

SECTION 014000
QUALITY CONTROL TESTING SERVICES

PART 1 – GENERAL

1.1 STIPULATIONS

- A. The specifications sections, "General Conditions of the Construction Contract", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 GENERAL

- A. The Contractor is responsible for verifying and enforcing compliance with all requirements of the Contract Documents. Contractor's responsibility includes, but is not limited to, the following:
 - 1. Supervision of field work to enforce contract compliance of all construction activity.
 - 2. Verification of compliance with plans and specifications of all manufactured materials or equipment. Provide certificates of compliance, or other approved proof of compliance, by the manufacturers and submit to the Professional.
 - 3. Performance of all necessary field measurements and/or inspections to verify compliance with requirements of the plans or specifications requiring adherence to measurable standards of field performance.
 - 4. Engaging an independent testing laboratory to perform tests and inspections as required by this specification section, hereafter referred to as Quality Control Testing and Inspection Services or Quality Control Testing Services.
 - 5. Providing support services for all Quality Control Services, including cutting and patching and repair or replacement as required.
- B. Work not included: Quality Assurance Services by the Department are specified in Section 014010. The Department reserves the right to perform tests under the Quality Assurance Testing program and to use those as the basis for approval or rejection at its sole discretion.

1.3 DESCRIPTION OF QUALITY CONTROL TESTING

- A. Quality Control Services include inspections, tests and reports by an independent testing laboratory or other approved agency, hereafter referred to as the Quality Control Agency. All Quality Control Services shall be at the Contractor's cost, which shall be included proportionally in all items of payment or contained in any Base Bid or Unit Price on the Proposal. Tests and Inspections are to include those specifically required by this section and within technical sections of the Project Manual.
- B. The Quality Control Agent shall submit a Testing and Inspection Plan to the Professional for its approval, and the approval of the Quality Assurance agent for all tests and inspections required by this section and within technical sections of the Project Manual.
- C. Quality Control Services by a Quality Control Agency or Agencies is intended to assist in the determination of probable compliance of the work with requirements specified or indicated and do not relieve the Contractor of the responsibility for compliance with Contract Document requirements.
- D. Specific testing or inspections of a structural nature required to be performed by independent Quality Control Agencies for individual construction activities are specified in this Section only. If testing or inspection requirements appear in this section and a technical section, the most stringent requirements shall prevail. If Quality Control Testing or Inspection is specified in a technical section and not in this section, it shall be required as if specified in this section. Non-structural tests and inspections are in the technical specifications.

- E. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Documents requirements.
- F. Quality Control Services required by the local municipality or other governing authorities are the responsibility of the Contractor, regardless of whether or not specified hereinafter or in the applicable specification section.
- G. Each prime Contractor will pay for all costs in connection with its Quality Control Services. Whenever the word "Contractor" is used it shall be interpreted to mean Prime Contractor or Contractors as applicable. All Contractors performing work for which testing or inspection is required by this section are required to perform said tests/inspections appropriate for the quantity of work performed as indicated by this specification section and as required by all Contract Documents.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 RESPONSIBILITIES AND DUTIES OF CONTRACTOR

- A. The Contractor shall engage Quality Control Agencies to provide all Quality Control Services required to comply with the Contract Documents. These services shall be at no cost to the Department.
- B. The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and indicate non-compliance with Contract Document requirements. Likewise, the Contractor is responsible for retesting when the Department's Quality Assurance Test results prove unsatisfactory. If Quality Assurance Tests were in error, the Contractor shall be reimbursed for his retesting costs.
- C. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility.
- D. Provide the Quality Control Agency with preliminary representative samples of materials to be tested in quantities requested. If the source, quality or characteristics of an approved material changes or indicates lack of compliance with Contract requirements, submit additional samples of materials to the Quality Control Agency.
- E. When requested by the Professional, the Department, or the Quality Control Agency, the Contractor shall immediately provide reports, cutting lists, material bills, shipping bills, time and place of shipment of materials to shop and field and any relevant data on previous testing and investigations of materials.
- F. Provide casual labor and facilities:
 - 1. To provide access to the work inspected or tested by any authorized party.
 - 2. To obtain and handle samples at the site.
 - 3. To facilitate inspections and tests by the Quality Control Agency or Quality Assurance Agency.
 - 4. For security and protection of samples and test equipment at the project site.
- G. To facilitate the timely sequence of inspection and testing, the Contractor shall give advanced notification to the Quality Control Agency and the Department that work has progressed to a point where inspection and testing may proceed.
- H. Contractor shall pay for additional cost of Quality Control Agency services which, in the opinion of the Professional and the Department, are required because of the following:

