

STATE OF RHODE ISLAND
DEPARTMENT OF TRANSPORTATION
MATERIALS & QUALITY ASSURANCE



Revision of 11-30-10

MASTER SCHEDULE OF TESTING (MST)
FOR THE PREPARATION OF A
PROJECT SCHEDULE
FOR
SAMPLING, TESTING AND
CERTIFICATION OF MATERIALS
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INTRODUCTION

To prescribe policies, procedures, and guidelines to assure the quality of materials and construction in all projects in the State of Rhode Island, the Materials & Quality Assurance Section of the Rhode Island Department of Transportation (RIDOT) has developed a sampling and testing program in accordance with Volume 60, No. 125, 23 CFR Part 637 (FHWA Docket No. 94-13) of the Federal Register dated Thursday, June 29, 1995 as amended at 67 FR 75934, Dec. 10, 2002. The program is designed to provide assurance that the materials and workmanship incorporated into every highway construction project are in close conformity with the requirements of the plans and specification.

In order to facilitate the job of the Resident Engineer on each highway project in undertaking the required sampling and testing, RIDOT is requiring that each project which is advertised for bidding have a Project Schedule for Sampling, Testing and Certification of Materials. This schedule will indicate clearly to the Resident Engineer the minimum required number of samples, tests and/or certifications required for each item of work indicated in the proposal for a particular project.

This handbook will establish procedures for those responsible for the design and preparation of the above referenced project schedules on highway projects in the State of Rhode Island.

PURPOSE

The purpose of the Master Schedule for the Preparation of a Project Schedule for Sampling, Testing and Certification of Materials is to provide the Department with the minimum number and type of samples and tests required for each individual pay item as listed in the project proposal and contract documents.

The minimum frequency and type of test required for each individual item of work in a project is determined from this document. If the Engineer feels that additional tests are required for any reason, he/she may increase the frequency of testing for any item as specified in the testing frequency templates.

Quality Assurance

There are three classes of samples and tests which must be taken:

1. Process Control Samples and Tests are those samples taken and tested for the purpose of controlling the production of materials proposed for incorporation in the project. They are the responsibility of the Contractor and/or Manufacturer and form the basis for a contractor incorporating material into the work prior to acceptance sampling and testing, or are the basis of a manufacturer's certificate of compliance. Personnel conducting Process Control Testing must be certified by the NorthEast Transportation Training and Certification Program (NETTCP), American Concrete Institute (ACI), National Institute for Certification in Engineering Technologies (NICET), and/or Prestressed Concrete Institute (PCI) within the related field they are performing the test in. Process control samples and tests are subject to verification by the State.

Contractor Quality Control (QC) testing for process control must be conducted in an NETTCP qualified or AASHTO Accredited laboratory.

2. Acceptance Samples and Tests are those samples taken and tested for determining the quality and acceptability of the materials and workmanship which have been or are being incorporated in the project. They are the responsibility of the State (Resident Engineer). Acceptance samples and tests will be taken as random samples, in accordance with 23 CFR 637 and in accordance with this document. Additional instructions and procedures for acceptance sampling and testing are located in the latest revisions of the AASHTO Subcommittee on Materials Standard Specifications for Transportation Materials and Methods of Sampling and Testing publication. Acceptance samples and tests, in the case of material manufactured and/or fabricated away from the project site, may be pre-sampled, tested and inspected by the Materials & Quality Assurance Section or a private consultant either at the off-site facility or when delivered to the project. Test reports and/or inspection reports will be submitted to the Resident Engineer covering pre-inspected or tested materials. The Resident Engineer may determine that pre-inspected materials are acceptable at the time they are incorporated into the work.

All acceptance and independent assurance sampling and testing must be performed by qualified personnel. This qualification consists of NETTCP/ACI/NICET/PCI certification and/or (2) Education and experience approved by the Associate Chief Engineer of Materials & Quality Assurance Section of the Department of Transportation within the related field they are performing the test in.

The Central Laboratory and third party laboratories (in the appropriate area) must be accredited by the AASHTO Accreditation Program or a comparable laboratory accreditation program approved by the FHWA and the Associate Chief Engineer of Materials & Quality Assurance.

Plant or field laboratories directly used by the RIDOT personnel shall be qualified by the Materials & Quality Assurance Section.

Inspection personnel are encouraged to inspect each of the Certificate of Compliance items on their projects whether these items are included for Acceptance Testing or not. Testing may be performed on any of these items for reasons of suspect quality, poor workmanship, or obvious deficiencies.

Yearly aggregate test results will be on file in the Materials Office and on the RIDOT website. Resident Engineers will use materials from approved sources as verified by approved concrete mix designs, approved asphalt job mix formulas or from sources that meet the quality requirements. Any questions on sources shall be directed to the Materials & Quality Assurance Section. When new aggregate sources are expected to be used the contractor will submit the new sources to the department Materials & QA section for approval. Please note that testing may take up to three months.

The acceptance or rejection of materials is based upon tests conducted by field personnel as part of the contract. Rejection may also be based upon visual determination.

3. Independent Assurance (IA) are those samples, tests or other procedures performed by State personnel who do not normally have direct responsibility for acceptance sampling and testing. They are used for the purpose of making independent check on the reliability of the results obtained in acceptance sampling and testing and not for determining the quality and acceptability of the materials workmanship directly. IA sampling and testing may be performed on Process Control testing at the discretion of the Engineer. IA is the responsibility of the Materials & Quality Assurance Section.

