Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JOSÉ ABREU
SECRETARY

June 25, 2004

Mr. Donald Davis
Program Operations Engineer
Federal Highway Administration
545 John Knox Road
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section 120
Proposed Specification: 1200010.D01 – Acceptance Program

Dear Mr. Davis:

We are submitting, for your approval, two copies of a proposed Supplemental Specification for Acceptance Program.

This change was proposed by John Shoucair of the State Materials Office to add Modified Proctor to all references of maximum density throughout the Section and make editorial changes.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to SP965DB or duane.brautigam@dot.state.fl.us.

If you have any questions relating to this specification change, please call Duane F. Brautigam, State Specifications Engineer at 414-4110.

Sincerely,

Duane F. Brautigam, P.E.
State Specifications Engineer

DFB/sh
Attachment
cc: General Counsel
Florida Transportation Builders' Assoc.
State Construction Engineer

ACCEPTANCE PROGRAM.
(REV ~~5-14-04~~*6-25-04*)

ARTICLE 120-10 (Pages 156-159) is deleted and the following substituted:

120-10 Acceptance Program.

120-10.1 General Requirements:

120-10.1.1 Initial Equipment Comparison: Before initial production, perform a comparison test using the Quality Control, Verifications and Independent Assurance gauges. Unless the Engineer instructs, do not perform the initial equipment comparison more than once per project. When comparing the computed dry density of one nuclear gauge to a second gauge, ensure that the difference between the two computed dry densities does not exceed 2 PCF [32 kg/m^3] between gauges from the same manufacturer, and 3 PCF [48 kg/m^3] between gauges from different manufacturers. Repair or replace any Quality Control gauge that does not compare favorably with the IA gauge.

Perform a comparison analysis between the Quality Control nuclear gauge and the Verification nuclear gauge any time a nuclear gauge or repaired nuclear gauge is first brought to the project. Repair and replace any Quality Control gauge that does not compare ~~favorable~~*favorably* with the Verification gauge at any time during the remainder of the project. Calibrate all Quality Control gauges annually.

120-10.1.2 Initial Production Lot: Before construction of any other Lot, prepare an initial control section consisting of one full LOT in accordance with the approved Quality Control Plan for the project. Notify the Engineer at least 24 hours prior to production of the initial control section. Perform all QC tests required in 120-10.1.4. When the initial Quality Control test results pass specifications, the Engineer will perform a Verification test to verify compliance with the specifications. Do not begin constructing another LOT until successfully completing the initial production LOT. The Engineer will notify the Contractor of the initial production lot approval within three working days after receiving the Contractor's Quality Control data when test results meet the following conditions:

Quality Control tests must meet the specifications.

Verification test must meet the specifications.

Difference between Quality Control and Verification computed Dry Density results shall meet the requirements of 120-10.1.1.

If Verification test result fails the density requirements of 120-10.2, correct the areas of non-compliance. The Quality Control and Verification tests will then be repeated. The Engineer will reject the Contractor's Quality Control Plan after three unsuccessful Verification attempts. Submit a revised Quality Control Plan to the Engineer for approval.

120-10.1.3 Density over 105%: When a QC computed dry density results in a value greater than 105% of the applicable ~~p~~*P*roctor maximum dry density, the Engineer will perform an Independent Verification density test within 5 feet [1.5 meters]. If the Independent Verification density results in a value greater than 105%, the Engineer will investigate the compaction methods, examine the applicable *Standard Proctor* Maximum Density and material description. The Engineer may collect and test an Independent Verification *Standard Proctor* Maximum Density sample for acceptance in accordance with the criteria of 120-10.2.

120-10.1.4 Quality Control Tests:

120-10.1.4.1 *Standard Proctor* Maximum Density Determination: Determine the Quality Control *standard Proctor* maximum density and optimum moisture content by sampling and testing the material in accordance with the specified test method listed in 120-10.2.

120-10.1.4.2 Density Testing Requirements: Ensure compliance to the requirements of 120-10.2 by Nuclear Density testing in accordance with FM 1-T 238. Determine the in-place moisture content for each density test. Use Florida Method FM 1-T 238, FM 5-507 (Determination of Moisture Content by Means of a Calcium Carbide Gas Pressure Moisture Tester), or ASTM D 4643

(Laboratory Determination of Moisture Content of Granular Soils By Use of a Microwave Oven) for moisture determination.

