

STATE OF LOUISIANA

INTERSTATE-12 WIDENING

DESIGN-BUILD PROJECT

O'NEAL LANE INTERCHANGE TO WALKER
EAST BATON ROUGE AND LIVINGSTON PARISHES
STATE PROJECT NOS. 454-01-0047 AND 454-02-0025

SCOPE OF SERVICES PACKAGE

CONTRACT DOCUMENTS

DB SECTION 112

CONSTRUCTION QUALITY CONTROL



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**DESIGN-BUILD SECTION 112
CONSTRUCTION QUALITY CONTROL**

DB 112-1 GENERAL

As per Design-Build (DB) Section 113, and prior to the commencement of any design or construction activities, the Design-Builder shall develop and implement a quality program for all phases of the Project, including design, construction, maintenance, and environmental compliance. The Design-Builder, through its Design-Builder Quality Plan, shall have the primary responsibility for the quality of the Work, including all Work and products of Subcontractors, fabricators, Suppliers, and vendors both on-site and off-site. The Louisiana Department of Transportation and Development (LA DOTD), in its role of Quality Assurance/Quality Control (QA/QC), reserves the right to and will conduct verification oversight inspections, audits, sampling and testing, and Independent Assurance (IA).

The quality program must ensure that procurement, shipping, handling, fabrication, installation, cleaning, Inspection, construction, testing, storage, examination, repair, maintenance, and required modifications of all Materials, Equipment, and elements of the Work will comply with the requirements of the Contract Documents and that all Materials incorporated in the Work and all Equipment and all elements of the Work will perform satisfactorily for the purpose intended.

DB 112-1.1 Definitions

See Design-Build Section 101-3 for definitions, including definitions of Quality Control and Quality Assurance/Quality Control.

DB 112-1.2 Construction Quality Control Inspection

All construction processes, procedures, and workmanship must be inspected by the Design-Builder's Construction Quality Control (QC) Inspectors. The Construction QC inspections must include the observations, measurements, and documentation specified in Appendix 112A – Construction QC Inspection to this DB Section 112 and the Design-Builder's Quality Plan. Inspection observations, measurements, results, non-conformances, and corrective actions must be documented on the forms in Appendix 112B - Forms to this DB Section 112 or on the Design-Builder's forms acceptable to the LA DOTD. Inspection observation and documentation must include a description of construction activity and location. *See also* Design-Build Section 112-10.

DB 112-2 INSPECTION AND TESTING OF MATERIALS

DB 112-2.1 General

All Materials are subject to Inspection, sampling, and testing at any time before Final Acceptance of the Work.

References in the Contract to a Louisiana 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 means the latest revision of that test method or specification for the Work in effect on the Proposal due date.

Materials will be sampled and tested by the construction QC testers and samplers. Copies of all test results will be furnished to the Design-Builder's Project Manager, the QC Manager, and the Department's Project Manager and other LA DOTD designated representatives. When a test is done for the Design-

Builder as process control assuring that its process and Materials source is producing an acceptable product, test results are not furnished to the above stated individuals but are Design-Builder internal documents. These process control tests usually occur when an operation is begun and when changes occur in the source of Materials or method of production.

The LA DOTD's designated representative may observe any sampling testing performed by the QC testers and samplers. If the LA DOTD's designated representative observe a deviation from the specified sampling or testing procedures, the LA DOTD's designated representative will verbally describe the observed deviation to the Design-Builder's Construction QC Manager, followed by a written Non-Conformance Report (NCR) covering the deviation to the Design-Builder's Construction QC Manager and Project Manager within 24 hours. *See also* Design-Build Section 109-4.4.

DB 112-2.2 Construction Quality Control Testing and Sampling

The Design-Builder's construction QC testers and samplers must perform sampling and testing for process control and for acceptance of Materials to be used on the Project. Construction QC testers and samplers must be certified, including, among other prudent and necessary certifications, LA DOTD certifications, for the level appropriate for the Work being sampled/tested. The Design-Builder shall maintain a list of construction QC testers and samplers that indicates what test certifications each person currently holds. Testers and samplers will be allowed 90 Working Days from execution of the Contract to obtain the certifications.

The construction QC testers and samplers will test and sample only those Materials for which they are certified to sample and test. Reports of each test must be recorded on the form prescribed for that test. All tests that do not pass specified requirements will be added to a log of failed tests. This log of failed tests will be used to assure that the Work is reconciled by a passing test.

