



Florida Department of Transportation

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GOVERNOR

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THOMAS F. BARRY, JR.
SECRETARY

MEMORANDUM

DATE: November 4, 2002
TO: Specification Review Distribution List
FROM: Duane F. Brautigam, P.E., State Specifications Engineer
SUBJECT: Proposed Specifications Change – D1050000 – Quality Control Plan.

In accordance with Specification Development Procedures, we are sending you a copy of a proposed specification change to Section 105.

This change was proposed by Susan Blazo of the State Materials Office to place QC personnel requirements in this Section.

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 to my attention via e-mail at SP965DB or duane.brautigam@dot.state.fl.us. Comments received after December 2, 2002 may not be considered. Your input is encouraged.

DFB/jho

Attachment

COMMENTS:

Submitted by:

Phone #:

**CONTRACTOR QUALITY CONTROL PLAN.
(REV 10-31-02)**

Section 105 (of the Supplemental Specifications) is deleted and the following substituted:

**SECTION 105
CONTRACTOR QUALITY CONTROL PLAN**

105-1 General.

Certain operations require qualified personnel. For all applicable materials included in the Contract, comply with the following Quality Control and personnel requirements.

Certain materials require production under an approved Quality Control Plan to ensure that these materials, whether manufactured or processed, or procured from suppliers or subcontractors, meet the requirements of the Contract. Applicable materials are identified in 6-8. For all applicable materials included in the Contract, submit a Quality Control Plan prepared in accordance with the requirements of this Section to the Engineer. Do not incorporate any of these materials into the project prior to the Engineer's approval of the Quality Control Plan.

105-2 Personnel Qualifications Certification of Compliance.

~~105-2.1 General: Provide qualified personnel for sampling, testing and inspection of materials and construction activities. Ensure that qualifications are maintained during the course of sampling, testing and inspection. Continuance of the Department's qualifications are subject to satisfactory results from periodic Independent Assurance evaluations.~~

~~105-2.2 Construction Training and Qualification Program (CTQP): Refer to the Construction Training and Qualification manual.~~

~~105-2.3 Other Qualification Requirements: Refer to related specifications for additional personnel qualification requirements.~~

Provide the Engineer with a notarized monthly certification of compliance with the requirements of this Section to accompany each progress estimate on a form provided by the Engineer. The Department may not authorize payment of any progress estimate not accompanied by an executed certification document. This certification will be required as a final certification summarizing all exceptions before final payment will be made in accordance with 9-9.

105-3 Guidelines for Development of the Quality Control Plan.

105-3.1 General: Use the following guidelines for developing the Quality Control Plan. Respond to the items that are applicable to the material(s), and related production and field operations. Include other items in addition to these guidelines as necessary.

105-3.2 Personnel:

105-3.2.1 Qualifications: Submit the list of qualified technicians with their Training Identification Numbers (TIN) for all technicians performing sampling, testing and inspection for both field and laboratory tests. Include employed and subcontracted technicians.

105-3.2.2 Level of Responsibility: Identify the primary contact for the Department. Identify roles and responsibilities of various personnel involved in the quality control process.

105-3.3 Raw Materials:

105-3.3.1 Source: Identify the sources of raw materials. Provide locations and plant or mine numbers when applicable.

105-3.3.2 Certification: Describe methods of verifying compliance of certification with the specifications.

105-3.3.3 Disposition of Failing Materials: Describe the system for controlling non-conforming materials, including procedures for identification, isolation and disposition.

105-3.4 Storage Facilities for Raw Materials: Describe measures and methods, including bedding details, for preventing segregation, contamination and degradation.

Describe methods of identifying individual materials. Where applicable, submit a site plan showing the locations of various materials.

105-3.5 Production Equipment: Describe calibration frequencies, maintenance schedule and procedures for production equipment.

105-3.6 Plant Requirements:

105-3.6.1 Plant Identification: Provide the mailing address, physical address including county and X-Y coordinates of the plant, telephone and fax numbers, E-mail address, primary contact at the plant, responsible person in charge, approved facility number provided by the Department, Owner information and Vendor Number and other information as required.

105-3.6.2 Process Control System: Describe the methods and measures established to ensure Contract compliance for the produced materials that are supplemental to the Quality Control sampling and testing program described in the Contract. These methods and measures shall include, but are not limited to, inspection schedule, additional sampling and testing, maintenance schedule, etc.

105-3.6.3 Loading and Shipping Control: Describe the methods and measures for preventing segregation, contamination and degradation during loading and shipping operations. Describe the methods established for materials to be in compliance with the specifications at the point of use.

105-3.6.4 Types of Products Generated: Describe the products the plant is approved to produce under Department guidelines.

105-3.7 Other Requirements:

105-3.7.1 Copy of Certification: Attach examples of certifications issued by the plant/Contractor for the products approved by the Department.

