

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 111

DESIGN MANAGEMENT AND

DESIGN QUALITY CONTROL



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DB SECTION 111

DESIGN MANAGEMENT AND DESIGN QUALITY CONTROL

DB 111-1 GENERAL DESIGN-BUILDER RESPONSIBILITIES

The Work must be performed in accordance with the details as shown on the Design Plans, Project specifications, and Working Plans prepared by the Design-Builder, subject to the Louisiana Department of Transportation and Development's (LA DOTD) Consultation and Written Comment and/or Approval, as appropriate.

It is the Design-Builder's sole responsibility to provide Design Plans, Project specifications, and Working Plans of such a nature to develop a finished product in accordance with the Contract requirements. The Design-Builder shall verify pertinent dimensions in the field prior to the review of Design Plans, Project specifications, and Working Plans. Review of the Design-Builder's Design Plans, Project specifications, and/or Working Plans by the LA DOTD does not relieve the Design-Builder of the responsibility for the satisfactory completion of the Work.

Design Plans, Project specifications, and Working Plans are subject to the LA DOTD's Consultation and Written Comments per DB Section 111-12 before beginning construction Work covered by the Plans and the design intent must not be thereafter amended or altered without the prior approval of the Design-Builder's Designer and subsequent Consultation and Written Comment by the LA DOTD.

The Lump Sum Contract Price includes the cost of furnishing all Design Plans and Working Plans.

The Design-Builder shall perform the following:

- A) Manage the design and design Quality Control;
- B) Coordinate with and obtain necessary approvals from authorities having jurisdiction for temporary road diversions and detours, shutdowns, temporary diversions, utility relocations, temporary sidewalk closures, and pedestrian detours; and
- C) Ensure that the Designer properly checks the designs of the Project and that the Design Quality Control (QC) Manager certifies QC procedures in accordance with the Contract.

The procedures for the checking of design of permanent components also apply to design of major temporary components and construction sequences that affect the permanent components of the Project.

Please refer to Part 2 – Design-Build Section 101, Section 101-3, for the definitions of QC and Quality Assurance/Quality Control (QA/QC).

DB 111-2 DESIGN-BUILDER'S DESIGN ORGANIZATION AND OBLIGATIONS

DB 111-2.1 Designer

The Design-Builder shall appoint a suitably qualified and experienced Designer, which may be a consultant or an in-house design team, to undertake the design of the permanent components and the major temporary components of the Project. The Design-Builder shall require the Designer to be located in the Project office and maintain all necessary representation throughout the duration of the Contract to ensure the Designer can meet all its obligations under the Contract and to ensure that the design intent is

met by construction.

DB 111-2.2 Location of Design-Builder's Designer

The Designer may perform production design Work in the Project vicinity or elsewhere. However, the key design personnel must be in the Project vicinity for the duration of the design. What constitutes the "Project vicinity" will be determined in the sole discretion of the Department's Project Manager.

DB 111-2.3 Completeness of Design

The Designer must determine the following:

- A) Effects of all loading requirements;
- B) Dimensions of all elements;
- C) Structural redundancies, where they exist;
- D) Sub-soil interaction to support the loads from above;
- E) Effects of seismicity;
- F) Effects of fatigue;
- G) Durability and maintainability requirements, including a maintenance manual;
- H) Details of required Quality Control procedures, monitoring, and controls; and
- I) Effects of hydrology, design flows, and scour depths.

Working Drawings will be reviewed by the LA DOTD for conformance to Contract requirements. However, design will be considered complete upon the LA DOTD's Design Approval following submittal and review of the As-Built Plans.

DB 111-2.4 Design Manager

The Design-Builder shall designate and assign a Design Manager to manage all Work performed by the Design-Builder's Designer. The Design Manager must be in the Project vicinity as required for the design Work and must be in the Project vicinity as required thereafter to manage design support during construction, design changes, and completion of As-Built Plans. What constitutes the "Project vicinity" will be determined in the sole discretion of the Department's Project Manager.

The Design Manager and/or staff working under the direct supervision of the Design Manager must conduct an assessment and evaluation of design such that the Design Manager can certify to the Design-Builder and to the LA DOTD that the design satisfies the Contract requirements, including the following requirements:

- A) Accuracy;
- B) Adequacy;
- C) Conformance to standards of practice;
- D) Compliance with codes, standards, and permits;
- E) Cost effectiveness;

- F) Quality; and
- G) Fitness for purpose and/or function as specified and/or implied in the Contract.

The Design Manager must include such written certification for all Work being subjected to a Design Review as per DB Section 111-12.

