

This quality assurance ITP supplements the inspection procedures of the SFQM and other supporting QA documents by tabulating the progression of QA inspections and tests required by MDOT as part of its acceptance of structural precast prestressed spun concrete poles. It is considered standard shop inspection for this product, characterized by fabrication document review and shop inspection of **only one member fabricated from start to finish**. QAIs are required to be onsite to perform fabrication inspection with the exception of strength testing, which must be witnessed remotely. Visits to Fabricator subcontractors and component manufacturers require SFU approval or direction via MDOT Work Assignment.

The Consultant determines the schedule for part-time and remote activity; however, having the QAI arrive to the fabrication shop earlier than the day prior to the start of fabrication of the one member they are inspecting is not permitted without SFU approval. Fabrication document review consists of the following:

- Initial Documents: QAI performs a thorough content review of all fabrication documents relevant to fabrication of the member being inspected.
- Remaining Documents: QAI verifies standard fabrication documents have been submitted but does not review content of documents.

The SFU may require or perform special onsite inspections or process audits to supplement this ITP.

All instances of required SFU approval noted in this document must be in writing from the MDOT PM.

1.1 QAI Activities (Inspection and Test Items)

QAI activities are listed in the table below along with their referenced requirements, activity codes, frequency, description, and output/record. Each activity is assigned a code to designate whether the activity is performed by the Fabricator and observed by the QAI or is performed by the QAI either solely or as an independent check of a QC inspection or test. The activity codes are defined in Section 1.2 below.

The term “Suitable intervals” when used in this ITP means the activity is required to occur at least once per project (or once per multiple projects going through the fabrication plant concurrently) with follow up duration and frequency determined by the QAI based on conditions such as QC inspection effectiveness and production workmanship provided the QAI works within the limits of their inspection hours. Duration is the time spent observing an activity. Frequency is how often an observation is required and is expressed as elapsed time or quantity of work completed between observations. At the QAI’s discretion, duration and frequency may differ between projects based on project complexity or Fabricator experience and may change during a project based on Fabricator performance provided the QAI works within the limits of their inspection hours.

Conformance of certain quality control and fabrication activities, required for fabrication of one member, that occur without the QAI present or onsite must be substantiated by the QAI with direct proof or competent evidence. QC inspections are substantiated by reviewing quality documentation supplied by the QCI and follow-up review, onsite or remote, with the QCI. Fabrication steps are similarly substantiated during the onsite QAI inspection.

When used in the Description column the term “verify” is the action by the QAI to establish correspondence of observed facts or details with recorded facts and details. It implies a responsibility by the QAI to confirm completion and conformance of an action or condition with expected requirements. For this ITP, it implies either onsite or remote QAI activity.

1.2 QAI Activity Codes

M = Monitor: QAI routinely observes the Fabricator’s active quality control and fabrication activities at suitable intervals. The Fabricator’s activities may be conducted without the QAI being present to monitor, even if the QAI is onsite.

P = Perform: QAI is responsible for actual completion of the step. These activities include verification inspections, tests, and review of quality control records for adequacy and completeness.

W = Witness: QAI must be present and observe the required activity performed by the Fabricator.

1.3 Hold Points

Some activities are identified as hold points. These are sensitive steps that require QAI notification by the Fabricator. Fabrication must not proceed past these points, for fabrication of the member being inspected, until the QAI is either satisfied of the outcome through direct testing or observation of testing, or the QAI grants a waiver or conditional release of the hold point based on situational evaluation. QAI satisfaction or waiver does not constitute product acceptance, which is the responsibility of the Fabricator. Hold points for fabrication of remaining members are understood to be waived for times when the QAI is not scheduled to be onsite.

The prefabrication meeting minute template initially establishes the minimum number of QAI hold points – see [blue shaded rows](#) below. The QAI may recommend, or request modification or addition of hold points for the approval of the SFU, at the start of fabrication – see note below.

QAI may request additional inspections, tests, or hold points during the fabrication process due to established action limits/suspension limits being exceeded or in reaction to a loss of confidence in a process. Additional inspections, tests, or hold points will be conveyed in writing to the Fabricator and must result in minimal impact to project schedule. SFU approval is required – see note below.

Ideally, the Fabricator must convey project schedule in writing to confirm when hold point inspections will occur and that the QAI is available for the hold point inspection as requested by the Fabricator. The QAI must reply to any written requests for hold point inspections. Other forms of communication are acceptable if documented (defining Fabricator notification to the QAI and QAI response) and agreed to at the prefabrication meeting.

Note - Any increase in inspection criteria or inspection hold points must be based on objective evidence. Rationale for additional inspection or hold point should be discussed with the MDOT Structural Precast Concrete Specialist prior to notifying the Fabricator of the new inspection requirements.

1.4 Output/Record

Where the Fabrication Inspection Report (Form 5617) is listed in the Output/Record column, the QAI may substitute a Consultant form meeting the requirements of the SFQM. Where other MDOT forms are listed, it is implied they are only necessary when the associated activities are performed.

1.5 ITP Table

The ITP table starting on the next page is sufficient for most projects. However, adjustments are permitted to suit specific project needs. Any adjustments must conform to project requirements and must be made in writing and shared with the SFU and the Fabricator prior to start of production, preferably before or during the prefab meeting.

