ORIGINATION FORM
Proposed Revisions to the Specifications
(Please provide all information - incomplete forms will be returned)

Date: 10/24/2018

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Specification Section: 105

Article/Subarticle: 8.6, 8.7 (new Subarticle), 8.8, 8.9

Will the proposed revision require changes to:

Publication	Yes	No	Office Staff Contacted
Standard Plans Index	○	◉	
Traffic Engineering Manual	○	◉	
FDOT Design Manual	○	◉	
Construction Project Administration Manual	○	◉	
Basis of Estimate/Pay Items	○	◉	
Structures Design Guidelines	○	◉	
Approved Product List	○	◉	
Materials Manual	◉	○	Jose Armenteros

Will this revision necessitate any of the following:

Design Bulletin ☐ **Construction Bulletin** ☐ **Estimates Bulletin** ☐ **Materials Bulletin** ☐

Are all references to external publications current? **Yes** ○ **No** ◉

If not, what references need to be updated? (Please include changes in the redline document.)

Materials Manual Section 9.2 Volume II

Why does the existing language need to be changed?

In accordance with the State Specification Office's policy, the personnel qualification requirements are included in Section 105.

Summary of the changes:

The personal qualification requirements of the structural concrete production facilities are moved from Materials Manual Section 9.2 Volume II to Section 105. The modified specifications require the testing technicians and quality control managers of the prestressed concrete plants to have active ACI Concrete Field Testing Technician - Grade I certification. The personnel who are performing Self-Consolidating Concrete (SCC) plastic property tests must have ACI Self-Consolidating Concrete Testing Technician Certification.

Are these changes applicable to all Department jobs? **Yes** ◉ **No** ○

If not, what are the restrictions?

Florida Department of Transportation

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ERIK R. FENNIMAN
INTERIM SECRETARY

M E M O R A N D U M

DATE: December 12, 2018

TO: Specification Review Distribution List

FROM: Dan Hurtado, P.E., State Specifications Engineer

SUBJECT: Proposed Specification: **1050806 Contractor Quality Control General Requirements.**

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change.

This change was proposed by Jose Armenteros of the State Materials Office to modify the language.

Please share this proposal with others within your responsibility. Review comments are due within four weeks and should be sent to Mail Station 75 or online at http://www2.dot.state.fl.us/ProgramManagement/Development/IndustryReview.aspx . Comments received after **January 10, 2019,** may not be considered. Your input is encouraged.

DH/dt
Attachment

CONTRACTOR QUALITY CONTROL GENERAL REQUIREMENTS.
(REV 11-27-18)

SUBARTICLES 105-8.6 through 105-8.11 are deleted and the following substituted:

105-8.6 Concrete QC Personnel:

105-8.6.1 Concrete Field Technician - Level ~~I~~1: Ensure technicians performing plastic property testing on concrete for materials acceptance are qualified CTQP Concrete Field Technicians - Level ~~I~~1. Plastic property testing will include but not be limited to slump, temperature, air content, water-to-cementitious materials ratio calculation, and making and curing concrete cylinders. Duties will include initial sampling and testing to confirm specification compliance prior to beginning concrete placements, ensuring timely placement of initial cure and providing for the transport of compressive strength samples to the designated laboratories. Ensure that~~In addition, the~~ personnel performing plastic property testing on ~~S~~self-~~C~~consolidating ~~C~~concrete (SCC) ~~plastic property tests must have~~possess an ACI Self-Consolidating Concrete Testing Technician Certification.

105-8.6.2 Concrete Field Inspector - Level ~~I~~2: Ensure field inspectors responsible for the quality of concrete being placed on the following structure types are qualified CTQP Concrete Field Inspectors - Level ~~I~~2:

1. Moveable bridges
2. Bridges over a water opening of 1,000 feet or more
3. Bridges with a span of 190 feet or more
4. Cable supported or cable stayed bridges
5. Post-tensioned bridges
6. Steel girder or steel truss bridges
7. Multi-level roadways

With the exception of concrete traffic railing placements, a Level ~~I~~2 Inspector must be present on the jobsite during all concrete placements. Prior to the placement of concrete, the inspector will inspect the element to be cast to ensure compliance with Contract Documents. A Level ~~I~~2 Inspector's duties may include ensuring that concrete testing, inspection, and curing in the field are performed in accordance with the Contract Documents. The QC Inspector will inform the Verification Inspector of anticipated concrete placements and LOT sizes.

