership of Engineers Australia would be an Engineer registered on the National Engineering Register (NER) in the general area of practice of Structural Engineering.

1.4 ADDITIONAL PROJECT QUALITY PLAN REQUIREMENTS

Include the following information as part of the PROJECT QUALITY PLAN:

(a) Details of any cranes, falsework and/or other equipment proposed for lifting, positioning and temporary support of the members;

(b) details of the method to be used for erection; and

(c) details of the method of keeping members in the correct position, without twisting or buckling occurring.

2 (NOT USED)

3 (NOT USED)

4 PRE-ERECUTION REQUIREMENTS

4.1 LIFTING, TRANSPORT AND STORAGE

After casting, carry out the lifting, transport and stacking of members in accordance with Specification RMS D&C B115.
4.2 CERTIFICATION OF ERECTION METHODS

**HOLD POINT**

Process Held: Erection of precast reinforced concrete members.

Submission Details: A certificate from an Engineer, certifying the structural adequacy and compliance of the proposed method of erection (including all supporting and bracing measures) with the Specification and design requirements, and compliance of the falsework with the relevant Australian Standards.

The certificate must be accompanied by any drawings necessary to clearly describe the proposed method of erection including detailed drawings of any supporting and bracing measures.

Release of Hold Point: The Nominated Authority will consider the details submitted, prior to authorising the release of the Hold Point.

4.3 CONFORMITY OF STRUCTURAL MEMBERS

Do not erect any member until:

(a) full conformity records for that member have been made available to the Project Verifier;
(b) the concrete in the supporting members has attained at least 80% of the specified strength; and
(c) the supporting formwork for these members has been removed,

unless specified otherwise on the Design Documentation drawings.

4.4 PRE-ALIGNMENT

4.4.1 Alignment on Bearings

Install bridge bearing in conformity with Specification RMS D&C B284. Set all bearings to achieve the correct final levels. All falsework and temporary supports must have adequate provision for adjustment to achieve the required profile detailed on the Design Documentation drawings.

To allow for the change in length of members due to temperature variations, position the bearings so that the horizontal distance between the centres of bearings will result in the distance being as shown on the Design Documentation drawings for the specified temperature.

At least one working day prior to erection, submit a certificate verifying that the location and levels of all permanent and temporary supports are in accordance with the profile shown on the Design Documentation drawings.

For a girder bridge, apply the requirements in Specification RMS D&C G71 for Joint Survey to the verification of locations and levels of all permanent and temporary supports and the certification must conform to the requirements in RMS D&C G71 for Product Conformity Survey. Apply the associated Hold Points.
4.4.2 Alignment on Bedding

For members that are to be set on cement mortar or epoxy mortar bedding, prepare the bedding to the required consistency and thickness and place and align the members in position before the setting time is reached. For any type of epoxy mortar formulations supplied by a specialist manufacturer, follow strictly the instructions of the Supplier.

5 MEMBERS ON SUBGRADE

Place members such as earth retention units on adequately prepared subgrade, which must be certified by an Engineer.

6 ERECTION

6.1 GENERAL

Take necessary actions, prepare and set up cranes, equipment and the site so as to comply with the relevant statutory regulations and to maintain safe working conditions at all times.

The erection operation must be supervised by an Engineer.

Ensure that:

(a) each member is placed in position safely, without damage to the member or the structure; and
(b) the intended permanent structural action of the member is not:

(i) restrained; or otherwise

(ii) adversely affected by the process of erection or by movements which occur due to environmental or construction-related forces,

before the member is finally integrated with the adjacent parts of the structure.

6.2 LIFTING

For the purpose of erection, lift members only by means of the inserts provided thereon and as specified on the Design Documentation drawings. The angle of the sling must be within the specified range at all times.

Submit a certificate specifying the safe lifting capacity of the equipment. Position the lifting equipment such that the turning radius, if any, does not endanger the stability of the equipment. Ensure that the mass of the units to be lifted is within the capacity of the equipment.

For tilt-up panels, certify that the stresses in all lifting positions are within the safe allowable limits.

