

SPECIAL PROVISION

SPECIFICATION 665 – CONTRACTOR QUALITY CONTROL PLAN (CQCP) REQUIREMENTS FOR HOT MIX ASPHALT (HMA)

665-1 DESCRIPTION

665-1.01 Scope - This work shall consist and include the following:

- a. The establishment and maintenance of a quality control system providing assurance that materials and completed construction conform to Contract requirements.
- b. The development, submission, and implementation of a Contractor Quality Control Plan (CQCP) in accordance with this specification. The CQCP shall include, as a minimum, detailed description, data, and documentation as appropriate for each of the material production and placement elements required herein to ensure that the specified quality of all materials will be met.
- c. The identification and description of a Quality Control Organization to be responsible for implementing and maintaining the CQCP for the project.
- d. The development, submittal, implementation and reporting to Engineer of Production Control Charts and related CQCP tests results and QC activities.

665-1.02 Definitions

- a. Quality Control (QC). Also called process control. All contractor operational techniques and activities that are performed or conducted to fulfill the contract requirements.
- b. Acceptance Program (AP). All factors that comprise the Authority determination of the quality of the product as specified in contract requirements.
- c. Acceptance. Sampling and testing, and inspection, performed by the Authority to determine the degree of compliance based upon contract requirements.
- d. Quality Assurance (QA). All those planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service. QA is a combination of QC and AP.
- e. Independent Assurance (IA). Activities that are an unbiased and independent evaluation of all sampling and testing procedures used in the acceptance program. IA will be performed by Materials testing Office personnel.

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- f. Technician Training and Certification Program. Program being developed by PRHTA to train and certify personnel that participates in the AP as per 23 CFR 637.

665-2 REQUIREMENTS

665-2.01 Contractor Quality Control Plan (CQCP) Minimum Requirements – The CQCP shall meet or exceed the following requirements:

- a. Process Control Procedures. List process control procedures to be implemented by the Contractor to provide a quality product. List personnel, equipment, supplies, and facilities necessary to perform process control testing, obtain samples, and to perform, document and report QC sampling and testing. Provide a quality control organization chart describing areas of responsibility and authority of each individual. List the records to be maintained. Include the work of all subcontractors. If a subcontractor is to perform work under this Section, detail how that subcontractor will interface with the Contractor's and other subcontractor's organizations.
- b. Process Control Sampling and Testing. List the materials to be tested, test to be conducted, the location of sampling and the frequency of sampling. As a minimum, the Contractor shall perform and report sampling and testing for mix quality characteristics as well as asphalt binder classification and moisture susceptibility of in-place/compacted mixes. Provide a list of the testing equipment proposed for quality control testing, and the test methods and frequency of calibration or verification of the equipment in the CQCP. Include procedures for verifying that testing equipment complies with specified standards, and is calibrated according to AASHTO Standards. Maintain records of all equipment calibration or verification results at the testing facility. Use control charts as part of the quality control system to document the variability of the production process and to identify production and equipment problems in order to make necessary adjustments. Adjustments shall be made whenever the production mix is outside action and suspension limits developed by the Contractor. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if: (1) One point falls outside the suspension limit for individual measurements or (2) Two points in a row fall outside the action limit for individual measurements. Post control charts in a visible, accessible location and keep them up-to-date. Control charts shall meet, as a minimum, with the requirements of this specification.

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- c. Process Control Inspection. Conduct intermittent or continuous process control inspection during construction to identify and correct deficiencies in such issues as material transportation, lay down procedures and compaction operations.
- d. Corrective Action Plans: Contractor's proposed strategies and related work to be performed to prevent repeated deficiencies. Describe the process to provide feedback and corrective actions plans to the Engineer to prevent repeated deficiencies. Cease production and make corrections to the process when problems are evident.
- e. The Contractor is responsible for all QC documentation and retention of all the documentation for three (3) years following completion of the project.
- f. The CQCP shall be contract specific, stating how the Contractor proposes to control the materials, equipment, and construction operations including subcontractors and suppliers as well as production facilities and transportation modes to the project.
- g. Identify all AASHTO; ASTM referenced standards as applicable in the CQCP.
- h. The CQCP shall be used to ensure conformance to the contract Specifications with respect to materials, workmanship, construction, finish and durability.
- i. The CQCP shall include a sampling and testing plan that identifies the specific tests to be completed, proposed methods of sampling, frequency of testing, calibration of test equipment, construction control and monitoring activities to adequately control the production and construction processes. The CQCP shall also include the process by which the contractor will report to Engineer all required QC reports within 72 hours.
- j. The Engineer and/or IA personnel may observe QC sampling and testing in the Laboratory or the field and may report any inconsistencies to the CQCP to the Contractor's Quality Control Manager for resolution. All findings are to be resolved within 24 hours of notification. Further:
 - 1. The Engineer may require the replacement of ineffective or unqualified equipment, QC personnel, subcontractors, or suppliers.
 - 2. The Engineer may require construction operations to stop until appropriate QC corrective actions are taken.