105-8.6.3 Concrete Laboratory Technician - Level ~~I~~1: Ensure technicians testing cylinders and recording concrete strength for material acceptance are qualified CTQP Concrete Laboratory Technicians - Level ~~I~~1. Duties include final curing, compressive strength testing, and the recording/reporting of all test data.

105-8.7 Structural Concrete Production Facility Quality Control (QC) Personnel:

Ensure that each ~~P~~portland ~~C~~cement ~~S~~structural ~~C~~concrete ~~P~~production ~~F~~facility (~~P~~plant), has an onsite ~~P~~plant ~~M~~manager of QC, ~~C~~concrete ~~M~~mix ~~D~~designer, ~~C~~concrete ~~B~~batch ~~P~~plant ~~O~~operator, and ~~T~~testing ~~T~~technicians to provide QC inspections and testing.

Upon Department approval~~At the discretion of the Department~~, the functions of the above positions may be performed by the same person when it can be demonstrated that the ~~P~~plant's operation and quality of ~~the~~ concrete will not be detrimentally affected and ~~available~~ personnel have the ~~required~~ qualifications required herein.

105-8.7.1 Plant Manager of QC: Ensure that the ~~P~~plant ~~M~~manager of QC has at least three years of concrete related experience and the following training certifications:

1. CTQP Concrete Laboratory Technician - Level 1 certificate.
2. CTQP Concrete Field Technician - Level 1 certificate.
3. CTQP Concrete Batch Plant Operator certificate.

As alternatives to these certifications, the Department will accept, ~~as a minimum,~~ one of the following:

a. Prestressed Concrete Institute (PCI) QC Personnel Certification Level III.

b. Precast Concrete Pipe, Box Culverts, Drainage Structures or Incidental Precast Concrete Plants Level II QC Inspector Certifications.

c. National Ready Mixed Concrete Association (NRMCA) Certified Concrete Technologist Level 2.

105-8.7.2 Concrete Mix Designer: Ensure that the ~~C~~concrete ~~M~~mix ~~D~~designer has the CTQP Concrete Laboratory Technician - Level 2 certification. As an alternative, the Department will accept any of the following qualifications:

1. PCI QC Personnel Level III Certification, for concrete mix designs of prestressed concrete products.
2. National Ready Mix Concrete Association (NRMCA) Certified Concrete Technologist Level 3.
3. Any of the Level II QC certifications in accordance with 105-8.9.2.2.

105-8.7.3 Qualified Testing Technicians: Ensure that the testing technicians have the following certifications:

1. ACI Concrete Field Testing Technician - Grade I, for personnel performing concrete plastic property tests and ACI Self-Consolidating Concrete Testing Technician if testing ~~S~~self-~~C~~consolidating ~~C~~concrete (SCC).
2. ACI Concrete Strength Testing Technician, for personnel performing tests on hardened properties of concrete.

105-8.7.4 Concrete Batch Plant Operator: Ensure that the ~~C~~concrete ~~B~~batch ~~P~~plant ~~O~~operator has a CTQP Concrete Batch Plant Operator Certification.

105-8.8 Prestressed Concrete Plant Quality Control (QC) Personnel: Obtain personnel certifications from Department accredited training providers. The list of Department approved courses and their accredited providers is available on the SMO website at the following URL: http://www.fdot.gov/materials/administration/resources/training/structural/concrete-prestressed.shtm .

Ensure each prestressed concrete plant has an onsite production manager, an onsite plant ~~quality control~~QC manager, a plant engineer, and adequate onsite QC inspectors/technicians to provide complete QC inspections and testing.