The Design Manager's activities must include, at a minimum, assessment and evaluation of the following:

- 1) Design reports;
- 2) Design Reviews;
- 3) Review of shop drawings;
- 4) Evaluation and mitigation of Non-Conformance Reports;
- 5) Analytical approach;
- 6) Drawing details for conformity to Contract requirements;
- 7) Project specifications for conformity to Contract requirements;
- 8) Design Plans and Working Drawings;
- 9) Major temporary components' effect on permanent components;
- 10) Field design changes;
- 11) Design approvals for Materials and procedures; and
- 12) As-Built Plans for conformity with final design and Contract requirements.

DB 111-2.5 Responsible Engineer

The Designer must designate and assign a Responsible Engineer for each Design-Builder-designated Design Unit. The Responsible Engineer(s) must sign and seal design reports, Design Plans, Working Drawings, and Project specifications for the assigned Design Unit(s). Responsible Engineers must be Louisiana-licensed Professional Engineers.

Responsible Engineers must be in the Project vicinity as necessary to coordinate the Work on assigned Design Units. The Responsible Engineer must be physically located in the Project vicinity for, and must attend all Design Reviews for, assigned Design Unit(s). What constitutes the "Project vicinity" will be determined in the sole discretion of the Department's Project Manager.

DB 111-2.6 Design Quality Control Manager

The Design-Builder shall assign a Design QC Manager, which is one of the Design-Builder's key personnel. The Design-Builder's Design QC Manager must report to the Design-Builder's QC Manager and must be a person who is independent from the production of the design.

The Design-Builder's Design QC Manager must be responsible for the QC of all Work conducted by the Designer. The Design-Builder's Design QC Manager must be in the Project vicinity as required throughout the design process and must be physically present in the Project vicinity to manage design QC related to design support during construction, design changes, and completion of As-Built Plans. What constitutes the "Project vicinity" will be determined in the sole discretion of the Department's Project

Manager.

The Design-Builder's Design QC Manager must assess and evaluate the Design-Builder's design QC activities in order to be able to certify to the Design-Builder and to the LA DOTD that the design QC activities comply with the Contract requirements, including the Design-Builder's Quality Plan.

The Design-Builder shall ensure that its Design QC Manager carries out all duties expressed and implied in the Contract.

The Design-Builder's Design Quality Control Manager must have QC responsibilities related to the following:

- A) Design of permanent and major temporary components;
- B) Changes in design of permanent components; and
- C) As-Built Plans.

The Design-Builder's Design Quality Control Manager must also perform the following activities:

- 1) Identify and report non-conformities/non-compliance;
- 2) Track, monitor, and report on status of outstanding design-related Non-Conformance Reports;
- 3) Supply monthly reports (*see* DB Section 111-18.3.1); and
- 4) Submit specified certificates (permanent components and major temporary components).

These responsibilities are further specified in DB Section 111-12.

DB 111-2.7 Check by the Designer

The requirement that the Design-Builder engage and use a Design QC Manager does not relieve the Designer from carrying out all the checks and reviews that a professional and prudent designer would normally carry out on the type of Work that is actually being designed.

DB 111-3 DESIGN UNITS

The Design-Builder shall package all design and drawings for the Work into separate Design Units. Each Design Unit must comprise similar and coherent significant parts of the Project that can be checked and reviewed as a self contained package with due consideration for accommodating interfaces with other Project components.

Within 30 Calendar Days of Notice to Proceed (NTP), the Design-Builder shall provide a written report updating and identifying each Design Unit. The written report must include the following:

- A) Design Unit descriptions, including the scope of design Work within each Design Unit, limits, and interface points;
- B) Planned review stages and dates, including specific information to be reviewed, planned review dates (measured from the NTP date), and percent complete represented by each review. *See* Appendix 111A - Forms, Form DUS;

- C) The identity of the Responsible Engineer; and
- D) Locations where design Work will be performed.

The Design-Builder shall submit any revisions to the information provided in response to this DB Section 111-3 in writing to the LA DOTD concurrent with the monthly progress report.

DB 111-4 RELATIONSHIP OF EARLY CONSTRUCTION STARTS TO DESIGN DEVELOPMENT AND REVIEW

It is the intent of the LA DOTD to allow construction to begin on a Design Unit prior to completion of final design. Construction on any Design Unit may begin at any time after the applicable readiness for construction Design Review. Construction may progress in increments determined by the Design-Builder, at the Design-Builder's risk, provided each increment of construction is covered by plans and specifications that have been reviewed and meet the requirements for readiness for construction noted in DB Section 111-12.5.

DB 111-5 SCHEDULE FOR DESIGN CHECKS, REVIEWS, AND SUBMISSION OF CHECKED DESIGN

The Design-Builder, through its Design QC Manager, is responsible for scheduling and conducting Design Reviews to meet design and/or construction needs of the Baseline Progress Schedule. It is recognized and anticipated that the Design Review process and frequency, duration, and intensity of Design Reviews may vary with the complexity of the individual Design Units and the associated construction activities. The duration of Design Reviews must be discussed and mutually agreed between the LA DOTD and Design-Builder during the Design Workshop (*see* DB Section 111-16) and verified and modified, as needed, by mutual agreement during the course of the Project. The Design-Builder shall give written notice of scheduled Design-Reviews to the Department's Project Manager at least one week prior to any review.