Custom ITPs developed by the Consultant are also permitted but must address all inspection and test activities listed in the ITP Table.

Altering the conditions detailed in the above introduction and outline is not permitted without SFU approval.

Inspection/Test Item	Referenced Requirement	Code	Frequency	Description	Output / Record
Approved Shop Drawings	SFQM 1.9.1, 2.2.3.2 & 2.2.3.6	P	Initially	Visually confirm shop drawings in use are approved. If Engineer permits Fabricator to proceed without approved drawings, notify Consultant PM and await instruction to proceed. If non-approved drawings are used for fabrication, compare approved drawings to unapproved drawings and noted deviations during fabrication – notify Consultant PM of any discrepancy.	Fabrication Inspection Report (Form 5617)
Materials Source List (MSL)	MDOT SSC 105.01.B SFQM 2.2.4.2.2	P	At or prior to pre-fabrication meeting	Review the MSL (Form 0501) approved by the Consultant FCS and discuss sampling and testing requirements with QC. Place a copy of the form along with any supporting documents in the project folder and note material changes to the MSL.	Material Source List (Form 0501) Fabrication Inspection Report (Form 5617)
Material Inventory	MDOT Prefabrication Meeting Minutes MDOT SSC 105.01.B SFQM 2.2.4.2.3	P	During material inventory	Inspect materials that will be used in the fabrication process for the member inspected and ensure they are being stored correctly, tagged for traceability purposes, and are in conformance with the contract. Conduct sampling and verify testing is complete as required. Send email to QC and Consultant PM when there are deficiencies.	Fabrication Inspection Report (Form 5617) Sample Identification (Form 1923) Email
Operations (Facility and Equipment)	SFQM 2.2.4.2.3	M	Suitable intervals	Inspect and monitor the Fabricator's work area and equipment, ensuring it is adequate and maintained in a condition to yield products conforming to project requirements. Note - Equipment includes cutting, welding, handling, forming, hole-making, surface preparation, coating, and inspection and testing as applicable. Verify calibrations of inspection and testing equipment and tensioning jack.	Fabrication Inspection Report (Form 5617)
Reinforcing Steel & Strand Placement	SFQM 2.2.4.5.3	P	One member	Spot check to confirm the reinforcing steel and/or welded wire reinforcement is of the correct size, free from defects, properly positioned (including lap lengths) and secured in accordance with the approved shop drawings. Confirm no crossed strands. Spot check strands are free of oil, foreign materials, or physical defects. Spot check to confirm required concrete cover.	Pre and Post Pour Inspection Checklist (Form 5616)
Blockouts & Inserts	SFQM 2.2.4.5.4	M	One member	Monitor blockout and insert placement.	Pre and Post Pour Inspection Checklist (Form 5616)
Readiness for Placing Concrete	MDOT Prefabrication Meeting Minutes SFQM 2.2.4.5.2 & 2.2.4.5.5	P	One member, prior to pouring concrete	Verify forms are of approved material, properly braced, clean, and coated with approved release agents. Obtain mix design number from QC prior to fresh concrete test for the member. Perform fresh concrete testing and verify results with Fabricator's QC test results. Observe strength test cylinder sampling and identification. Release hold point.	Pre and Post Pour Inspection Checklist (Form 5616)
Placing Concrete and Securing Form Mold	SFQM 2.2.4.5.6	M	Suitable intervals	Monitor concrete placement and closure of form mold.	Fabrication Inspection Report (Form 5617)

Inspection/Test Item	Referenced Requirement	Code	Frequency	Description	Output / Record
Initial Tensioning	SFQM 2.2.4.3	W	One member	Witness initial tensioning. Witness marking of strand at live and dead ends.	Strand Tensioning Report (Form 0513) Pre and Post Pour Inspection Checklist (Form 5616)
Final Tensioning	SFQM 2.2.4.4	W	One member	Witness final tensioning and verify loading.	Strand Tensioning Report (Form 0513)
Post Tensioning	SFQM 2.2.4.4	P	One member, after final tensioning	Complete independent elongation calculations and verify with QC results after final tensioning. Verify strand patterns. Perform the following activities after all strands have been final tensioned: Visually verify no strand slippage and net elongation of strands appear to be consistent, and measure net elongation on 25 percent of strands. Verify all wire and strand failures are resolved or acceptable as appropriate.	Strand Tensioning Report (Form 0513)
Curing	SFQM 2.2.4.7	M	One member	Observe the curing method for compliance with project requirements. For steam or radiant heat curing, review temperature monitoring documentation.	Fabrication Inspection Report (Form 5617)
Release Strength Testing	SFQM 2.2.4.6	W	One set of either release strength or 28-day strength tests for one member	Witness QC compression testing of cylinders that were cast and match cured per contract. Compression testing is verified by photographs, recorded videos, or live streaming video when remote inspection is established.	Fabrication Inspection Report (Form 5617)
28-Day Compressive Strength Testing	SFQM 2.2.4.10	W	One set of either release strength or 28-day strength tests for one member	Witness the compression testing performed by QC. Compression testing is verified by photographs, recorded videos, or live streaming videos for remote inspection.	Fabrication Inspection Report (Form 5617)