Ensure the plant manager for QC has at least five years of related experience and the following certifications:

1. ACI Concrete Field Testing Technician - Grade I certification.
2. ~~and a current Precast/Prestressed Concrete Institute (~~PCI~~)~~ QC Personnel Certification Level III.
3. C~~and a current c~~ertificate of completion of Section 450 Specification examination.

Ensure that the QC inspector/technician has the following certifications:

1. ACI Concrete Field Testing Technician - Grade I certification.

2. C~~a current c~~ertificate of completion of Section 450 Specification examination.

105-8.8.1 Additional Requirements for Quality Control (QC) Personnel of Prestressed Manufacturing Facilities:

105-8.8.1.1 Testing Personnel: Ensure that testing technicians meet the requirement of 105-8.7.3.~~Ensure personnel performing tests have the following certifications:~~

~~Personnel performing plastic property tests must have ACI Concrete Field Testing Technician-Grade I certification.~~

~~Personnel performing laboratory compressive strength testing must have ACI Concrete Laboratory Testing Technician Level I certification or ACI Concrete Strength Testing Technician certification.~~

105-8.8.1.2 Batch Plant Operator: Ensure that the ~~B~~batch ~~P~~plant ~~O~~operator meets the requirement of 105-8.7.4.~~Ensure the concrete batch plant operator is qualified as a CTQP Concrete Batch Plant Operator. As an alternative to CTQP qualification, the Department will accept the Precast Concrete Structures Association (PCSA) Batch Plant Operator Certification.~~

105-8.~~10~~ 9 Pipe and Precast Concrete Products Manufacturing Facilities Quality Control (QC) Personnel:

105-8.~~10~~9.1 General: Obtain personnel certifications from Department accredited training providers. The list of Department approved courses and their accredited providers is available on the SMO website at the following URL: http://www.fdot.gov/materials/administration/resources/training/structural/index.shtm.

105-8.~~10~~9.2 Precast Concrete Drainage Structures, Precast Concrete Box Culvert, Precast Concrete Pipe, and Incidental Precast Concrete Manufacturing Facilities Quality Control (QC) Personnel:

105-8.~~10~~9.2.1 Level I Quality Control Inspectors: Ensure that the Level I Inspectors have the following certifications:

105-8.~~10~~9.2.1.1 Precast Concrete Drainage Technician Level I:

1. PCI Quality Control Technician Level I certification. As an alternative, a current Precast Concrete Quality Control Technician Level I certification in the respective work area will be accepted.

2. CTQP Concrete Field Technician Level ~~I~~1.

105-8.~~10~~9.2.1.2 Incidental Precast Concrete Technician - Level I:

1. PCI Quality Control Technician Level I certification. As an alternative, a current Precast Concrete Quality Control Technician Level I certification in the respective work area will be accepted.

2. CTQP Concrete Field Technician Level ~~I~~1.

105-8.~~10~~9.2.1.3 Precast Concrete Pipe Technician Level I:

1. Precast Concrete Pipe~~Quality Control~~ Technician Level I certification.

2. CTQP Concrete Field Technician Level ~~I~~1.

105-8.~~10~~9.2.2 Level II Quality Control Inspectors: Ensure that Level II Inspectors have the following certifications:

105-8.~~10~~9.2.2.1 Precast Concrete Drainage Technician Level II:

1. Precast Concrete Drainage Technician Level I, in accordance with 105-8.~~10~~9.2.1.1.

2. PCI Quality Control Technician Level II certification. As an alternative, a current Precast Concrete Quality Control Technician Level II certification in the respective work area will be accepted.

105-8.~~10~~9.2.2.2 Incidental Precast Concrete Technician Level II:

1. Incidental Precast Concrete Technician Level I, in accordance with 105-8.~~10~~9.2.1.2.

2. PCI Quality Control Technician Level II certification. As an alternative a current Precast Concrete Quality Control Technician Level II in the respective work area will be accepted.

3. Level II technicians who will perform of incidental prestressed products must have a current certificate of completion of Section 450 Specification examination.