The Design-Builder shall include the agreed Design Review schedule for all Design Units (including their components and elements) as part of the Baseline Progress Schedule. The Design Review schedule must be reviewed monthly until design Work is complete. The Design-Builder shall not schedule more than two concurrent Design Reviews without the LA DOTD's written concurrence.

Except for As-Built Plans, "submissions" must be in the form of sufficient copies [to accommodate participants in the Design Review(s)] of Design Plans and Project specifications and supporting data and reports assembled for review in the Designer's office. For final Design Reviews, "submissions" must be in the form of two hard copies and one electronic copy of Design Plans and Project specifications and supporting data.

The Design-Builder shall make specified submissions of checked designs in accordance with DB Section 111-12. Submissions must be completed for each Design Unit, but may be combined for multiple Design Units at any one time upon the LA DOTD's written concurrence. The Design-Builder shall submit each Design Unit for Consultation and Written Comment (*see* DB Section 105-11) in accordance with the Baseline Progress Schedule.

For each Design Unit designated by the Design-Builder, the Design-Builder shall include design checks and Design Reviews as indicated in Table 111-12 and such additional reviews as may arise as indicated in DB Section 111-12.4.4. The Design-Builder shall allow the time for the LA DOTD's participation and

input to any Design Review conducted by the Design-Builder's Design QC Manager as agreed as per this DB Section 111-5. The Design-Builder shall incorporate this schedule into the Design-Builder's Baseline Progress Schedule and report progress and updates in the monthly updates. The Design-Builder shall keep the LA DOTD up-to-date on exact timing of reviews and readiness for construction Design Reviews through the weekly progress meetings.

DB 111-6 REVISIONS TO DESIGN

The Design-Builder shall deal with any changes to design initiated by the Design-Builder and already checked by the Designer and certified by the Design QC Manager as an entirely new design. The Design-Builder shall not be entitled to any increase in the Lump Sum Contract Price or extension of time pursuant to DB Section 108-6 in such circumstances.

DB 111-7 DESIGN REVIEW PLAN

The Design-Builder shall prepare and submit a written Design Review Plan within 30 Calendar Days of NTP for Consultation and Written Comment by the LA DOTD. The Design Review Plan must describe the level of design that the Designer will accomplish for each of the planned stages of design development and provide a description and/or checklist for each Design Unit clearly identifying the design product that will be reviewed. The Design Review Plan must include proposed review times for each Design Review, including the review times for LA DOTD and Project stakeholders, if any.

DB 111-8 STAGES OF DESIGN DEVELOPMENT

The Design-Builder shall make a single comprehensive design check and Design Review for each Design Unit at the stages of design development specified herein.

The following are the six stages of design development:

- A) Definitive Design;
- B) Readiness for construction;
- C) Interim design;
- D) Final design;
- E) Working Drawings; and
- F) As-Built Plans.

The intent of each stage of design development and Design Review is the following:

- 1) Verify that the design complies with the Contract requirements;
- 2) Allow components of Design Units to be released for construction; and/or
- 3) In the case of reviews of Working Drawings, to allow construction to continue.

Design Reviews or design checks must be completed as specified in DB Section 111-12 for each Design Unit (and for each component or element within a Design Unit) at each stage of design development.

The Design-Builder shall time the Design Review and submissions (where specified) to be consistent with the Baseline Progress Schedule.

DB 111-9 DESIGN REVIEWS

The Design-Builder shall invite the LA DOTD to participate in Definitive, readiness for construction, interim, and final Design Reviews. The LA DOTD may invite other Project Stakeholders to participate. The Design-Builder shall resolve the LA DOTD's comments to the satisfaction of the LA DOTD prior to the Design Review process being considered complete. Any Stakeholder comments will be forwarded to the Design-Builder by the LA DOTD and must be addressed and/or resolved by the Design-Builder.

DB 111-9.1 Definitive Design Review

The Design Review of Definitive Design must be the first Design Review after Award and is intended to verify that the design concepts proposed by the Design-Builder meet Contract requirements. The Definitive Design Review may also serve as a readiness for construction review (DB Section 111-9.2 and DB Section 111-12.5). The Definitive Design Review must verify the following:

- A) The design concepts governing future design development are defined consistently with Contract requirements;
- B) The final Basic Project Configuration;
- C) The design concepts are substantiated and justified by adequate Site investigation and analysis;
- D) Final Right-of-Way requirements;
- E) The specific standards applicable to the proposed concepts are identified and appropriate;
- F) The proposed design concepts are constructible;
- G) The availability of required Materials/Equipment; and
- H) The design meets Project quality requirements and required design QC procedures have been followed.

