



## **Prestressing Concrete – General – Quality Assurance**

### **Revision and Approval**

Revision	Date	Nature of Changes	Approved By
0	11-16-2018	Original issue.	Steve Altman

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### **Background**

This process establishes the responsibilities and procedures of Structure Construction (SC) for prestressing quality assurance. This includes review of materials release and quality acceptance, the Contractor's prestressing equipment calibration and certification, pressure testing ducts and duct demonstrations, void investigation, and the Contractor's personnel qualification requirements.

The contract documents have specific requirements for each Quality Assurance (QA) activity. This is for the purpose of specification compliance and assurance that each prestressed structure or structural element performs as designed.

Department Acceptance is covered in [BCM 50-1.01D\(3\)](#), *Prestressing Concrete – General – Quality Assurance – Department Acceptance*.

### **Process Inputs**

1. [CEM-3101](#), *Notice of Materials to be Used*, per [Standard Specifications \(SS\)](#)<sup>1</sup>.
2. Prestressing submittals per [BCM 50-1.01C](#), *Prestressing Concrete – General Submittals*
3. Lot numbers and tags for prestressing materials per SS<sup>2</sup>.
4. Equipment proposed for prestressing per SS<sup>3</sup>.

<sup>1</sup> 2015 SS, Section 6-1.01, *Control of Materials, General*

<sup>2</sup> 2015 SS, Section 50-1.01D(1), *Prestressing Concrete – Quality Assurance – General*

<sup>3</sup> 2015 SS, Section 50-1.01D(2)(b), *Prestressing Concrete – Quality Assurance – Quality Control – Equipment and Calibration*

5. Contractor to schedule the calibration of the jacking equipment and pressure gauges with Materials and Engineering Testing Services (METS) per SS<sup>3</sup>.
6. Notification from the Contractor for pressure testing of prestressing ducts per SS<sup>4</sup>.
7. Notification from the Contractor to witness duct demonstrations per SS<sup>5</sup>.
8. Notification from the Contractor for duct void investigations per SS<sup>6</sup>.
9. Copy of certificate to verify technician is certified as a Level 2 Bonded PT Field Specialist per SS<sup>7</sup>.
10. Copy of certificate to verify technician is certified as a Grouting Technician per SS<sup>7</sup>.

## **Procedure**

1. All work associated with this process should be charged to the [Project Direct - Construction](#).
2. Field work for this process is:
  - a. [Continuous](#) inspection is required for pressure testing ducts, duct demonstrations for post-tensioned members, and void investigation.
  - b. Inspection as required to ensure contract compliance with project plans and specifications, materials, and workmanship acceptance.
3. Before construction begins:
  - a. Review authorized prestressing shop drawing submittals to verify materials contract compliance.
  - b. Verify all material released by METS matches individual lot numbers and release tags:
    - i. Materials not inspected and released by METS must be field released.
  - c. Verify prestressing equipment has been calibrated in accordance with the requirements of the contract documents and [calibration charts](#).
  - d. Verify qualifications of Contractor personnel performing prestressing and grouting operations.
4. During construction:

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<sup>4</sup> 2015 SS, Section 50-1.01D(2)(c), *Prestressing Concrete – Quality Assurance – Quality Control – Pressure Testing Ducts*

<sup>5</sup> 2015 SS, Section 50-1.01D(2)(d), *Prestressing Concrete – Quality Assurance – Quality Control – Duct Demonstrations for Post-Tensioned Members*

<sup>6</sup> 2015 SS, Section 50-1.01D(2)(e), *Prestressing Concrete – Quality Assurance – Quality Control – Void Investigation*

<sup>7</sup> 2015 SS, Section 50-1.01D(2)(f), *Prestressing Concrete – Quality Assurance – Quality Control – Personnel Qualification*

- a. Verify prestressing ducts meet pressure testing requirements of the contract documents per SS<sup>8</sup>.
- b. Verify prestressing ducts meet demonstration requirements of the contract documents per SS<sup>9</sup>.
- c. Verify void investigation of ducts is performed and any voids are filled with secondary grout per SS<sup>10</sup>.
- d. Complete [SC-4305](#), *Air Pressure Test – Prestress Ducts* document per [Attachment 1](#).
- e. Document all inspection, construction, and quality assurance activities in the Daily Reports per [BCM C-4.04](#), *Daily and Weekly Reports*.

### **Process Outputs**

1. Daily reports
2. Prestressing quality assurance documentation

### **Attachments**

[Attachment 1](#), SC-4305, *Air Pressure Test – Prestress Ducts*

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<sup>8</sup> 2015 SS, Section 50-1.01D(2)(c), *Prestressing Concrete – Quality Assurance – Quality Control – Pressure Testing Ducts*

<sup>9</sup> 2015 SS, Section 50-1.01D(2)(d), *Prestressing Concrete – Quality Assurance – Quality Control – Duct Demonstrations for Post-Tensioned Members*

<sup>10</sup> 2015 SS, Section 50-1.01D(2)(e), *Prestressing Concrete – Quality Assurance – Quality Control – Void Investigation*