105-8.~~10~~9.2.2.3 Precast Concrete Pipe Technician Level II:

1. Precast Concrete Pipe Technician Level I, in accordance with 105-8.~~10~~9.2.1.3.

2. Precast Concrete Pipe Technician Certification Level II.

105-8.~~10~~9.2.3 Plant Quality Control Manager: Ensure that the QC manager has a minimum of two years construction related experience in the specific work area and has the following certifications:

105-8.~~10~~9.2.3.1 Precast Concrete Drainage Facilities: Precast Concrete Drainage Technician Level II in accordance with 105-8.~~10~~9.2.2.1.

105-8.~~10~~9.2.3.2 Incidental Precast Concrete Facilities:

1. Incidental Precast Concrete Technician Level II in accordance with 105-8.~~10~~9.2.2.2.

2. Section 450 Specification Certification if the plant produces incidental prestressed products.

105-8.~~10~~9.2.3.3 Precast Concrete Pipe Facilities: Precast Concrete Pipe Technician Level II in accordance with 105-8.~~10~~9.2.2.3.

105-8.~~10~~9.2.4 Additional Requirements for Quality Control (QC) Personnel of Precast Concrete Drainage, Precast Concrete Box Culvert, and Incidental Precast Concrete Manufacturing Facilities:

105-8.~~10~~9.2.4.1 Testing Personnel: Ensure that testing technicians meet the requirement of 105-8.7.3.~~Ensure personnel performing tests have the following certifications:~~

~~Personnel performing plastic property tests must have ACI Concrete Field Testing Technician-Grade I certification.~~

~~Personnel performing laboratory compressive strength testing must have ACI Concrete Laboratory Testing Technician Level 1 certification or ACI Concrete Strength Testing Technician certification.~~

105-8.~~10~~9.2.4.2 Batch Plant Operator: ~~Ensure the concrete batch plant operator is qualified as a CTQP Concrete Batch Plant Operator. As an alternative to CTQP~~

~~qualification, the Department will accept the Precast Concrete Structures Association (PCSA) Batch Plant Operator Certification.~~ Ensure that the ~~B~~batch ~~P~~plant ~~O~~operator meets the requirement of 105-8.7.4.

For dry cast concrete pipe and dry cast drainage structures, as an alternative to CTQP qualification, the Department will accept the ACPA ~~Quality~~ QC School Level II Certification.

105-8.~~7~~ 10 Supervisory Personnel – Post-Tensioned and Movable Bridge Structures:

105-8.~~7~~10.1 General: Provide supervisory personnel meeting the qualification requirements only for the post-tensioned and movable bridge types detailed in this Article. Submit qualifications to the Engineer at the pre-construction conference. Do not begin construction until the qualifications of supervisory personnel have been approved by the Engineer.

105-8.~~7~~10.2 Proof of License or Certification: Submit a copy of the Professional Engineer license current and in force issued by the state in which registration is held. The license must be for the field of engineering that the construction work involves such as Civil, Electrical or Mechanical. Under certain circumstances Florida registration may be required.

Submit a copy of the license issued by the State of Florida for tradesmen that require a license indicating that the license is in force and is current. Submit a copy of the certification issued by the International Society of Automation for each Certified Control Systems Technician.

105-8.~~7~~10.3 Experience Record: Submit the following information for supervisory personnel to substantiate their experience record. The supervisor (project engineer, superintendent/manager or foreman) seeking approval must provide a notarized certification statement attesting to the completeness and accuracy of the information submitted. Submit the following experience information for each individual seeking approval as a supervisor:

Project owner's name and telephone number of an owner's representative, project identification number, state, city, county, highway number and feature intersected.

Detailed descriptions of each bridge construction experience and the level of supervisory authority during that experience. Report the duration in weeks, as well as begin and end dates, for each experience period.

The name, address and telephone number of an individual that can verify that the experience being reported is accurate. This individual should have been an immediate supervisor unless the supervisor cannot be contacted in which case another individual with direct knowledge of the experience is acceptable.