The minimum frequency of QC sampling and testing must be consistent with Contract requirements and the individual Project Specifications accepted by the Department's Project Manager.

The Design-Builder shall utilize an electronic system to document and track Material and field test results. The minimum information in the electronic system must be that required to populate the LA DOTD's MATT system. The Design-Builder shall develop a method to transfer and transfer the Material and field test result information to MATT or, alternatively, may make arrangements with the appropriate LA DOTD sections and/or offices to use MATT.

DB 112-3 QUALITY ASSURANCE/QUALITY CONTROL INSPECTION

Quality Assurance/Quality Control (QA/QC) Inspection will be performed by the LA DOTD's designated representative assigned to the Project.

The LA DOTD's designated representative will periodically audit sampling and testing results. The review, audit, and subsequent feedback to the Design-Builder's Construction QC Manager are intended to assess the adequacy of the construction QC.

The Design-Builder's Project Manager will provide information to the LA DOTD's designated representative regarding verification that Progress Check Points (PCP) are met as per the Design-Builder's Schedule of PCPs and quantities of any unit price Work items. A monthly audit of PCPs and quantities of any unit price Work items will be performed and any required correction will be made to the subsequent progress payment. The LA DOTD's designated representative's review and audit will assure

that the PCP achievement and correct quantities are shown. Documents for payment of Change Orders must also contain sufficient information to satisfy an audit. Documents for the closure of each Change Order will be reviewed and included in the final payment. Additionally, in accordance with DB Sections 105 and 109, the Department's Project Manager will have the authority to suspend the Work if at any time he determines that the Design-Builder is not in conformance with Contract requirements.

See Design-Build Section 109 regarding payment processing.

Verification Sampling and Testing will be performed by the LA DOTD or its designated representative assigned to this Project.

DB 112-4 INDEPENDENT REFEREE LABORATORY

The LA DOTD will retain the services of an independent AASHTO accredited laboratory on an "on-call" basis to act as a "referee" laboratory for resolution of disputes regarding sampling and testing results reported by the LA DOTD's verification samplers and testers and the Design-Builder's construction QC testers and samplers. The "referee" laboratory may be the LA DOTD's materials laboratory. The services of the "referee" laboratory may be requested by the LA DOTD or by the Design-Builder. The sampling and testing results determined by the "referee" laboratory will be final and binding on both parties and not subject to disputes resolution under DB Section 107-31. The party whose sampling and testing results are not confirmed and/or supported by the "referee" laboratory (i.e., the unsuccessful party) will be responsible for payment for the "referee" services. If the LA DOTD is the unsuccessful party, it will make payment directly to the "referee" laboratory. If the Design-Builder is the unsuccessful party, the cost of the "referee" laboratory services will be deducted from payment(s) otherwise due and the LA DOTD will make payment to the "referee" laboratory on behalf of the Design-Builder.

The "referee" laboratory will not be associated with the Project in any capacity or be affiliated with any party to the Contract or with any Principal Participant and/or the Design-Builder. The "referee" laboratory will not be a department, agency, or office of any Stakeholder.

DB 112-5 COMPETENCE

If a concern arises as to the competence of any certified individual, this concern must be documented in writing to the Design-Builder's Project Manager and the Department's Project Manager. The concern will be investigated as deemed necessary by the Department's Project Manager. If this investigation substantiates the concern, corrective action, or decertification will be implemented in accordance with procedures established by the LA DOTD. *See also* DB Section 108.

DB 112-6 DESIGN-BUILDER QUALITY CONTROL

The Design-Builder shall provide process control measures adequate to produce a constructed product of acceptable quality that conforms to the Contract Documents. The Design-Builder shall perform process control sampling, testing, and Inspection during all phases of the Work at a rate sufficient to assure that the Work conforms to the Contract requirements.

The Design-Builder shall provide personnel and Equipment capable of providing a product that conforms to specified requirements and shall provide personnel and Equipment capable of verifying and documenting this conformance. Continual production of non-conforming Work will not be allowed.

DB 112-7 DESIGN-BUILDER'S CONSTRUCTION QUALITY CONTROL ORGANIZATION

The Design-Builder's Quality Plan must provide the information regarding the construction Quality Control organization.

