

SECTION 01400: CONSTRUCTION QUALITY CONTROL / QUALITY ASSURANCE**1 PART 1 GENERAL****1.1 SECTION INCLUDES**

- A. Construction quality control - control of installation.
- B. Tolerances.
- C. Construction quality control testing services by contractor.
- D. Construction quality assurance - testing services by Ecology.
- E. Manufacturers' field services.

1.2 RELATED SECTIONS

- A. Section 01300 - Submittals.
- B. Section 01700 - Contract Closeout: Certifications and Project Records.

1.3 REFERENCES AND STANDARDS

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.

1.4 SUBMITTALS

- A. Mark all submittals in accordance with provisions of Section 01300.
- B. Provide Ecology's Representative with test results and certifications from Manufacturer's Quality Control Plan a minimum of three business days prior to installation of materials on site.
- C. Duplicate Samples: Provide Ecology's Representative with the opportunity to collect duplicates for all samples as specified within the appropriate technical

specifications a minimum of three business days prior to installation of materials on site.

- D. Construction Quality Control Plan. Submit the following in writing:
 - 1. Authorities and responsibilities of inspection and testing personnel.
 - 2. Experience and qualifications of inspection and testing personnel to be assigned and name and location of the testing facility to be used.
 - 3. Description of the testing facilities and information on when and where each of the required materials tests will be performed.
- E. Chain-of-Custody Forms: Provide Ecology's Representative with copies of chain-of-custody forms along with test results and laboratory quality assurance documentation.
- F. Equipment Calibration Certification: Within three business days prior to commencing with work requiring testing, provide Ecology's Representative with certification of laboratory equipment calibration to meet appropriate American Society for Testing of Materials (ASTM) standards.

1.5 CONSTRUCTION QUALITY CONTROL (CQC) - CONTROL OF INSTALLATION

- A. Actively monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including performance of each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Ecology's Representative before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.6 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Ecology's Representative before proceeding.
- C. Adjust products to appropriate dimensions; position before securing Products in place.

1.7 CONSTRUCTION QUALITY CONTROL TESTING SERVICES BY CONTRACTOR

- A. Contractor will appoint, employ, and pay for specified services of an independent firm qualified to perform Construction Quality Control (CQC) testing in accordance with the testing guidelines of Project Specifications.
- B. The Contractor's CQC testing firm will perform tests and other services specified in individual specification sections.
- C. Collection of duplicate samples shall be arranged with Ecology's Representative a minimum of 24 hours prior to sample collection. Collection of duplicate samples shall be at the discretion of Ecology's Representative.
- D. Testing and source quality control may occur on or off the project site. Ecology's Representative is to be notified of all in-situ sampling or other tests at least 24 hours prior to testing activities.
- E. Reports will be submitted *by the CQC testing firm* to Ecology's Representative, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- F. Coordinate Work with Contractor's CQC testing firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested:
 - 1. Notify Ecology's Representative and independent CQA testing firm 24 hours prior to expected time for operations requiring services.
 - 2. Any tests, or other services provided by the Contractors CQC testing firm, performed without prior knowledge of Ecology's Representative will be automatically rejected and materials tested may be subject to rejection and removal. Re-testing on these materials will be performed at no cost to Ecology, and with Ecology's Representative present.
- G. Construction Quality Control testing does not relieve Contractor from performing Work to Contract requirements.

- H. Maintain a log of all test and samples conducted: Indicate date, time, location (on-site tests), reference specification method and personnel present at time of sampling/testing.
- I. Maintain accurate, thorough file of sample and material disposal chain-of-custody forms.

1.8 CONSTRUCTION QUALITY ASSURANCE TESTING SERVICES BY ECOLOGY

- A. Ecology will, at its discretion, appoint, employ, and pay for specified services of an independent firm qualified to perform construction quality assurance (CQA) testing.
- B. Cooperate with the Ecology's CQA testing firm; furnish duplicate samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested:
 - 1. Notify Ecology's Representative 24 hours prior to expected time for operations requiring testing services.
- C. Testing by Ecology does not in any way relieve Contractor to perform Work to Contract requirements including, but not limited to, CQC tests and documentation.
- D. Test results by Ecology's CQA testing firm will be compared with those prepared by the Contractor's CQC test firm. Test results that indicate variance of more than 10 percent, or non-conformance with the specified requirements may require retesting at Ecology's discretion. Costs for Contractor retesting will be the responsibility of the Contractor.

1.9 MEASUREMENT AND PAYMENT

- A. Work under Section 01400 - Construction Quality Control / Quality Assurance will be paid as a lump sum item under bid item number 1.0. No separate payment will be made. Includes provision of independent testing laboratory services, field and laboratory testing and analyses, suitable equipment, materials and personnel to provide the quantity and types of test required in the Technical Specifications.

2 PART 2 PRODUCTS

Not Used.

3 PART 3 EXECUTION

3.1 EQUIPMENT CALIBRATION

- A. All equipment utilized for CQC field testing, QC testing, and laboratory tests are to be calibrated according to the applicable and appropriate ASTM standards within the immediate 12 months prior to use for this project. If applicable and appropriate ASTM standards are not available, use of the equipment manufacturer's recommended methods is acceptable.
- B. Certification of equipment calibration by the CQC testing personnel is to be submitted to Ecology's Representative a minimum of three business days prior to use for this project.
- C. Should significant variance, as determined by Ecology's Representative, in test data or measurements occur, and there is reason to believe that it may be attributed to the equipment rather than to the material or test procedures, re-calibration will be required, and subsequent documentation of satisfactory calibration activities will be submitted.
- D. Documentation is required for all re-calibration efforts performed on equipment used for this project.
- E. Ecology's Representative may inspect both the sampling and testing procedures prior to implementation for this work. The testing laboratory (including and equipment and personnel) should be fully operational and available for inspection at least 48 hours (two working days) prior to utilization for on-site quality control testing support.

3.2 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Immediately notify Ecology's Representative of discrepancies or unacceptable site conditions prior to commencing with new Work.

3.3 PREPARATION

- A. Prepare substrate surfaces prior to applying next material or substance.
- B. Apply manufacturer required or recommended materials prior to applying any new material or substance in contact or bond.

3.4 PROTECTION

- A. Protect completed work elements from damage during ongoing construction operations.
- B. Protect completed work from sediment, debris, or other materials found on-site.
- C. Store and handle products in accordance with the manufacturer’s instructions.

3.5 INSPECTIONS

- A. Provide inspections of Work as specified in the Technical Specifications.

3.6 TESTING

- A. Provide testing of Work as specified.
- B. A Summary of tests and responsibilities follows in Table A.

Table A. Summary of conformance sample and test requirements.

Work Element	Spec. Sect.	Key Property	Sample/Test	Sampling Plan/ Frequency	Standard Test Method
Site Earthwork Harvard Road					
Spawning Gravel Mix Cap Material	02200	Gradation	CT/COR	1/source	ASTM D422
1 ¼-inch Chipped Basalt- Launch Ramp Material	02200	Gradation	CT/COR	1/source	ASTM D422

* Responsibility for sampling/testing:
 CT - Contractors personnel (CQC activity)
 COR - Sampling, testing, measuring and/or data performed by Ecology’s Representative (QA activity)

END OF SECTION