IA samples will be split samples when possible to provide for sampling observation, or from the same location as, or in close proximity to, the sample taken by the tester (the samples taken by the tester are not required to be acceptance samples).

A maximum of 20% of the IA tests per quarter may be performed by observation.

A prompt comparison of acceptance tests results with IA test results and documentation of that comparison will be made.

In general, the IA will follow AASHTO R 44 Independent Assurance (IA) Programs on a Systems basis. At the discretion of the Engineer it may be advantageous to utilize IA by the Project basis or Combination of Project and System basis.

This will be accomplished by the following procedure/policy:

Field/Plant:

1. IA team will monitor each person performing tests at least once every quarter. This frequency may be modified at the discretion of the Materials Engineer per AASHTO R 44.
2. Samples and/or tests performed by the subject tester will be clearly documented that it was taken "with IA", and this documentation will be carried through laboratory analysis on test sheets.
3. IA team will fill out an Independent worksheet. Laboratory analyses will be forwarded to the IA team. Variation limits will be evaluated by the independent test team and compared to standard variations. If the variation of the test is greater than the variation allowed, further analysis will be performed to determine the reason for the excess variation.

If variations arise, the IA team will file a "Report of Action" documenting what corrective action has been taken and attached to the original independent review sheet for documentation.

4. IA team will not perform any Acceptance Sampling or Testing unless specifically authorized by the Materials Engineer.

General:

1. Resident Engineers who perform concrete testing (i.e. slump test, air content test, or cylinder fabrication) will keep track and notify the Materials & Quality Assurance office at least once every quarter they perform the tests so that Independent Sampling and Testing may be made. Residents who perform acceptance testing will submit the results through the proper channels for documentation.
2. The Materials & Quality Assurance Section will submit an annual report which will include: the results of the independent assurance tests, the independent personnel, the frequency of witnessed tests, and the results of the calibration of independent field equipment.

The Materials & Quality Assurance Section will keep all IA tests and records on file in the

Materials & Quality Assurance Section Office.

SMALL QUANTITIES PER CONTRACT

General:

When the quantity of a material used on a job is significantly less than that indicated in the Master Schedule, the Resident Engineer may accept such small quantities without sampling or testing. To qualify for small quantities acceptance, the material shall be from a known reliable source and judged by the Resident Engineer to be capable of performing satisfactorily and to meet the requirements for the intended purpose. The Resident Engineer may also accept Bituminous Concrete and/or Portland Cement Concrete delivered to the project on a "small quantities" basis as long as the following guidelines are met:

Bituminous Concrete Mixes:

Base or Binder Type Mixes - 75 Tons or less per day.

Surface Courses - 50 Tons or less per day.

NOTE: THE TOTAL SMALL QUANTITY FOR EACH BID ITEM OF BITUMINOUS MIXTURE TYPES ACCEPTED SHALL NOT EXCEED 200 TONS OR 5% OF THE TOTAL CONTRACT QUANTITY, WHICHEVER IS GREATER.

Portland Cement Concrete/Soils:

Prestressed, Structural, and Pavement/Overlay concrete shall not be accepted under the "small quantities category".

NOTE: THE TOTAL SMALL QUANTITY FOR EACH BID ITEM OF CONCRETE OR SOIL ACCEPTED SHALL NOT EXCEED 50 CUBIC YARDS OR 5% OF THE TOTAL CONTRACT QUANTITY, WHICHEVER IS GREATER.

All Bituminous and/or Portland Cement Concrete and/or soils accepted under "Small Quantities" must meet all the required specifications for the given item. Where small quantity items are used in critical locations or may significantly influence the performance, strength or durability of major items, prior approval for their use without testing must be obtained by the Engineer.

OPTIONAL TESTING

Concrete Testing will be optional for the following items; curb lock, void filler, thrust blocks, fence pole footings, manhole bases, guardrail post anchorages, pipe, utility frame/grate collars, electrical control box pads, concrete pads for aesthetic reasons, small quantity sidewalk patching, non-structural walls less than 4 feet in height, slope paving, and barrier caps.

PUNCH LIST ITEMS

Punch list items remain subject to these provisions.

CERTIFICATE OF COMPLIANCE

Requirements for Certificate of Compliance will be as specified in the Standard Specifications and the Procedures for Uniform Record Keeping (PURK) manual.

It is the Resident Engineer's responsibility to obtain the required Certificate of Compliance from the contractor as produced and signed by the manufacturer or supplier, prior to payment for and incorporation of the material in the project.

APPENDIX A

The preparation and submission of a materials certification, as shown below conforming to the requirements of 23CFR637.207 Quality Assurance Program (3), will be sent to the FHWA Division Administrator for each FHWA oversight project.

GUIDE LETTER OF CERTIFICATION BY STATE ENGINEER

DATE: _____
R.I. PROJECT NO. _____
F.A.P. NO. _____

This is to certify that:

All sampling and testing for Acceptance were performed in accordance with approved procedures and the Master Schedule, the results of the tests used in the acceptance program indicate that the materials incorporated in the construction work were in conformity with the approved plans and specifications, with exceptions noted.

Exceptions to the plans and specifications are explained on the back of hereof (or on attached sheet).

Associate Chief Engineer (Materials & QA)

SAMPLING/TESTING REQUIREMENTS

See MS Standard Items and Template Details for Further Information