

## **DB Section 156 - Construction Workmanship and Materials Quality Management**

**DB156.10 General** - Per **DB General Provisions**, Section 154, Design-Builder shall develop and implement a Quality Program for all phases of the Work. Design-Builder, through its Quality Plan, shall be responsible to assure the quality of work, both design and construction, complies with the requirements and standards set forth in the Contract, including the workmanship and products of Subcontractors, fabricators, suppliers, and vendors both on-site and off-site. Agency reserves the right to conduct verification oversight Inspections, audits, sampling and testing, and Independent Assurance.

### **DB156.20 Construction Quality Organization**

**(a) Construction Quality Manager** - Design-Builder shall provide a Construction Quality Manager to oversee, manage, certify and perform construction Quality Management activities as specified herein and in other Contract Documents and Design-Builder's Quality Plan. The Construction Quality Manager and staff shall report directly to Design-Builder's Project Quality Manager.

Management of the quality control (QC) Inspection function will require the CQM to be certified in all areas of construction inspection as outlined in ODOT's Inspection Certification Program. In addition, the CQM shall either be certified in all areas of Materials testing, as outlined in ODOT's Quality Assurance Program, to perform the role of a Quality Control Compliance Specialist as outlined in the ODOT Quality Control Compliance Specialist (QCCS) Manual, or have a supporting staff that is certified and capable of fulfilling this role. The supporting staff may consist of one or more individuals who collectively hold the required certifications. Design-Builder's Quality Plan shall clearly outline the organization, certifications, authority levels, and responsibilities for the CQM and supporting staff.

**(b) Construction Quality and Construction Quality Control (QC) Inspectors** - All construction processes, procedures, and workmanship shall be inspected by Design-Builder's Construction Quality Inspectors. Inspection shall include the observations, measurements, and documentation specified in Design-Builder's Quality Plan and the Contract Documents. Inspection, observations, verification of conformance to specified requirements, measurements, results, non-conformances, and required corrective actions shall be documented on the forms provided by Agency or on Design-Builder's forms acceptable to Agency. Inspection, observation and documentation shall include descriptions of construction activity and location.

Construction quality Inspection, testing, and documentation procedures shall at a minimum, be consistent with the ODOT *Construction Manual*, *Manual of Field Test Procedures (MFTP)* and *Inspector's Manual*. Quality Inspectors shall be certified in accordance with Agency Inspection Certification Program. Program information, including requirements and training schedules is found on the following website: <http://www.oregon.gov/ODOT/HWY/CONSTRUCTION/Cert/InspCert.shtml>

**(c) Quality Control (QC) Testing Staff** - Design-Builder's QC testers shall perform sampling and testing of field-tested Materials in accordance with the *MFTP*. QC testers shall be certified in accordance with Agency Technician Training and Certification Program (identified in the *MFTP*), to the level appropriate for the Work being sampled/tested, and shall test only those Materials for which they are certified. Design-Builder Project Quality Manager shall maintain a list of QC testers that identifies the test certifications each tester currently holds, and shall provide Agency PM the names, telephone numbers, and copies of certifications for all personnel performing field testing. This list shall be updated on a regular basis and any time a new technician performs testing on the Project. It is Design-Builder's responsibility to ensure that all technicians have the proper certifications at the time testing is performed.

The frequency of QC sampling and testing shall, at a minimum, be consistent with the *MFTP* and the Contract Specifications.

References in the Contract to an Oregon test method or test designation of the American Association of State Highway and Transportation Officials (AASHTO), the American Society for Testing and Materials (ASTM), or any other recognized national organization, shall mean the latest version of that test method or Contract Specification for the Work in effect on the day the testing is performed, unless otherwise directed by Agency in writing. Unless authorized by Agency, Design-Builder shall comply with the published version of the *MFTP* in effect on the proposal due date.

**(d) Certified Testing Laboratory** - Quality Control (QC) laboratory testing of field-tested Materials shall be conducted by testing laboratories that are certified by Agency for the applicable tests. This certification shall be valid for one (1) year from date of issue. Laboratories performing QC testing may be Design-Builder's own, the Material supplier's, or an independent testing laboratory.

Agency Quality Assurance (QA) testing laboratories will perform Independent Assurance (I/A) or Verification tests of field-tested Materials in coordination with the QC testing laboratories performing QC tests of Materials on behalf of Design-Builder. This provides Agency with an independent analysis of the QC tests to ensure that the test results are valid. QA laboratories will usually be Agency Region laboratories, but may also be Agency's Central Laboratory or an Agency-contracted independent testing laboratory. Agency's Central Laboratory will certify all QA laboratories for those test methods necessary to perform QA tests of Materials.

**(e) Independent Referee Laboratory** - Agency's Central Laboratory will act as a "referee" laboratory for resolution of disputes regarding Agency's verification sampling and testing results and Design-Builder's QC test results unless a potential for conflict of interest exists. In the event that the dispute is between the QC testing laboratory and Agency's Central Laboratory, the dispute will be resolved by test results obtained from a certified laboratory agreed upon by the Parties. The services of the "referee" laboratory may be requested by either Agency or Design-Builder. The sampling and testing results determined by the "referee" laboratory shall be final and binding on both Parties and not subject to dispute resolution under **DB General Provisions**, Section 199. The Party whose sampling and testing results are not confirmed or supported by the "referee" laboratory (i.e., the unsuccessful Party) shall be responsible for payment for the "referee" services. If Design-

Builder is the unsuccessful Party, the cost of the “referee” laboratory services will be deducted from monies due or to become due Design-Builder under the Contract.