105-3.7.2 Statement of Compliance: Include a statement of compliance with all quality requirements set forth by the Department including Contract Documents and other Department manuals.

105-3.7.3 Information on Producer's Quality Control Plan: Submit copies of the Department's approval of the Producers' Quality Control Plans.

105-3.7.4 Describing Documentation Procedure: Identify location of document storage to enable Department review. Include quality control charts, qualification/accreditation records, inspection reports, and other pertinent/supporting documents for an approved Quality Control Program.

105-3.8 Final Manufactured Product – Plant Operations: Describe inspection schedule and methods for identifying defects and non-compliance with the specifications. Describe corrective actions and methods to resolve them.

105-3.8.1 Storage: When storage of the produced materials is required and it is not defined in the Contract Documents, describe the methods and duration for storage. Include measures and methods for preventing segregation, contamination and degradation during storage.

105-3.8.2 Disposition of Failing Materials: When not described in the specifications, describe the methods and measures for identifying and controlling the failing materials. Include preventive and corrective measures. Describe disposition of failing materials.

105-3.9 Final Manufactured Product – Field Operations:

105-3.9.1 Transportation: Describe the method of delivery from the point of production/storage to the point of placement.

105-3.9.2 Storage: When storage of the produced materials is required and it is not defined in the Contract Documents, describe the methods and duration for storage. Include measures and methods for preventing segregation, contamination and degradation during storage.

105-3.9.3 Placement: Describe the methods and identify the type of equipment used in incorporation of the materials into the project.

105-3.9.4 Disposition of Failing Materials: When not described in the specifications, describe the methods and measures for identifying and controlling the failing materials. Include preventive and corrective measures. Describe disposition of failing materials.

105-3.10 Testing Laboratories: Identify the laboratories performing testing. Ensure that the testing laboratories comply with the Laboratory Qualification Program requirements of 6-9.

105-4 Quality Control Plan Submittal.

Submit the Quality Control Plan to the Engineer for approval within 21 calendar days after the Contract Award. The Engineer will review the Quality Control Plan and respond to the Contractor within 21 calendar days of receipt.

If at any time the Contractor is not in compliance with the approved Quality Control Plan, or a part thereof, affected portions of the plan will be disapproved. Cease work in the affected operation(s) and submit a revision to the Engineer. If the Quality Control Plan, or a part thereof, must be revised, submit the revision to the Engineer. The Engineer will review the revision and respond within seven calendar days of receipt.

Continue to work on operations that are still in compliance with the approved sections of the Quality Control Plan.

105-5 Personnel Qualifications.

105-5.1 General: *Provide qualified personnel for sampling, testing and inspection of materials and construction activities. Ensure that qualifications are maintained during the course of sampling, testing and inspection. Continuance of the Department's qualifications are subject to satisfactory results from periodic Independent Assurance evaluations.*

For information about the Construction Training and Qualification Program (CTQP) and how to become qualified, consult the following website: <http://ctqp.ce.ufl.edu>.

Construction operations that require a qualified technician must not begin until the Department verifies that the technician is on the CTQP list of qualified technicians.

105-5.2 Quality Control Manager: *Designate a Quality Control (QC) Manager who has full authority to act as the Contractor's agent to institute any and all actions necessary for the successful implementation of the QC Plan. The QC Manager must speak and understand English. The QC Manager must be on-site at the project on a daily basis or always available upon four hours notice to administer the Quality Control (QC) Plan. This includes administering, implementing, monitoring, and as necessary, adjusting the processes to ensure compliance with the Contract Documents. Ensure that the QC Manager is qualified as such through the Construction Training/Qualification Program.*

Under the direction of the QC Manager, and using Department's standard forms provided by the Engineer, summarize the daily QC program activities including testing and material sampling activities. Make copies of the completed forms available for the Department to review daily unless otherwise required in the respective Sections of the Specifications. Ensure that the QC test data is entered into the Department's database on a daily basis.

105-5.3 Worksite Traffic Supervisor: *Provide a Worksite Traffic Supervisor who is responsible for initiating, installing, and maintaining all as described in this Section and in the Contract Documents. Ensure that the Worksite Traffic Supervisor is certified by a Department approved training agency, which meets the Department's maintenance of traffic training requirement for advanced training. Use approved alternate Worksite Traffic Supervisors when necessary.*

Ensure that the Worksite Traffic Supervisor is available on a 24-hour per day basis, participates in all changes to traffic control and reviews the project on a day-to-day basis.

Ensure that the Worksite Traffic Supervisor is present to direct the initial setup of the traffic control plan and any changes. Provide the Worksite Traffic Supervisor with all equipment and materials needed to set up, and maintain traffic control and handle traffic-related situations.

Ensure that the Worksite Traffic Supervisor immediately corrects all safety deficiencies. Do not allow minor deficiencies that are not immediate safety hazards to remain uncorrected for more than 24 hours.