If the Definitive Design is amended subsequent to the Definitive Design Review, the Design-Builder shall re-check and re-certify the design at an additional Definitive Design Review. The Design-Builder shall not be entitled to an increase in the Lump Sum Contract Price or a time extension for the re-check and re-certification except when the amended design results from a change order requested by the LA DOTD.

See also DB Section 111-13 regarding design deviations and exceptions.

DB 111-9.2 Readiness for Construction Review

The Design-Builder and the LA DOTD will use the Design Review(s) of readiness for construction design to verify that the concepts and parameters established and represented by Definitive Design are being followed and that Contract requirements continue to be met. The Design-Builder shall specifically highlight, check, and bring to the attention of the LA DOTD any changes to information presented at Definitive Design. The Design-Builder shall present the information for readiness for construction review to the LA DOTD for Consultation and Written Comment by the LA DOTD.

The Design-Builder shall not construct any permanent components or major temporary components until the design checks, Design Reviews, and Design QC Manager's certifications have been completed for the relevant Design Unit and the LA DOTD's provided Consultation and Written Comment (*see* DB Section 105-11) of the readiness for construction design have been resolved to the satisfaction of the LA DOTD.

The Design-Builder shall not commence any construction until any design-related NCRs have been addressed and resolved to the satisfaction of the LA DOTD.

If the readiness for construction design includes design information for Work that can be released for continuation of construction, the results of the readiness for construction Design Review, upon satisfaction of the LA DOTD's Consultation and Written Comment, may be used to satisfy a portion of the requirements of DB Section 111-12.5.

DB 111-9.3 Interim Design Reviews

If the Design-Builder does not initiate construction on a designated Design Unit prior to 100% completion of the design, thereby accomplishing a readiness for construction Design Review, the Design-Builder shall plan and conduct at least one interim Design Review between the Definitive Design Review and completion of design for that Design Unit. The Design-Builder shall schedule such interim reviews at a time when design is at the 60% to 80% stage of completion.

The Design-Builder and the LA DOTD will use the interim Design Review(s) to verify that the concepts and parameters established and represented by Definitive Design are being followed and that Contract requirements continue to be met. The Design-Builder shall specifically highlight, check, and bring to the attention of the LA DOTD any changes to information presented at Definitive Design. The Design-Builder shall submit the interim design for Consultation and Written Comment by the LA DOTD. The Design-Builder shall not move to the final Design Review until it has resolved the LA DOTD's Consultation and Written Comment on the interim design to the satisfaction of the LA DOTD.

DB 111-9.4 Final Design Review

The Design-Builder shall schedule and conduct a final design review when the Design Plans and Project specifications for a Design Unit are 100% complete. The Design-Builder shall specifically highlight, check, and bring to the attention of the LA DOTD any changes to information presented at previous Design Reviews. The Design-Builder shall submit final design for Consultation and Written Comment by the LA DOTD. The Design-Builder shall not move to construction until it has resolved the LA DOTD's Consultation and Written Comment on the final design to the satisfaction of the LA DOTD.

The final Design Review, upon satisfaction of the LA DOTD's Consultation and Written Comment, may be used to satisfy a portion of the requirements of DB Section 111-12.5.

DB 111-10 WORKING PLANS

Working Plans comprise the development and production of Working Drawings. The Design-Builder shall check, review, and certify Working Drawings in accordance with DB Section 111-12.1 through 111-12.3 and DB Section 111-14 prior to their being issued for construction.

The Design-Builder shall invite the LA DOTD to participate in the review of Working Plans. The LA DOTD may invite the Stakeholders to participate in reviews of Working Plans.

Working Plans includes, but is not limited to, the following:

- A) Working Drawings;

- B) Material and product data from Manufacturers; and
- C) Calculations.

DB 111-11 AS-BUILT DESIGN

The Design-Builder shall submit the As-Built Plans for each Design Unit in accordance with DB Sections 109-10.3 and 111-12.