DB 112-7.1 Construction Quality Control Manager

The Design-Builder shall assign an on-site Construction QC Manager. This individual will be considered one of the Project's key personnel.

The Design-Builder's Construction QC Manager will be responsible for overall management and supervision of the Design-Builder's construction QC programs. The Design-Builder's Construction QC Manager must be a Louisiana-licensed Professional Engineer. The Design-Builder's Construction QC Manager must report directly to the Design-Builder's QC Manager.

The Design-Builder's Construction QC Manager, or his/her designees, must be delegated the authority to make needed improvements to the quality of Work, including the suspension of the Work if required.

The Design-Builder's Construction QC Manager must be responsible for coordinating the schedules of the Design-Builder's construction QC Inspectors and construction QC testers and samplers with the Design-Builder's construction activities so as not to delay the Design-Builder's operations due to Construction QC Inspection, sampling, and testing activities.

DB 112-7.2 Staffing Levels

The actual size of the field/Site staff will reflect the complexity, needs, shifts, and composition of QC activities consistent with Work in progress.

The Design-Builder's Quality Plan (*see* DB Section 113) must identify administrative and clerical support for the maintenance and management of records and documents pertinent to QC activities.

The QC staffing schedule must be updated as necessary throughout the Contract duration to reflect accurate forecasting of QC staffing requirements.

DB 112-7.3 Laboratories

Laboratory QC testing must be conducted by testing laboratories retained by the Design-Builder under subcontract that comply with the requirements for LA DOTD certification for applicable tests. Laboratories must be accredited by the AASHTO Material Reference Laboratory (AMRL), the Concrete Cement Reference Laboratory (CCRL), the National Precast Concrete Association (NPCA) for precasters, or the Prestressed Concrete Institute (PCI), as appropriate, for the Work to be constructed. Louisiana Department of Transportation and Development certification must be obtained for all AASHTO and ASTM test methods to be performed by the testing laboratory. Certification must also be obtained for AASHTO and ASTM test methods that are modified or referenced by Louisiana test methods.

Satellites (field laboratories) of these laboratories may be used where appropriate for the tests being conducted. The Equipment in the satellite laboratories must be certified at the start of Work and annually thereafter. Certification must be by an independent party.

The laboratory must have written policies and procedures to assure portable and satellite laboratories performing testing activities on the Project are capable of providing testing services in compliance with

applicable test methods. The policy and procedures must address Inspection and calibration of testing Equipment as well as a correlation testing program between the accredited laboratory and portable or satellite facilities.

The LA DOTD reserves the right to check testing Equipment for compliance with specified standards and to check testing procedures and techniques.

The LA DOTD also reserves the right to access the testing facilities of the testing laboratories with no additional cost to the LA DOTD to witness the testing and verify compliance of the testing procedures, testing techniques, and test results.

The LA DOTD's rights to check Equipment, procedures, and techniques and to access testing facilities will also apply to Project Stakeholders when the Design-Builder is performing Work on their facilities.

DB 112-8 DESIGN-BUILDER SCHEDULING AND NOTICE TO THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

The Design-Builder shall notify the LA DOTD in writing by Friday noon of each week of planned construction activities, including fabrication, for the following two weeks to allow the LA DOTD to schedule its resources. The Design-Builder shall deliver this information at the weekly progress meeting where related discussion will occur. For activities (such as fabrication) occurring out of the immediate Project area (beyond 100 miles of the Project), the Design-Builder shall give the LA DOTD at least 21 Calendar Days of notice of planned Work.

DB 112-9 DOCUMENTATION

The Design-Builder shall collect and preserve each of the following types of data in a computer-generated form concurrently during Design-Builder's performance of the Work, all of which must be in a format acceptable to the LA DOTD:

- A) Daily Inspection Reports;
- B) As-Built Plans;
- C) Secure databases, such as spreadsheets, standard database software, and computation books;
- D) Materials acceptance records;
- E) Photographs; and
- F) Field change sheets.

Daily manpower and Equipment reports for the Design-Builder and each Subcontractor for construction-related activities must be prepared and maintained by the Design-Builder, using the forms in Appendix 112B – Forms to this DB Section 112 or other forms with a format acceptable to the Department's Project Manager.

