



Concrete Structures – Precast Concrete Members

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	02-28-2022	Original Issue	Richard Foley

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for:

- Review and authorization of precast concrete member submittals, including girders, closure wall panels, box culverts, and deck panels. Review and authorization of shop drawings for precast concrete members, under this process, is usually performed in conjunction with Materials Engineering and Testing Services (METS) and coordinated with the METS Representative (MR).
- Coordinating inspection and release of precast concrete members with the MR. The MR generally administers fabrication of precast concrete members at the fabrication site. Precast concrete members are released for construction from the fabrication site via [Form TL-0029](#), *Report of Inspection of Material*.
- Fabrication, delivery, storage, and handling of precast concrete members. Precast concrete members are generally fabricated at a precasting plant and the inspection of fabrication of these members is generally performed by the MR. Therefore, close coordination with the MR is necessary.
- Construction of precast concrete members. Precast concrete members are generally utilized for accelerated bridge construction (ABC) and in locations where temporary support structures are impractical. There are many aspects of precast concrete girder construction that must be addressed, including deflection, staging, bracing, and member splicing.

Additional unique requirements for this BCM are detailed in:

- [BCM 50](#), *Prestressing Concrete*

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review the [Contract Specifications](#), Section 51-4, *Concrete Structures – Precast Concrete Members*, that this BCM is based on, as identified in the title block above. The information in the *Contract Specifications* typically will not be repeated in the text of this BCM.

Process Inputs

1. Form [CEM-3101](#), *Notice of Materials to be Used*
2. Precast concrete member shop drawings
3. Casting schedule
4. Certificate of compliance for precast culverts
5. Girder erection work plan
6. [Form TL-38](#), *Inspection Request*

Procedure

1. All work associated with this process is charged as [Project-Direct – Construction](#).
2. Inspection of field work for this process is:
 - a. [Benchmark](#): for delivery of precast concrete members.
 - b. [Intermittent](#): for installation of precast concrete member.
 - c. [Continuous](#): for installation of major precast concrete elements near traffic.
3. Before construction begins:
 - a. Review the following references:
 - i. RE Pending File (Designer Notes and 4-Scale Deck Contours)
 - ii. *Concrete Technology Manual*, [Chapter 3](#), *Review of Concrete Mix Designs*
 - iii. [Construction Manual](#):
 1. Chapter 4, *Construction Details*, [Subsection 4-9004](#), *Precast Concrete*
 2. Chapter 6, *Sampling and Testing*, [Subsection 6-203A](#), *Source Inspection*

- iv. *Reinforced Concrete Construction Manual*, [Chapter 7](#), Bridge Deck Construction
 - v. *Memo to Designers 9-3, Widening Existing Bridges*, and *Memo to Designers 11-1, Prestressed Concrete – Shop Drawing Review*
 - vi. *Contract Specifications*, Section 90-4, *Concrete – Precast Concrete*, for documents required prior to fabricating precast members (i.e. Test data, Daily Temperature data, Precast Concrete Quality Control Plan, Quality Control Meeting, etc.)
- b. Discuss responsibilities for fabrication of precast concrete members with the MR. Include the following topics in the discussion:
- i. Procedures for processing Non-Compliant Reports (NCRs), which are issued by METS for resolving inconsistencies between the authorized precast concrete member shop drawings and the fabricated precast member.
 - ii. The Critical Path Method (CPM) schedule includes fabrication and erection of precast concrete members.
 - iii. The fabrication schedule.
 - iv. The requirement that the contractor must submit Form TL-38, *Inspection Request*.
 - v. Materials release procedure via Form TL-0029, *Report of Inspection of Material*.
 - vi. Anticipated date of precast concrete member delivery to the job site.
 - vii. Precast fabrication requirements.
 - viii. Delivery, handling, and storage of precast concrete members with the contractor.
 - ix. Time-dependent precast concrete member deflection, grade adjustments, and bearing pad thickness with the contractor.
 - x. Precast concrete member splicing requirements with the contractor, if applicable.
 - xi. Protection of protruding prestressing strand, and/or exposed reinforcing steel during stage construction, if applicable.
 - xii. Establish a project specific inspection plan and communication protocols between Structure Representative, Assistant Structure Representative(s), and Materials Representative.
- c. For precast concrete girders:

- i. Verify information is correct on Form CEM-3101, *Notice of Materials to be Used*.
- ii. Review and authorize or reject the shop drawings, verify drawings include anticipated deflection calculations, that materials are on the [Authorized Materials List](#) and maintain a submittal log to ensure timely review.
- iii. Coordinate review and authorization of Precast Concrete Quality Control Plan with METS. Notify the contractor in writing.
- iv. Ensure that the MR is invited to the Quality Control Meeting. Refer to the *Contract Specifications*, Section 90-4.01D(2)(b), *Prestressing Concrete – Precast Concrete – General – Quality Assurance – Quality Control – Quality Control Meeting*.
- v. Verify that a Precast Concrete Report is submitted to the engineer before the precast concrete members are shipped to the jobsite. Coordinate the review of this report with METS for compliance and acceptance. Refer to the *Contract Specifications*, Section 90-4.01C(5), *Prestressing Concrete – Precast Concrete – General – Submittals – Precast Concrete Report*.
- vi. Discuss requirements for the precast concrete girder erection work plan with the contractor, with special attention for traffic locations and railroads.
- vii. Review and authorize or reject the precast concrete girder erection work plan. Notify the contractor in writing.

4. During construction:

- a. Request verification of all precast concrete member camber values and other controlling dimensions from the MR prior to the release of the precast members.
- b. Ensure that precast concrete members delivered to the project site have been properly released by METS before being incorporated into the work. If concrete members are delivered without a METS release, coordinate with the MR and verify member is fit for purpose prior to field release.
- c. Collect Form TL-0624 (Orange tags) from the precast concrete members, verify the Orange tags match the Form TL-0029, *Report of Inspection of Material*, attach the Orange tags to Form TL-0029, and file.
- d. Verify precast concrete members are delivered, handled, and stored in accordance with the requirements of the contract documents and the authorized shop drawings.
- e. Verify precast concrete members are erected in accordance with the requirements of the contract documents and authorized erection work plan.

- f. Verify precast concrete members are spliced in accordance with the requirements of the contract documents.
 - g. Verify top of precast concrete girders do not reduce the bridge deck thickness after erection.
 - h. Hold safety meeting in conjunction with the contractor before delivery and installation. Refer to Cal/OSHA Title 8, Subchapter 4, *Construction Safety Orders*:
 - i. [Article 24](#), *Fall Protection*
 - ii. [§ 1711](#), *Reinforcing Steel and Post-Tensioning in Concrete Construction*
 - iii. [§ 1712](#), *Requirements for Impalement Protection*
 - i. Track quantities for the monthly payment estimates.
 - j. Document all inspection, construction, and quality assurance activities, pertinent to this BCM, in the Daily Reports per [BCM C-7](#), *Daily and Weekly Reports*.
5. Following construction:
- a. Review and follow as-built guidelines in [BCM C-6](#), *Required Documents to be Submitted During Construction*.
6. File all project documentation (materials acceptance documentation, correspondence, Daily Reports, etc.) in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-102](#), *Organization of Project Documents*.

Process Outputs

1. Precast concrete members fabricated and installed in conformance with contract requirements
2. Authorized precast concrete member submittals
3. Submittal logs
4. [Form TL-0029](#), *Report of Inspection of Material*, with attached orange tags
5. Daily Reports

Attachments

None