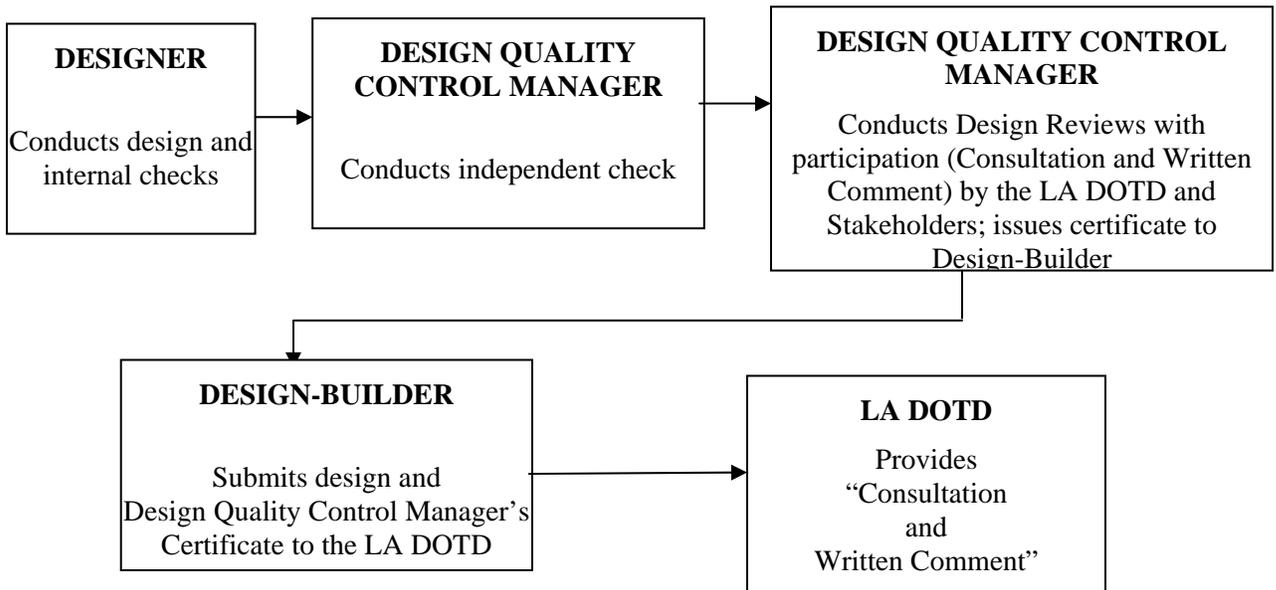
See DB Section 111-12.4.2 for additional requirements relating to As-Built Plans and information.

DB 111-12 DESIGN CHECKS, CERTIFICATIONS, AND REVIEWS

The Designer's organization must check all design documents (drawings, plans, specifications, calculations, and reports) produced by the Design-Builder's organization. The Design-Builder's Design QC Manager must certify that these documents have been checked as per Contract requirements and the Design-Builder's Quality Plan. The Design-Builder's Design QC Manager's written certification must provide the certification specified in DB Section 111-12.5.

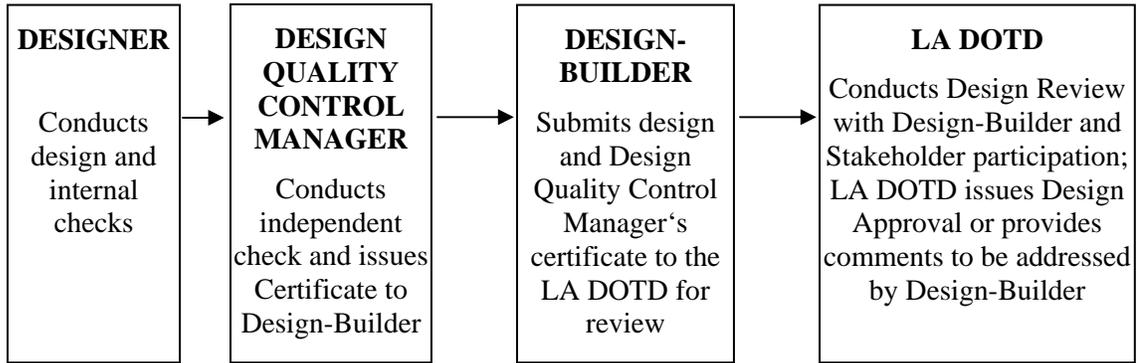
The Design-Builder and the LA DOTD will follow the process shown in Figure 111-12A for Design Reviews conducted by the Design-Builder's Design QC Manager (applies to all Design Reviews except As-Built Plan Design Reviews).

**FIGURE 111-12A
DESIGN REVIEW FLOW CHART
(DESIGN-BUILDER'S DESIGN QUALITY CONTROL MANAGER
CONDUCTS DESIGN REVIEW)**



The Design-Builder and the LA DOTD will follow the process shown in Figure 111-12B for As-Built Plan Design Reviews.

FIGURE 111-12B
AS-BUILT PLAN DESIGN REVIEW FLOW CHART
(LA DOTD CONDUCTS DESIGN REVIEWS)



The Design-Builder shall conduct and complete the design checks, certifications, and reviews for each Design Unit by the entity specified in Table 111-12. The LA DOTD will provide Consultation and Written Comment of the design prior to the Design-Builder releasing designs for construction, which must be resolved to the satisfaction of the LA DOTD. The LA DOTD may also issue design NCRs which must be addressed and resolved to the satisfaction of the LA DOTD prior to releasing the design(s) for construction.