105-8.~~7~~10.4 Concrete Post-Tensioned Segmental Box Girder Construction: Ensure the individuals filling the following positions meet the minimum requirements as follows:

105-8.~~7~~10.4.1 Project Engineer-New Construction: Ensure the project engineer is a registered Professional Engineer with five years of bridge construction experience. Ensure a minimum of three years of experience is in segmental box girder construction engineering and includes a minimum of one year in segmental casting yard operations and related surveying, one year in segment erection and related surveying, including post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project engineer in responsible charge of segmental box girder construction engineering. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

105-8.~~7~~10.4.2 Project Engineer-Repair and Rehabilitation: Ensure the project engineer is a registered Professional Engineer with five years of bridge construction experience. Ensure a minimum of three years of experience is in segmental box girder construction engineering and includes one year of post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project engineer in responsible charge of segmental box girder rehabilitation engineering or segmental box girder new construction engineering.

105-8.~~7~~10.4.3 Project Superintendent/Manager-New Construction: Ensure the project superintendent/manager has a minimum of ten years of bridge construction experience or is a registered Professional Engineer with five years of bridge construction experience. Ensure that a minimum of three years of experience is in segmental box girder construction operations and includes a minimum of one year in the casting yard operations and related surveying, one year in segment erection and related surveying including post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project superintendent/manager in responsible charge of segmental box girder construction operations. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

105-8.~~7~~10.4.4 Project Superintendent/Manager-Repair and Rehabilitation: Ensure the project superintendent/manager has a minimum of five years of bridge construction experience or is a registered Professional Engineer with three years of bridge construction experience. Ensure that a minimum of two years of experience is in segmental box girder construction operations and includes a minimum of one year experience performing post-tensioning and grouting of longitudinal tendons and a minimum of one year as the project superintendent/manager in responsible charge of segmental box girder rehabilitation operations or segmental box girder new construction operations.

105-8.~~7~~10.4.5 Foreman-New Construction: Ensure that the foreman has a minimum of five years of bridge construction experience with two years of experience in segmental box girder operations and a minimum of one year as the foreman in responsible charge of segmental box girder new construction operations. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

105-8.~~7~~10.4.6 Foreman-Repair and Rehabilitation: Ensure the foremen has a minimum of five years of bridge construction experience with two years of experience in segmental box girder operations and a minimum of one year as the foreman in responsible charge of segmental box girder rehabilitation operations or segmental box girder new construction operations.

105-8.~~7~~10.4.7 Geometry Control Engineer/Manager: Ensure that the geometry control engineer/manager for construction of cast-in-place box segments is a registered Professional Engineer with one year of experience, a non-registered Engineer with three years of experience or a registered Professional Land Surveyor with three years of experience in geometry control for casting and erection of cast-in-place box segments. Credit for experience in cast-in-place box girder geometry control will be given for experience in precast box girder geometry control but not vice versa.

Ensure that the geometry control engineer/manager for precast box segments is a registered Professional Engineer with one year of experience or non-registered with three years of experience in casting yard geometry control of concrete box segments.

The geometry control engineer/manager must be responsible for and experienced at implementing the method for establishing and maintaining geometry control for segment casting yard operations and segment erection operations and must be experienced with the use of computer programs for monitoring and adjusting theoretical segment casting curves and geometry. This individual must be experienced at establishing procedures for assuring accurate segment form setup, post-tensioning duct and rebar alignment and effective concrete placement and curing operations as well as for verifying that casting and erection field survey data has been properly gathered and recorded. Ensure this individual is present at the site of construction, at all times while cast-in-place segmental box girder construction is in progress or until casting yard operations and segment erection is complete.

105-8.~~7~~10.4.8 Surveyor: Ensure that the surveyor in charge of geometry control surveying for box segment casting and/or box segment erection has a minimum of one year of bridge construction surveying experience. Ensure this individual is present at the site of construction, at all times while segmental box girder construction or segment erection is in progress.

105-8.~~7~~10.5 Movable Bridge Construction: Ensure the individual filling the following positions meet the minimum requirements as follows:

105-8.~~7~~10.5.1 Electrical Journeyman: Ensure the electrical journeyman holds, an active journeyman electrician's license and has at least five years experience in industrial electrical work, or is a certified control systems technician. A certified control systems technician will not be permitted to perform electrical power work including, but not limited to, conduit and wire-way installation or power conductor connection. Ensure the electrical journeyman has successfully completed the installation of one similar movable bridge electrical system during the last three years.