Ensure that the Worksite Traffic Supervisor is available within 45 minutes after notification of an emergency situation and is prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.

The Department may disqualify and remove from the project a Worksite Traffic Supervisor that fails to comply with the provisions of this Subarticle. The Department may temporarily suspend all activities, except traffic and erosion control and such other activities that are necessary for project maintenance and safety, for failure to comply with these provisions.

Ensure that the Worksite Traffic Supervisor performs a drive-through inspection and observes traffic flow as soon as the work zone is activated and in each subsequent phase of work as they are opened to traffic. Provide to the Engineer a report, using the current Department's approved form, listing any deficiencies and proposed corrective measures.

Ensure that the Worksite Traffic Supervisor conducts within the limits of the project, daily daytime and weekly night time inspections within the limits of the project for projects with predominate daytime work activities and daily nighttime and weekly daytime inspections for projects with predominate nighttime work, of all traffic control devices, traffic flow, pedestrian, bicyclist, and business accommodations.

Advise the project personnel of the schedule of these inspections and give them the opportunity to join in the inspection as is deemed necessary. Submit a comprehensive weekly report, using the current Department's approved form, to the Engineer and include condition of all traffic control devices (including pavement markings) being used. The inspection report will also include assurances that pedestrians are accommodated with a safe travel path around work sites and safely separated from mainline traffic, that existing or detoured bicyclist paths are being maintained satisfactorily throughout the project limits, and that existing businesses in work areas are being provided with adequate entrances for vehicular and pedestrian traffic during business hours. The Worksite Traffic Supervisor will sign the report and certify that all of the above issues are being handled in accordance with the Contract Documents. If deficiencies are noted, the Worksite Traffic Supervisor is to note such deficiencies and include the proposed corrective actions.

105-5.4 Flagger: *Provide trained flaggers to direct traffic where one-way operation in a single lane is in effect and in other situations as required. The Worksite Traffic Supervisor or others as approved by the Department will provide training for flaggers using Department approved training material.*

105-5.5 Earthwork Quality Control Technicians:

105-5.5.1 Earthwork Level I: *Ensure the inspector who samples soil and earthwork materials from the roadway project, takes earthwork moisture and density readings, and records those data in the Density Log Book holds a Construction Training and Qualification Program (CTQP) Earthwork Construction Inspection Level I qualifications.*

105-5.5.2 Earthwork Level II: *Ensure the inspector responsible for determining the disposition of soil and earthwork materials on roadway project, and interpreting and meeting Contract Document requirements holds a CTQP Earthwork Construction Inspection Level II qualifications.*

105-5.6 Asphalt Quality Control Technicians:

105-5.6.1 Plant Technicians: *For asphalt plant operations, provide a quality control technician, qualified as a CTQP Asphalt Plant Level II technician, available at the asphalt plant at all times when producing mix for the Department.*

105-5.6.2 Paving Technicians: *Perform all asphalt plant related testing with a CTQP Asphalt Plant Level I technician. For paving operations, keep a qualified CTQP Asphalt Paving Level II technician on the roadway at all times when placing asphalt mix for the Department, and perform all testing with a CTQP Asphalt Paving Level I technician. As an exception, measurements of cross-slope, temperature and yield (spread rate) can be performed by someone under the supervision of a CTQP Paving Level II technician.*

105-5.6.3 Mix Designer: All mix designs will be developed by individuals who are CTQP qualified as a Hot Mix Asphalt Designer.

105-5.6.4 Documentation: Document all quality control procedures, inspection, and all test results and make them available for review by the Engineer throughout the life of the Contract.

105-5.7 Concrete Quality Control Technicians:

105-5.7.1 Concrete Field Technician – Level I: Technicians performing plastic property testing on concrete for materials acceptance must be a qualified CTQP Concrete Field Technician Level I. The plastic tests will include but not be limited to slump, temperature, air content, water-to-cementitious ratio calculation, making and curing concrete cylinders. Duties will include initial sampling and testing to confirm specification compliance prior to concrete placement and the initial curing and provide for transporting of compressive strength samples to the designated laboratories. This technician shall reject non-complying loads of concrete that do not meet contract documents. Technicians who test concrete properties or perform Verification testing for the Department must possess this qualification.

105-5.7.2 Concrete Field Technician – Level II: Technicians who will be responsible for the quality of the concrete being placed on major bridge projects, not limited to substructure or superstructure, must be a qualified CTQP Concrete Field Technician Level II. Technicians must be present on the jobsite during all concrete placements. Prior to the placement of concrete, the technician will inspect the element to ensure compliance with contract documents. Duties may include ensuring that testing, inspection, and curing of concrete in the field is performed in accordance with applicable contract documents. The Quality Control Technician will inform the Verification Technician of anticipated concrete placements and lot sizes.