The Design-Builder shall conduct its Design Review or submit its design for review in accordance with Table 111-12, supported by a written certification issued by the Design-Builder's Design QC Manager, at the stages of design development shown in Table 111-12 for each Design Unit in accordance with the Design Review schedule in the Baseline Progress Schedule.

**TABLE 111-12
DESIGN CHECKS, CERTIFICATIONS, AND REVIEWS
FOR PERMANENT AND TEMPORARY COMPONENTS**

STAGE OF DESIGN DEVELOPMENT	DESIGN CHECK AND CERTIFICATION TO DESIGN-BUILDER	DESIGN REVIEW
Definitive design	Designer and Design Quality Control Manager	Design Quality Control Manager
Interim design	Designer and Design Quality Control Manager	Design Quality Control Manager
Readiness for construction design	Designer and Design Quality Control Manager	Design Quality Control Manager
Final design	Designer and Design Quality Control Manager	Design Quality Control Manager
Working Plans and related documents	Designer and Design Quality Control Manager	Design Quality Control Manager
As-Built Plans	Designer and Design Quality Control Manager	LA DOTD
Major temporary components	Designer and Design Quality Control Manager	Design Quality Control Manager
Temporary components	Designer and checker	Not applicable

DB 111-12.1 Design-Builder’s Independent Checks

The Design-Builder shall carry out independent checks of permanent components, major temporary components, and effects of temporary components on the permanent components by senior engineers not involved in the production of the design being reviewed who have equal or greater qualifications and experience as the Responsible Engineer for the design being checked.

Independent design checks must comprise design assessment and analytical checks as specified in DB Sections 111-12.2 and 111-12.3.

DB 111-12.2 Design Assessment

Design assessment must be the review of general compliance with the requirements of the Contract, taking into consideration the proposed method of construction, and must cover the following areas:

- A) Loads;
- B) Codes and standards;
- C) Methods of analysis;
- D) Computer software and its validation;
- E) Interface requirements;

- F) Maintenance requirements;
- G) Materials and Material properties;
- H) Durability requirements;
- I) Fatigue performance;
- J) Hydrology; and
- K) Design flows.

DB 111-12.3 Analytical Check

The independent design check must include an independent analytical check using separate calculations (and without reference to the Designer's calculations) to establish the structural adequacy and integrity of critical structural members. This analytical check must include, but is not limited to, the following:

- A) The structural geometry and modeling;
- B) Material properties;
- C) Member properties;
- D) Loading intensities; and
- E) Structural boundary conditions.

DB 111-12.4 Design Reviews

The Design-Builder's time and cost impacts of revisions arising from LA DOTD's and Stakeholders' participation in Design Reviews and/or caused by Design-Builder's non-compliance with Contract requirements, including the LA DOTD's and Stakeholders' time for reviewing revisions, must be borne by the Design-Builder.

DB 111-12.4.1 Design Reviews Conducted by the Design-Builder's Design Quality Control Manager

The Design-Builder shall notify and invite the LA DOTD to participate in all Design Reviews conducted by the Design-Builder's Design QC Manager. The LA DOTD may also invite Project Stakeholders and affected utility owners to participate. The LA DOTD will provide Consultation and Written Comment (based on the LA DOTD and Stakeholder participation) regarding these Design Reviews.

For Design Reviews conducted by the Design-Builder's Design QC Manager (*see* Table 111-12), the Design-Builder's Design QC Manager must provide a Design Review report for each Design Unit at the conclusion of each Design Review. The Design Review reports will identify any actions arising from the review. The Design Review report must note items requiring corrective action on the design NCR, Form NCR-D (Appendix 111A - Forms). The Design-Builder's Design QC Manager must send the design NCR to the Designer and a copy to the LA DOTD.

The Design-Builder shall conduct Design Reviews in the offices of the Designer and/or Design-Builder in the Project vicinity. What constitutes the "Project vicinity" will be determined by the Department's Project Manager, in his sole discretion.

The Responsible Engineer and any specialists with significant input to the design or review must be

present. The Design-Builder shall provide to the LA DOTD all drawings, copies of calculations, reports, or other items pertinent to the Design Review.

DB 111-12.4.2 As-Built Review

As-Built Plans and Project specifications must incorporate complete information that defines the Work as constructed to meet the Contract requirements.

The Design-Builder shall submit As-Built Plans complete for each Design Unit to the LA DOTD for review and Design Approval in accordance with DB Section 111-11. The LA DOTD review will be one of the processes to verify if the Project has been designed and constructed in accordance with Contract requirements and to see if As-Built Plans comply with Contract requirements.

The Design-Builder shall make all corrections noted in the review of As-Built Plans and resubmit the corrected As-Built Plans to the LA DOTD for review and Design Approval.