105-8.~~7~~10.5.2 Control Systems Engineer and Mechanical Systems Engineer: Ensure the control systems engineer and mechanical systems engineer are both registered Professional Engineers with a minimum of 10 years supervisory experience each in movable bridge construction. Ensure the engineers have working knowledge of the movable bridge leaf motion control techniques, mechanical equipment and arrangements specified for this project. Ensure that each engineer has been in responsible control of the design and implementation of at least three movable bridge electrical control and machinery systems within the past 10 years of which, at least one of the three bridges was within the last three years. Ensure that a minimum of one of the three bridge designs incorporated the same type of leaf motion control and machinery systems specified for this project.

105-8.~~7~~10.6 Concrete Post-Tensioned Other Than Segmental Box Girder Construction: Ensure the individual filling the following positions meet the minimum requirements as follows:

105-8.~~7~~10.6.1 Project Engineer: Ensure the project engineer is a registered Professional Engineer with five years of bridge construction experience. Ensure that a minimum of three years of experience is in concrete post-tensioned construction. Ensure that the three years of experience includes experience in girder erection, safe use of cranes, stabilization of girders; design of false work for temporary girder support, post-tensioning and grouting operations, and a minimum of one year as the project engineer in responsible charge of post-tensioning related engineering responsibilities.

105-8.~~7~~10.6.2 Project Superintendent/Manager: Ensure the project superintendent/manager has a minimum of ten years of bridge construction experience or is a

registered Professional Engineer with five years of bridge construction experience and has a minimum of three years of supervisory experience in girder erection, safe use of cranes, stabilization of girders; design of falsework for temporary girder support post-tensioning, grouting operations and a minimum of one year as the project superintendent/manager in responsible charge of post-tensioning related operations.

105-8.~~7~~10.6.3 Foreman: Ensure the foremen has a minimum of five years of bridge construction experience with two years of experience in post-tensioning related operations and a minimum of one year as the foreman in responsible charge of post-tensioning related operations.

105-8.~~7~~10.7 Post-Tensioning (PT) and Filler Injection Personnel Qualifications: Perform all stressing and filler injection operations in the presence of the Engineer and with personnel meeting the qualifications of this article. Coordinate and schedule all PT and filler injection activities to facilitate inspection by the Engineer.

105-8.~~7~~10.7.1 Post-Tensioning: Perform all PT field operations under the direct supervision of a Level II CTQP Qualified PT Technician who must be present at the site of the post-tensioning work during the entire duration of the operation. For the superstructures of bridges having concrete post-tensioned box or I girder construction, provide at least two CTQP Qualified PT Technicians, Level I or II, on the work crew. The supervisor of the work crew, who must be a Level II CTQP Qualified PT Technician, may also be a work crew member, in which case, the supervisor shall count as one of the two CTQP qualified work crew members. For PT operations other than the superstructures of post-tensioned box or I girder construction, perform all PT operations under the direct supervision of a Level II CTQP Qualified PT Technician who must be present at the site of the PT work during the entire duration of the operation. Work crew members are not required to be CTQP qualified.

105-8.~~7~~10.7.2 Grouting: Perform all grouting field operations under the direct supervision of a Level II CTQP Qualified Grouting Technician who must be present at the site of the grouting work during the entire duration of the operation. For the superstructures of bridges having concrete post-tensioned box or I girder construction, provide at least two CTQP Qualified Grouting Technicians, Level I or II, on the work crew. The supervisor of the work crew, who must be a Level II CTQP Qualified Grouting Technician, may also be a work crew member, in which case, the supervisor shall count as one of two CTQP qualified work crew members. For grouting operations other than the superstructures of post-tensioned box or I girder construction, perform all grouting operations under the direct supervision of a Level II CTQP Qualified Grouting Technician who must be present at the site of the grouting work during the entire duration of the operation. Work crew members are not required to be CTQP qualified.