1. Failure of materials or workmanship to meet Contract requirements.
 2. Materials or practices not complying with the technical specifications which could possibly result in defective and unacceptable work.
 3. Changes in source, quality or characteristics of materials.
 4. Site cured concrete cylinders requested by the Contractor.
- I. The Quality Control Agency shall submit a certified written report of each inspection, test or similar service to the Design Professional, the Quality Assurance Agent, the Bureau of Construction Regional Director, Project Manager and Assistant Project Manager, and the Contractor, with additional copies directly to any governing authority when that authority so directs. All reports shall be uploaded to e-Builder within 24 hours of when the inspection occurs, test is conducted, test results obtained or similar service was conducted.
- J. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
1. Date of issue.
 2. Project title and number.
 3. Name, address and telephone number of testing agency.
 4. Dates and location of samples and tests or inspections.
 5. Names of individuals making the inspection or test.
 6. Designation of the Work and test method.
 7. Identification of product and specification section.
 8. Complete inspection or test data.
 9. Test results and an interpretation of test results.
 10. Ambient conditions at the time of sample taking and testing.
 11. Comments or professional opinion as to whether inspected or tested work complies with Contract Document requirements.
 12. Name and signature of Quality Control Agency inspector.
- K. The QC Agent shall cooperate in using standard forms/procedures developed by the Department that assist in accomplishing the tasks required.
- L. Engage independent testing laboratories, whose employees assigned to the Project and tests performed comply with ASTM E 329, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction. The testing laboratory must be accredited and audited by a qualified national authority. The Contractor is to submit the name and credentials of the proposed QC Agent to the Design Professional and the Department for acceptance.
- M. Upon completion of inspection, testing, sample taking and similar activities, repair the damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Comply with the Contract Document requirements for "Cutting and Patching". Protect work exposed by or for Quality Control Testing activities, and protect repaired work.
- N. All required testing/inspection, including that stated in the body of the technical specification sections (be it referenced in the technical specifications as "Quality Control", "Quality Assurance", or any other referenced testing and/or inspection) shall be performed by the Contractor, unless it explicitly states it shall be performed by the Department. If stated to be performed by the Department, the Contractor shall still be required to perform all necessary testing/inspection in advance of the Department to assure the work meets all the requirement of the contract documents.
- O. Contractor shall coordinate closely with the Department, the Professional and the Professional's QA Agencies and Consultants so that any required or desired QA testing can be performed concurrently or immediately after the Contractor's QC testing.

3.2 RESPONSIBILITIES AND DUTIES OF QUALITY CONTROL AGENCIES

- A. Quality Control Agencies engaged to perform inspections, sampling and testing of materials and construction shall cooperate with the Professional, the Quality Assurance Agent, the Department, the Department of Labor and Industry, and the Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests. If it is determined by the Department that the personnel provided are not qualified or are not working in the best interests of the Project for the tests performed, the Contractor, through their Quality Control Agent, shall immediately replace or supplement the subject personnel.
- B. Quality Control Agencies shall notify the Department, the Quality Assurance Agent, the Professional, and the Contractor immediately of irregularities or deficiencies observed in the Work during performance of its services.

3.3 QUALITY CONTROL SERVICES TO BE PERFORMED

- A. Testing and inspections by the Quality Control Agency or Agencies shall include, but are not limited to, the following list.

LIST OF TESTS AND INSPECTIONS

DESCRIPTION OF TEST OR INSPECTION	REFERENCED STANDARD	QUANTITY OR FREQUENCY
BITUMINOUS PAVEMENT		
Bulk Specific Gravity...of Compacted Bituminous Mixtures...	ASTM D1188 or D 2726	1 test
Density of Bituminous Concrete in Place by Nuclear Method	ASTM D2950	6 tests/1000sy paving
Thickness or Height of Compacted Bituminous Paving Mixture Specimens	ASTM D3549	3 tests/1000sy paving
EARTHWORK¹		
Laboratory Compaction Characteristics of Soil Using Modified Effort	ASTM D1557	One for each type and variation of cohesive soil to be compacted
Laboratory Compaction Characteristics of Soil Using Standard Effort	ASTM D698	One for each type and variation of cohesive soil to be compacted
Density of Soil and Soil-Aggregate In Place by Nuclear Methods	ASTM D6938	As often as required to ensure contract compliance
Inspect and comment on suitability of subgrades. Test footing excavations and paving subgrades regardless if it is native material or fill and record resultant foundation bearing capacity or compaction results as applicable.	N/A	As often as required to ensure the minimum required bearing capacity is present. Bearing Capacity tests must be witnessed and/or reviewed by the Department, Professional, Professional's Geotechnical Engineer or QA Agent.
Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	ASTM D6938	Continuous
CONCRETE		
Practice for Sampling Freshly Mixed Concrete. (5 cylinders/test) Perform air tests when sampling concrete. Perform slump tests and record temperature for all concrete deliveries.	ASTM C143, C1064, C231 or C173 or C138, C172, C31	For each mix, 1 test for each day of concreting or for each 50cy, whichever is greater. For non-structural concrete, 1 test for each 100cy is adequate.
Compressive Strength of Cylindrical Concrete Specimens	C39	
Inspection of bolts to be installed in concrete prior to and during placement of concrete, where allowable loads have been increased or where strength design is used	AWS D1.4; ACI 318: 3.5.2	
Inspection of concrete placement for proper application techniques	ACI 318: 5.9, 5.10	Continuous

DESCRIPTION OF TEST OR INSPECTION	REFERENCED STANDARD	QUANTITY OR FREQUENCY
CONCRETE CONTINUED		
Verification of slump flow and VSI as delivered to the site for self-consolidating grout	ACI 530	Continuous
MASONRY		
Constructing and Testing Masonry Prisms Used to Determine Compliance with Specified Compressive Strength of Masonry (3 prisms/test)	ASTM C1314	1 Test
Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry, Annex A7 Compressive Strength (3 cylinders/test) (Contractor makes cylinders.)	ASTM C 780	1 Test/5000 units of masonry for each mortar type.
Sampling and Testing Grout (3 cubes/test) (Contractor makes cubes)	ASTM C1019	1 Test/25 CY grout.
Observation of any grout specimens and/or prisms	ACI 30.1/ASCE 6/TMS 602 Art 1.4	Continuous
STRUCTURAL STEEL		
High Strength Bolting	AISC ASD or LRFD M2.5	Comply with current requirements of RCSC

Footnotes:

1. Refer to Earthwork Section for additional details.

END OF SECTION