Design Approval by the LA DOTD will not occur until the As-Built Plans are submitted, reviewed, and corrected to the satisfaction of the LA DOTD.

DB 111-12.4.3 Design Review of Major Temporary Components

The Design-Builder's Design QC Manager must conduct a Design Review of major temporary components that represent complex structures and that potentially can affect the safety, quality, and durability of the permanent components. The review must include the effect of the major temporary components on the permanent components.

DB 111-12.4.4 Additional Reviews

The LA DOTD (with Stakeholder participation, if invited by the LA DOTD) may conduct additional "over-the shoulder" reviews as considered necessary, in the sole determination of the LA DOTD, to ensure a continued and uniform consistency in the quality and effective incorporation of revisions to designs. The Design-Builder may also conduct reviews necessary to facilitate early release of designs for construction.

DB 111-12.5 Readiness for Construction

The Design-Builder may start construction of any element of the permanent components only after all the following items have occurred:

- A) The Designer has conducted its design QC checks throughout the design process in compliance with the Quality Plan and certifies in writing that the design is complete to the appropriate level or stage of review, checked, and ready to be released for construction;
- B) The Design-Builder's Design QC Manager has signed the title sheet for the drawings, certifying to the following (the title sheet can be formatted to include the items of certification):
 - 1) Design checks have been completed;
 - 2) Work conforms to Contract requirements;
 - 3) Any deviations or design exceptions have been approved in writing by the LA DOTD (DB Section 111-13);

- 4) Design Quality Control activities are following the Design-Builder's Quality Plan; and
- 5) All outstanding issues or comments from Design Reviews have been resolved to the satisfaction of the LA DOTD;
- C) The Responsible Engineer has signed all drawings prepared under his/her direction. For those drawings and documents included in the submittal that are prepared by a Manufacturer or Supplier or other Persons not under the Responsible Engineer's direct supervision, the Responsible Engineer will affix a stamp that indicates the design shown on the sheet or document conforms to the overall design and Contract requirements;
- D) The Design Manager has signed the title sheet to the drawings certifying to the items contained in DB 111-2.4(A) through (G). (The title sheet can be formatted to include the items of certification);
- E) The Design-Builder has verified the following:
 - 1) Working Plans, Project specifications, and related documents for the portion of the Project to be constructed are complete and checked in accordance with this DB Section 111-12;
 - 2) The design and drawings for Maintenance of Traffic (MOT) and temporary erosion control and environmental measures applicable to the Work are complete; and
 - 3) Adequate stakes, lines, and/or monuments necessary to control the Work have been established on the Site; and
- F) The LA DOTD will provide Consultation and Written Comment regarding the design and applicable MOT, temporary erosion control measures, and environmental requirements.

The LA DOTD's Consultation and Written Comment will not constitute Approval or Design Acceptance of the design or subsequent construction. All Consultation and Written Comment must be resolved by the Design-Builder to the satisfaction of the LA DOTD.

Any design NCRs issued by the Design-Builder's Design QC Manager or the LA DOTD must be addressed and resolved by the Design-Builder to the satisfaction of the LA DOTD prior to any design being released for construction.

The Design-Builder may proceed with construction on the Project at the Design-Builder's risk to the extent Work is covered by relevant design documents that have been processed as shown in Figure 111-12A. Prior to construction proceeding further, the Design-Builder shall complete the next stage of design and Design Review and/or submission.

DB 111-12.6 Comment Resolution

The LA DOTD's and Stakeholders' comments from Design Reviews will be recorded on Form DR (Appendix 111A) and transmitted to the Design-Builder. The Design-Builder shall record its proposed disposition and response to each comment and meet with the LA DOTD to resolve outstanding comments and dispositions to the LA DOTD's satisfaction. Final disposition and resolution will be documented on Form DR.

If the Design Review reveals non-conformance with Contract requirements, the LA DOTD will prepare Form NCR-D (Appendix 111A) and submit it to the Design-Builder for action. The Design-Builder shall complete Form NCR-D when the non-conformance is corrected and return Form NCR-D to the LA DOTD.

All Design Reviews must include a comment and NCR resolution process where unresolved comments and NCRs are discussed and a written action plan and schedule for resolution of unresolved comments and NCRs is developed. The Design-Builder's Design QC Manager will lead the process.

DB 111-13 DESIGN EXCEPTIONS

All deviations (design exceptions) from the Contract requirements must be submitted to the LA DOTD for review and Approval. All requests for deviations and exceptions must be submitted with a justification report detailing the reasons to retain a non-standard or substandard feature or for providing an improvement that does not bring the feature up to standard. Requests for design deviations and exceptions must be submitted not later than the Definitive Design Review and Approved by the LA DOTD in writing before the affected Design Units will be released for construction (DB Section 111-12.5). If the LA DOTD does not Approve a design exception, it is the Design-Builder's sole responsibility to provide design in accordance with this Contract. The LA DOTD will not consider providing the Design-Builder additional time or compensation under this Contract due to the rejection of a design exception request.