A daily log for construction-related activities must be maintained by the Design-Builder's Project Manager or his/her designee(s), using a form acceptable to the Department's Project Manager, in which all significant occurrences on the Project must be recorded daily in a narrative form, including, unusual weather, asserted occurrences, events and conditions causing or threatening to cause any significant delay or disruption or interference with the progress of any of the Work, significant injuries to person or

property, and a listing of each activity depicted on the current monthly plan update which is being actively prosecuted. Also, traffic accidents in the Project area will be noted as well as lane closures in effect at the time of the accident.

For utility-related Work such data must be maintained separately for each utility facility.

For harmful/Hazardous Material remediation Work, such data must be maintained separately for each site.

Records must document all QC operations, Inspections, activities, and tests performed, including the Work of Subcontractors. The Design-Builder may use the forms provided by the LA DOTD or its own forms providing equivalent information. Such records must include any delays encountered and Work noted that does not conform to the requirements of the Contract and design together with the corrective actions taken regarding such Work.

The Design-Builder shall complete and submit appropriate documentation at the following times and frequencies:

A) Monthly:
See Design-Build Section 108;

B) Weekly:

The Design-Builder shall maintain and submit records that include factual evidence that required activities or tests have been performed, including the following:

- 1) Type, number, and results of QC and control activities, including, reviews, Inspections, tests, audits, monitoring of Work performance, and Materials analysis;
- 2) Closely-related data, such as, qualifications of personnel, procedures, and Equipment used;
- 3) The identity of the Design-Builder's QC Inspector or data recorder, the type of test or observation employed, the results, and the acceptability of the Work, and action taken in connection with any deficiencies noted;
- 4) Nature of non-conforming Work and causes for rejection;
- 5) Proposed corrective action;
- 6) Corrective actions taken; and
- 7) Results of corrective actions.

DB 112-10 MATERIAL CERTIFICATIONS

WHEN THE DESIGN-BUILDER PURCHASES MATERIALS FROM PROVIDERS/SUPPLIERS SHOWN ON THE LA DOTD'S APPROVED MATERIALS OR SOURCE LIST, THE DESIGN-BUILDER SHALL OBTAIN AND RETAIN A MATERIALS CERTIFICATION (CERTIFICATE OF DELIVERY, CERTIFICATE OF ANALYSIS, OR CERTIFICATE OF COMPLIANCE, AS REQUIRED) FROM THE PROVIDER/SUPPLIER COVERING THE MATERIAL AND/OR THE SOURCE.

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Documentary evidence that Material and Equipment conform to the procurement requirements must be available at the job Site no less than 24 hours prior to installation or use of such Material and Equipment. This documentary evidence must be retained at the job Site and must be sufficient to identify the specific requirements, such as, Contract Documents, codes, standards, or specifications, met by the purchased Material and Equipment. Additionally, a copy of all documentary evidence that Material and Equipment conform to the procurement requirements must be provided to the LA DOTD, or its designated representative, at the same time the Design-Builder receives such documentary evidence. The effectiveness of the QC by the Design-Builder's own forces and Subcontractors must be assessed by the Design-Builder and the LA DOTD's designated representative at intervals consistent with the importance, complexity, and quantity of the product or services.

The Louisiana Department of Transportation and Development reserves the right to inspect and review these documents at any time.

At the completion of the Project, the Design-Builder shall submit with the final invoice a certificate of compliance signed by the Design-Builder's Project Manager and Construction QC Manager indicating that all materials incorporated in the Project conform to the Contract requirements.

DB 112-11 FINAL ACCEPTANCE

The Louisiana Department of Transportation and Development has the responsibility and authority for Final Acceptance of all Work.

The Design-Builder shall complete all Work and provide all documents, certifications, and other information in accordance with the Contract Documents. Final Acceptance will be based on QC testing verified by verification testing and the final Inspection. Any deviations from the sampling and testing methods and frequencies indicated in the Contract Documents or the Design-Builder's Project Specifications will require LA DOTD's Approval prior to the start of construction on any affected Work. If there is a discrepancy between the Design-Builder's Project Specifications and the Contract the more stringent requirements will apply unless otherwise agreed in writing by the LA DOTD.

Final Acceptance will be based on certificates of compliance and/or Manufacturer's test results where specified in the Design-Builder's Project Specifications or the Contract.

Deficient Materials and products must be brought into compliance with Contract requirements or replaced. The method of reconciliation will be noted in the log of failed tests.