120-10.1.4.3 Soil Classification: ~~Perform soil classification tests in accordance with AASHTO T-88. Classify soils in accordance with AASHTO M-145 in order to determine compliance with embankment utilization requirements.~~ *Perform soil classification tests on the sample collected in 120-10.1.4.1, in accordance with AASHTO T-88. Classify soils in accordance with AASHTO M–145 in order to determine compliance with embankment utilization requirements. Unless required by the Engineer, do not test or classify materials for stabilized subgrade or base.*

120-10.1.5 Department Verification: The Engineer will conduct a Verification test(s) in order to accept all materials and work associated with 120-10.1.4. The Engineer will verify the Quality Control results if they meet the Verification Comparison Criteria, otherwise the Engineer will implement Resolution procedures.

The Engineer will select test locations, including Station, Offset, and Lift, using a Random Number generator based on the Lots under consideration. Each Verification test evaluates all work represented by the Quality Control testing completed in those LOTs.

In addition to the Verification testing, the Engineer may perform additional Independent Verification (IV) testing. The Engineer will evaluate and act upon the IV test results in the same manner as Verification test results.

When the project requires less than four Quality Control tests per material type, the Engineer reserves the right to accept the materials and work through visual inspection.

120-10.1.6 Reduced Testing Frequency: When no Resolution testing is required for 12 consecutive verified LOTs, or if required, the QC test data was upheld, reduce the QC density testing to one test every two LOTs by identifying the substantiating tests in the Density Log Book and notifying the Engineer in writing prior to starting reduced frequency of testing. Generate random numbers based on the two LOTs under consideration. When Quality Control test frequency is reduced to one every two LOTs, obtain the Engineer's approval to place more than one LOT over an untested LOT. Assure similar compaction efforts for the untested LOTs. If the Verification test fails, and Quality Control test data is not upheld by Resolution testing the Quality Control testing will revert to the original frequency of one Quality Control test per LOT. The results of the Independent Verification testing will not affect the frequency of the Quality Control testing.

120-10.2 Acceptance Criteria: Obtain a minimum Quality Control (QC) density of 100% of the *standard* ~~*p*~~*Proctor* maximum density as determined by AASHTO T 99, Method C, with the following exceptions: 1) embankment constructed by the hydraulic method as specified in 120-8.3; 2) material placed outside the standard minimum slope as specified in 120-8.2.4; and 3) other areas specifically excluded herein.

120-10.3 Additional Requirements:

120-10.3.1 Frequency: Conduct QC sampling and testing at a minimum frequency listed in the table below. The Engineer will perform Verification sampling and tests at a minimum frequency listed in the table below.

Test Name	Quality Control	Verification
Standard Proctor Maximum Density	One per soil type	One per soil type
Density	One per LOT	One per four LOTs and for wet conditions, the first lift not affected by water
Soil Classification	One per *Standard Proctor* Maximum Density	One per *Standard Proctor* Maximum Density

120-10.3.2 Test Selection and Reporting: Determine test locations including Stations and offsets, using the random number generator provided by the Engineer. Do not use note pads or work sheets to record data for later transfer to the Density Log Book. Notify the Engineer upon successful completion of Quality Control testing on each LOT.

120-10.4 Verification Comparison Criteria and Resolution Procedures:

120-10.4.1 *Standard Proctor* Maximum Density Determination: The Engineer will verify the Quality Control results if the results compare within 4.5 PCF [72 kg/m^3] of the Verification test result. Otherwise, the Engineer will take one additional sample of material from the soil type in question. The State Materials Office or an AASHTO accredited laboratory designated by the State Materials Office will perform Resolution testing. The material will be sampled and tested in accordance with AASHTO T 99, Method C.

The Engineer will compare the Resolution Test results with the Quality Control test results. If all Resolution Test results are within 4.5 PCF [72 kg/m^3] of the corresponding Quality Control test results, the Engineer will use the Quality Control test results for material acceptance purposes for each LOT with that soil type. If the Resolution Test result is not within 4.5 PCF [72 kg/m^3] of the Contractor's Quality Control test, the Verification Test result will be used for material acceptance purposes.