6.3 BRACING

Maintain effective support and bracing at all times until the supporting system has gained adequate strength.
6.4 **TOLERANCES IN POSITION AND ALIGNMENT**

Place members in their correct position as shown on the drawings. Properly align members placed in series adjacent to one another within specified tolerances.

Unless specified otherwise on the Design Documentation drawings, Specification RMS D&C B80 or other relevant specification, the following tolerances must not be exceeded:

(a) Deviation from the correct position must not exceed 20 mm in any direction except for surfaces visible to view, for which the tolerances of RMS D&C B80 Table B80.16 will apply;

(b) Deviation at any point on a surface of a member, from a straight line joining any two points on the surface, must not exceed 1/250 times the length of the line or 10 mm, whichever is less; and

(c) For vertical members, the deviation from plumb between any two points must not exceed 1/200 times the vertical distance between the points or 10 mm, whichever is less.

Check all alignment dimensions before finally fixing or grouting the units. The above tolerances apply to the as-cast formed surface prior to surface treatment, if any.

7 **POST-ERECTION LOADING OF PLANKS AND GIRDER**

7.1 **PRIOR TO THE PLACEMENT OF THE DECK CONCRETE**

The application of any live load during the construction phase, before placement of topping concrete, if any, must be as specified on the Design Documentation drawings and must be approved by an Engineer.

7.2 **AFTER THE PLACEMENT OF THE DECK CONCRETE**

Do not impose loads on the deck between the commencement of placing of the cast-in-place concrete and seven days after completion of such concreting and before the deck concrete has reached the structural strength specified in the Design Documentation drawings.

8 **PROFILE DIAGRAM**

Before placing of the cast in-place concrete, or permanent fixing of precast units by any other means, submit a diagram that sets out the profile of the completed member(s) in relation to the profile specified in the Design Documentation drawings. For girder bridges, this diagram must conform to the requirements in RMS D&C G71 for Product Conformity Survey and apply the associated HOLD POINT.

9 **REMOVAL OF TEMPORARY WORKS**

Remove all inserts and fixtures used solely for lifting or installation, temporary supports, packers, falsework and temporary bracing and carry out any repairs due to the use of such temporary works using suitable cementitious patching material to the specified finish as the Project Works proceed.
ANNEXURES B153/A TO B153/B – (NOT USED)

ANNEXURE B153/C – SCHEDULES OF HOLD POINTS AND IDENTIFIED RECORDS

Refer to Clause 1.2.2.

C1  SCHEDULE OF HOLD POINTS

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<td>4.4.1 &amp; RMS D&amp;C G71</td>
<td>Notification of Joint Survey of permanent and temporary supports for girder bridges</td>
</tr>
<tr>
<td>4.4.1 &amp; RMS D&amp;C G71</td>
<td>Submission of survey report for permanent and temporary supports for girder bridges</td>
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<td>Submission of profile diagram</td>
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C2  SCHEDULE OF IDENTIFIED RECORDS

The records listed below are Identified Records for the purposes of RMS D&C Q6 Annexure Q/E.

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<th>Clause</th>
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<td>4.4.1</td>
<td>Certificate verifying that the location and levels of all supports are in accordance with the Design Documentation drawings</td>
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<td>8</td>
<td>Diagram setting out profile of completed members in relation to profile specified on the Design Documentation drawings</td>
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ANNEXURE B153/D – PLANNING DOCUMENTS

Refer to Clause 1.2.3.

The following documents are a summary of documents that must be included in the PROJECT QUALITY PLAN. The requirements of this Specification and others included in the Project Deed must be reviewed to determine additional documentation requirements.

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ANNEXURE B153/M – REFERENCED DOCUMENTS AND ABBREVIATIONS

Refer to Clause 1.2.4.

M1 REFERENCED DOCUMENTS

RMS Specifications
RMS D&C G71 Construction Surveys
RMS D&C Q6 Quality Management System (Type 6)
RMS D&C B80 Concrete Work for Bridges
RMS D&C B115 Precast Concrete Members (Not Pretensioned)
RMS D&C B150 Erection of Pretensioned Precast Concrete Members
RMS D&C B284 Installation of Bridge Bearings

M2 ABBREVIATIONS

RMS Roads and Maritime Services