Perform all vacuum grouting operations under the direct supervision of a crew foreman who has been trained and has experience in the use of vacuum grouting equipment and procedures. Submit the crew foreman's training and experience records to the Engineer for approval prior to performing any vacuum grouting operation.

105-8.~~7~~10.7.3 Flexible Filler Injection: Perform all filler injection operations under the direct supervision of a filler injection foreman who has American Segmental Bridge Institute (ASBI) certification in the flexible filler process. Provide at least two CTQP Qualified Grouting Technicians with ASBI certification in the flexible filler process, one of whom must be a Level II CTQP Qualified Grouting Technician. Both technicians must be present at the site of the flexible filler injection work during the entire duration of the operation.

Provide a filler injection quality control (QC) inspector who has ASBI certification in the flexible filler process. The filler injection QC inspector must be present at the site of the flexible filler injection work during the entire duration of the operation.

Verifiable experience performing injection of similar flexible filler on at least two projects is acceptable in lieu of ASBI certification in the flexible filler process.

Perform all flexible filler repair operations under the direct supervision of a crew foreman who has been trained and has verifiable experience in the use of vacuum flexible filler repair equipment and procedures. Submit the crew foreman's training and experience records to the Engineer prior to performing any flexible filler operation.

105-8.~~7~~10.8 Failure to Comply with Bridge Qualification Requirements: Make an immediate effort to reestablish compliance. If an immediate effort is not put forth as determined by the Engineer, payment for the bridge construction operations requiring supervisors to be qualified under this Specification will be withheld up to 60 days. Cease all bridge construction and related activities (casting yard, etc.) if compliance is not met within 60 days, regardless of how much effort is put forth. Resume bridge construction operations only after written approval from the Engineer stating that compliance is reestablished.

105-8.~~9~~ 11 Signal Installation Inspector: Provide an inspector trained and certified by the International Municipal Signal Association (IMSA) as a traffic signal inspector to perform all signal installation inspections. Use only Department approved signal inspection report forms during the signal inspection activities. Ensure all equipment, materials, and hardware is in compliance with Department Specifications and verify that all equipment requiring certification is listed on the Department's Approved Product List (APL). Submit the completed signal inspection report forms, certified by the IMSA traffic signal inspector to the Engineer.

The Department's approved inspection report forms are available at the following URL: http://www.fdot.gov/traffic/.

105-8.~~11~~ 12 Structural Steel and Miscellaneous Metals Fabrication Facility Quality Control Personnel: Ensure each fabrication facility has an onsite production manager, an onsite facility manager for QC, a plant engineer, and on-site QC inspectors/technicians to provide complete QC inspections and testing.

Ensure that the facility manager for QC and QC inspectors/technicians meet the certification requirements set forth in the latest version of AASHTO/NSBA Steel Bridge Collaboration S 4.1, Steel Bridge Fabrication QC/QA Guide Specification, including the years of experience required in Table 105-~~5~~ 1 below. The facility manager for QC must meet the requirements of Table 105-~~5~~ 1 for every structural steel member type produced by a plant with QC being managed by the facility manager for QC. The facility manager for QC will report directly to the plant manager or plant engineer and must not be the plant production manager nor report to or be the subordinate of the plant production manager. QC inspectors/technicians must be the employees of, and must report directly to the facility manager for QC.

TABLE 105-~~5~~1
Experience Requirements for QC Inspectors/Technicians
And Facility Manager for Quality Control

Structural Steel Member Type	Minimum Years of Experience Required	
	QC Inspector/Technician	Facility Manager for QC
Rolled beam bridges	1 year	3 years

TABLE 105-~~5~~1 Experience Requirements for QC Inspectors/Technicians And Facility Manager for Quality Control		
Structural Steel Member Type	Minimum Years of Experience Required	
	QC Inspector/Technician	Facility Manager for QC
Welded plate girders (I sections, box sections, etc.)	2 years	4 years
Complex structures, such as trusses, arches, cable stayed bridges, and moveable bridges	3 years	5 years
Fracture critical (FC) members	3 years	5 years