105-5.7.3 Concrete Laboratory Technician - Level I: Technicians testing cylinders and recording concrete strength for material acceptance must be qualified CTQP Concrete Laboratory Technician Level I. Duties will include final curing, compressive strength testing, and reporting of data.

105-5.7.4 Concrete Production Facility Manager of Quality Control: Ensure each concrete production facility has an Facility Manager for Quality Control with the following qualifications:

1. Qualified as a CTQP Concrete Laboratory Technician Level II or,
2. Qualified as a CTQP Concrete Laboratory Technician Level I, Concrete Field Technician – Level I, and Batch Plant Operator.

Three years of quality control experience directly related to cement concrete production. Demonstrated proficiency in implementing, supervising, and maintaining surveillance over a quality control program. Experience or certification in performance of required quality control tests and in organization and statistical evaluation of quality control test results.

105-5.8 Bridge Structures:

105-5.8.1 General: Submit qualifications of supervisory personnel to the Engineer at the pre-construction conference. Do not begin Construction until the qualifications of supervisory personnel have been approved by the Engineer.

105-5.8.2 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 Instrumentation, Systems and Automation Society of America for each Certified Control Systems Technician.

105-5.8.3 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. Provide 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.

Provide a detailed description 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.

Provide 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.

105-5.8.4 Concrete Post-Tensioned Segmental Box Girder Construction: *Ensure the individuals filling the following positions meet the minimum requirements as follows:*

105-5.8.4.1 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 Segmental Box Girder Construction Engineering 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 Engineer in responsible charge of Segmental Box Girder Construction Engineering.*

105-5.8.4.2 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. Ensure that a minimum of three years of experience is in Segmental Box Girder Construction Operations and includes a minimum of one year in 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 operations.*

105-5.8.4.3 Foreman: *Ensure the Foreman has a minimum of five years of bridge construction experience with two years of experience in Segmental Box Girder Construction Operations and a minimum of one year as the foreman in responsible charge of Segmental Box Girder Construction Operations.*

105-5.8.5 Movable Bridge Construction: *Ensure the individual filling the following positions meet the minimum requirements as follows:*

105-5.8.5.1 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.*

105-5.8.5.2 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.*

105-5.8.6 Concrete Post-Tensioned Other Than Segmental Box Girder Construction: *Ensure the individual filling the following positions meet the minimum requirements as follows:*

105-5.8.6.1 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 other than segmental box girder construction. Ensure*

that the three years 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.

105-5.8.6.2 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. Ensure that a minimum of three years of the experience includes girder erection, safe use of cranes, stabilization of girders; design of false work 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.*

105-5.8.6.3 Foreman: *Ensure the Foreman 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.*

105-5.8.7 Post Tensioning: *Perform all post-tensioning field operations under the direct supervision (crew foreman) of a Level II Qualified Post-Tensioning and Grouting technicians that are qualified through the Department's Construction Training Qualification Program (CTQP). In addition to the crew foreman, provide a minimum of two crewmembers that are CTQP Level I Qualified Post-Tensioning and Grouting Technicians. All personnel involved in grouting must attend a grouting training session provided by the Department not less than seven days prior to the start of the first stressing or grouting operation of the project.*

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 credentials to the Engineer prior to performing any vacuum grouting operations.

Conduct all stressing and grouting operations in the presence of the Engineer. Coordinate and schedule all post-tensioning activities to facilitate inspection by the Engineer.

105-5.9 Prestressed Concrete Plant Facility Manager of Quality Control: *Ensure each plant has an on site production manager, an on site Facility Manager for Quality Control, a plant engineer, and adequate on site QC inspectors/technicians to provide complete QC inspections and testing.*

Ensure the Facility Manager for Quality Control has at least five years of related experience and a current PCI Quality Control personnel Level III certification and a certificate of completion of 450 Specification examination. Ensure that the QC inspector/technician has current PCI QC Technician/Inspector Level II certification and a certificate of completion of 450 Specification examination. Department certified prestressed concrete inspectors are exempt from PCI Level II certification and from completion of 450 Specification examination, until the time of expiration of their certificates. Facility Managers for Quality Control certified by the Department as prestressed concrete inspectors are exempt from PCI Level III certification and from completion of 450 Specification examination, until the time of expiration of their certificates.

105-5.10 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 are in compliance with Department Specifications and verify that all equipment requiring certification is listed on the Department's Approved Product List (APL). Provide the completed signal inspection report form(s), certified by the IMSA Traffic Signal Inspector to the Engineer.*

The Department's approved inspection report forms are available at the following URL: <http://www11.myflorida.com/trafficoperations/>.

105-5.11 Failure to Comply with 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 90 days. Cease all bridge construction and related activities (casting yard, etc.) if*

compliance is not met within 90 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.