120-10.4.2 Density Testing: When a Verification or Independent Verification density test fails the Acceptance Criteria, retest the site within a 5 feet (1.5 meter) radius and the following actions will be taken:

1. If the Quality Control retest meets the Acceptance Criteria and meets the ~~120-10.2~~*120-10.1.1* criteria when compared with the Verification or Independent Verification test, the Engineer will accept those LOTs.
2. If the Quality Control retest does not meet the Acceptance Criteria and compares favorably with the Verification or Independent Verification test, rework and retest the LOT. The Engineer will re-verify those LOTs.
3. If the Quality Control retest and the Verification or Independent Verification test do not compare favorably, complete a new comparison analysis as defined in 120 10.1.1. Once acceptable comparison is achieved, retest the LOTs. The Engineer will perform new verification testing. Acceptance testing will not begin on a new LOT until the Contractor has a gauge that meets the comparison requirements.

Record Quality Control test results in the density log book on approved Department forms provided by the Engineer. Submit the original, completed density log book to the Engineer at final acceptance.

120-10.4.3 Soil Classification: The Engineer will verify the Quality Control results if the Verification results identify matching soil classifications. Otherwise, the Engineer will take one additional sample of material from the soil type in question. The State Materials Office or an AASHTO accredited laboratory designated by the State Materials Office will perform Resolution testing. The material will be sampled and tested in accordance with AASHTO T 88.

The Engineer will compare the Resolution Test results with the Quality Control test results. If the Resolution test matches the Quality Control classification, the Engineer will use the Quality Control classification for material acceptance purposes. If the Resolution Test result does not match the Contractor's Quality Control classification, the Verification Test result will be used for material acceptance purposes.

ACCEPTANCE PROGRAM.
(REV 6-25-04)

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Perform a comparison analysis between the Quality Control nuclear gauge and the Verification nuclear gauge any time a nuclear gauge or repaired nuclear gauge is first brought to the project. Repair and replace any Quality Control gauge that does not compare favorably with the Verification gauge at any time during the remainder of the project. Calibrate all Quality Control gauges annually.

120-10.1.2 Initial Production Lot: Before construction of any other Lot, prepare an initial control section consisting of one full LOT in accordance with the approved Quality Control Plan for the project. Notify the Engineer at least 24 hours prior to production of the initial control section. Perform all QC tests required in 120-10.1.4. When the initial Quality Control test results pass specifications, the Engineer will perform a Verification test to verify compliance with the specifications. Do not begin constructing another LOT until successfully completing the initial production LOT. The Engineer will notify the Contractor of the initial production lot approval within three working days after receiving the Contractor's Quality Control data when test results meet the following conditions:

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If Verification test result fails the density requirements of 120-10.2, correct the areas of non-compliance. The Quality Control and Verification tests will then be repeated. The Engineer will reject the Contractor's Quality Control Plan after three unsuccessful Verification attempts. Submit a revised Quality Control Plan to the Engineer for approval.

120-10.1.3 Density over 105%: When a QC computed dry density results in a value greater than 105% of the applicable Proctor maximum dry density, the Engineer will perform an Independent Verification density test within 5 feet [1.5 meters]. If the Independent Verification density results in a value greater than 105%, the Engineer will investigate the compaction methods, examine the applicable Standard Proctor Maximum Density and material description. The Engineer may collect and test an Independent Verification Standard Proctor Maximum Density sample for acceptance in accordance with the criteria of 120-10.2.

120-10.1.4 Quality Control Tests:

120-10.1.4.1 Standard Proctor Maximum Density Determination: Determine the Quality Control standard Proctor maximum density and optimum moisture content by sampling and testing the material in accordance with the specified test method listed in 120-10.2.

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120-10.1.4.3 Soil Classification: Perform soil classification tests on the sample collected in 120-10.1.4.1, in accordance with AASHTO T-88. Classify soils in accordance with AASHTO M–145 in order to determine compliance with embankment utilization requirements. Unless required by the Engineer, do not test or classify materials for stabilized subgrade or base.

120-10.1.5 Department Verification: The Engineer will conduct a Verification test(s) in order to accept all materials and work associated with 120-10.1.4. The Engineer will verify the Quality Control results if they meet the Verification Comparison Criteria, otherwise the Engineer will implement Resolution procedures.

The Engineer will select test locations, including Station, Offset, and Lift, using a Random Number generator based on the Lots under consideration. Each Verification test evaluates all work represented by the Quality Control testing completed in those LOTs.

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When the project requires less than four Quality Control tests per material type, the Engineer reserves the right to accept the materials and work through visual inspection.

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The Engineer will compare the Resolution Test results with the Quality Control test results. If the Resolution test matches the Quality Control classification, the Engineer will use the Quality Control classification for material acceptance purposes. If the Resolution Test result does not match the Contractor's Quality Control classification, the Verification Test result will be used for material acceptance purposes.