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665-2.02 Contractor Quality Control Organization Personnel Requirements – The Quality Control Organization Personnel Requirements shall comply with the following:

- a. Quality Control Manager. Document the name, authority, relevant experience, and qualifications of person with overall responsibility implementing the Contractor Quality Control Plan.
- b. Quality Control Tester / Inspector. Document the name, authority, relevant experience, and qualifications of person(s) directly responsible for contractor inspection and testing.
- c. Include the names, qualifications, telephone number, duties, and employer of all quality control personnel necessary to implement the CQCP.

665-2.03 Contractor Quality Control Testing Laboratory – The Contractor Quality Control Testing Laboratory shall comply, as a minimum, with the following:

- a. Location. Be located at the asphalt plant or plants producing asphalt to the project.
- b. Facilities. Keep laboratory facilities clean and all equipment maintained in proper working condition. Include and perform all laboratory equipment calibration based upon AASHTO R-18.
- c. Access. Allow unrestricted access to the Engineer for inspection and review of the facility and sampling and testing procedures during quality control activities.

665-2.04 Contractor Quality Control Reports – The Contractor shall maintain records and submit to the Engineer reports of quality control activities within 72 hours.

Reports shall include, as a minimum, the following:

- a. Name of the technician that performed the QC sampling and testing.
- b. Location or where was the sample taken (i.e. number of truck, number of tons).
- c. Signature of the technician that performed sampling and testing.

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- d. Mix design code.
- e. Remark section in which the QC Manager can indicate actions taken.
- f. Signature of the QC Manager.

665-2.05 Quality Control Charts – The Contractor shall develop, maintain and report to the Engineer Quality Control Charts for process control. The control charts shall indicate the process control limits for materials covered by Quality Control testing and include as minimum, the following:

- a. Use control charts for each individual Quality Characteristics, including smoothness, as describe in contract.
- b. The Contractor shall establish and inform in the CQCP action and suspension limits to be used as part of the Control charts.
- c. Control Charting shall identify the project number, the contract number, the item number, test numbers, test parameters, action and suspension limits and test results applicable to each test parameter.
- d. Place the target value of each parameter, if applicable, in the center of the chart represented by a heavy long dash followed by a short dash line.
- e. Place control limits on the chart represented by heavy solid lines.
- f. Indicate full payment limits as short dashed lines.
- g. Identify Upper Specification Limits and Lower Specification Limits with the vertical distance between the two is no less than two (2) inches.
- h. Make the plot points for the test results surrounded by a small circle with each consecutive point connected by a solid straight line.
- i. Plot the test results from left to right in chronological order, and show dates corresponding to each test along the horizontal axis.

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- j. Plot Authority's Acceptance test results on the Control Chart using a separate identifier with each point connected by a straight line that is different than the one used for QC.

665-2.06 Modifications to CQCP - Maintain the CQCP to reflect the current status of the operations, and provide any revisions in writing prior to initiating a change. Do not implement any changes until the revision has been accepted by the Engineer. Modification requests to the CQCP must include the following:

- a. A brief description and reasons for the proposed revisions
- b. Revised pages in the CQCP noting the changes and the date of the changes
- c. Signature page for the Quality Control Manager submitting the document and for the Engineer's approval.
- d. Submit any revisions related to materials, material control limits, material testing equipment, Contractor Organization and/or, change in QCP personnel for approval by the Engineer in writing.

665-4 METHOD OF MEASUREMENT

665-4.01 The Contractor Quality Control Plan (CQCP) will be measured as a lump sum item complete with all of the required components, elements and reports set forth herein.

665-5 BASIS OF PAYMENT

665-5.01 The Contractor Quality Control Plan (CQCP) will be paid for at the contract lump sum price, such price and payment shall be full compensation for establishing, implementing, maintaining and reporting the quality control system as described herein in order to ensure that materials and completed construction conform to Contract requirements.

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665-7.02 Payment will be made under:

Pay Item

Pay Unit

Contractor Quality Control Plan..... Lump Sum