### **DB156.30 Materials Quality Management**

**(a) Field-Tested Materials** - Design-Builder is responsible for providing Quality Control (QC) sampling and testing, furnishing Materials of the quality specified, and furnishing Quality Level Analysis during production when required by the *MFTP*. Design-Builder’s Construction QC testers shall perform sampling and testing for process control and QC consistent with the *MFTP* and the Contract Specifications. Any requested deviations from the sampling and testing methods and frequencies indicated in the *MFTP* or the Contract Specifications will require Agency concurrence prior to the start of the Work. If there is a discrepancy between one of the Contract Specifications and the *MFTP*, the more stringent requirements shall apply unless otherwise agreed in writing by Agency.

**(b) Non-Field Tested Materials** - Design-Builder shall provide Materials meeting all Contract requirements, along with all Materials conformance and quality compliance documents. Quality compliance documents shall be in the form of test results certificates, quality compliance certificates, and Equipment lists and drawings. Non-field tested Materials will be accepted for use according to the ODOT *Non-Field Tested Materials Acceptance Guide (NFTMAG)*, unless otherwise specified in the Contract. The most current version of the *NFTMAG* at the time the Materials are incorporated into the Project shall be used.

Design-Builder shall have documentation that Materials and Equipment conform to all Contract requirements available at the Project Site no less than 24 hours prior to installation or use of such Materials or Equipment. This documentation shall be retained at the Project Site.

**(c) Quality Assurance** - Agency’s QA Program defines the responsibilities and roles of both Design-Builder and Agency. The QA Program is contained in the *MFTP*.

Design-Builder is responsible for providing QC sampling and testing, and furnishing Materials of the quality specified. Agency will perform such QA of field-tested Materials through Verification and Independent Assurance as it may deem appropriate. Design-Builder’s QC test results will be used for acceptance of Material quality only if verified by tests performed by Agency.

If Agency’s QA test results verify Design-Builder’s results, the Materials will be analyzed for acceptance according to one of the methods defined in **DB General Provisions**, Subsection 165.40. If such testing reveals that Design-Builder’s data is incorrect, Agency will perform additional testing to determine whether the Material meets Contract Specifications. If the Materials do not meet the required Specifications, Design-Builder shall reimburse Agency for the cost of the additional testing, which may be deducted from monies due to or become due Design-Builder under the Contract.

**(1) Verification** - Verification is defined as: “Sampling and testing performed to validate the quality of the product, Material, or Work.”

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Verification samples are taken randomly (minimum ten-percent of the specified QC frequency) and tested by Agency to verify that products, Materials, and the Work meet Contract Specifications. Quality Control samples shall not be used for verification.

**(2) Independent Assurance** - Design-Builder shall notify Agency in writing by Friday noon of each week of planned construction activities, including fabrication, for the following two (2) weeks. For activities occurring out of the immediate Project area (beyond 100 miles of the Project Site), Design-Builder shall give Agency at least 21 Calendar Days' notice of planned Work. Any change to the schedule requires a minimum 48-hour advance notification to Agency.

Design-Builder shall notify Agency a minimum of 48 hours in advance of the time scheduled for Agency to perform Verification and Independent Assurance tests.

**(d) Agency Quality Control (QC) Testing** - Agency will perform QC testing for all source/compliance tests and those non-field tested items associated with construction products produced in outside facilities where Agency has QC Inspectors (e.g. asphalt, emulsion, tack oil, water, cement, lime, etc.).

**DB156.50 Documentation** - Design-Builder shall collect and preserve all required documentation as Project Records, all of which shall be in a form acceptable to Agency.

Daily manpower and Equipment reports for Design-Builder and each Subcontractor for construction-related activities shall be prepared by Design-Builder's construction quality inspectors and maintained by Design-Builder Construction Quality Manager, using the forms provided by Agency or other forms with a format acceptable to Agency PM.

For Utility-related Work such data shall be maintained separately for each Utility facility. For Hazardous Materials remediation Work, such data shall be maintained separately for each remediation site.

Records shall document all daily work on the Project, the Quality Management operations, Inspections, reviews, all internal and external Project Quality Manager audits, monitoring of performance of Work, including the Work of Subcontractors, and tests performed. Design-Builder may use the forms provided by Agency or its own forms providing equivalent information. Such records shall document all delays encountered, and all Work that does not conform to Contract requirements, together with the corrective actions taken regarding such Work. Records shall also document all delays encountered listing what Work activities were delayed, cause of delay, and remedial action taken to mitigate the delay.

The QC records shall identify the inspector, date of testing or inspection, product, Material, or Work tested or Inspected, test method used, testing laboratory used, and the results of each test or Inspection. The records shall also include, for each documented QC activity, the qualifications of the QC and testing personnel and, where applicable, the testing Equipment used.

In the event of a finding of nonconformance, Design-Builder shall note the source of the nonconformance or the Contract provision or Specification with which the product, Material, or Work fails to comply.