DB 111-14 DESIGN CHANGES BEFORE CONSTRUCTION

Design changes may occur prior to construction or may occur after final design and may be initiated by the Design-Builder, through its Designer, or the LA DOTD.

For all design changes requiring calculations, the Designer and the Design-Builder's Design QC Manager must conduct a documented check of all calculations. All design changes requiring alteration of design documents released for construction must undergo all review procedures included for original design documents in the Design-Builder's Quality Plan and DB Section 111-12.

DB 111-15 DESIGN SUPPORT DURING CONSTRUCTION

The Designer and Design-Builder's Design QC Manager must verify during construction that the conditions actually encountered are consistent with the design and related Design Plans, Working Plans, and Project Specifications. The Designer must prepare necessary adjustments in the Design Plans, Working Plans, and Project Specifications and the Design-Builder shall obtain required LA DOTD Consultation and Written Comment. The Design-Builder shall be responsible for obtaining Stakeholder permits or approvals. The Designer and Design-Builder's Design QC Manager must check any such changes in accordance with the Design-Builder's Quality Plan. The Design-Builder's Design QC Manager must certify the change in writing as meeting the Contract requirements. The Design-Builder shall incorporate the adjustments in the As-Built Plans. The Design-Builder shall retain copies of its Design QC Manager's written certifications and submit the certifications to the LA DOTD.

DB 111-16 DESIGN WORKSHOP

Within 45 Working Days of NTP, the Design-Builder shall arrange a design workshop to familiarize the Designer's personnel and the LA DOTD's (and Stakeholders', if invited by the LA DOTD) review

personnel with the design concepts, issues, status, and review procedures. The agenda must include developing agreements regarding time allowed for design reviews (*see* DB Section 111-5). The LA DOTD and Design-Builder will jointly develop the agenda of the workshop and how it will be organized (i.e., by Design Unit and engineering discipline). The intent of the workshop is to make the subsequent Design Reviews more effective and efficient for all parties.

All agreements, schedules, and understandings reached during the design workshop must be documented in writing and signed off by the Design-Builder's and Department's Project Managers.

DB 111-17 QUANTITY ESTIMATES

To facilitate determining sampling and testing requirements, the Design-Builder shall provide quantity estimates for the Work on its Plans. The quantity estimates must be in units that facilitate sampling and testing (i.e., the units must be consistent with the units used to determine frequency of sampling and testing). For example, if "X" numbers of compaction tests are specified to be taken for every "Y" cubic yards of embankment, the quantity estimate would need to be in cubic yards of embankment.

See also DB Section 111-19.4.

DB 111-18 DESIGN DOCUMENTATION

DB 111-18.1 Progress Tracking

The Design-Builder shall include engineering and design progress and changes in its Baseline Progress Schedule (including Work on any design change) in the monthly updates.

DB 111-18.2 Design Quality Records

The Design-Builder's Design QC Manager must prepare and submit monitoring reports to the LA DOTD of all design issues and review comments resulting from the scheduled and additional checks and reviews, including "over-the-shoulder" reviews.

The Design-Builder shall also maintain an auditable record of all of its Quality Plan procedures. An independent auditor must be able to determine by reviewing documentation if all procedures included in the Design-Builder's Quality Plan have been followed.

The Design-Builder shall submit reports of checks and reviews within seven Calendar Days of the completion of the review.

The Design-Builder shall develop, implement, and maintain a log of design NCRs and/or notices indicating dates issued, reasons, status, or resolution and date of resolution.

The Design-Builder shall prepare and maintain daily records of design activities on forms acceptable to the LA DOTD.

DB 111-18.3 The Design-Builder's Design Quality Control Manager Reports

DB 111-18.3.1 Monthly Report to the Louisiana Department of Transportation and Development

The Design-Builder's Design QC Manager must submit a monthly report directly to the LA DOTD by the third Working Day of the following month that includes the following:

- A) A summary of reviews conducted;
- B) Identification of nonconforming Work and current status and/or disposition (based on design non-conformance log, DB Section 111-18.2); and
- C) A listing of submission(s) from the Design-Builder and status.

DB 111-18.3.2 Final Design Report

Upon completion of the final design for each Design Unit, including all its components and elements, the Design-Builder's Design QC Manager must notify the Design-Builder, with a copy to the LA DOTD, of any outstanding monitoring report issues or unresolved review comments.

DB 111-19 DESIGN PLANS, WORKING PLANS, AND PROJECT SPECIFICATIONS

The Lump Sum Contract Price will include the cost of furnishing all Design Plans, Project Specifications, Working Plans, and As-Built Plans.

The Contract Documents establish the minimum standards of quality and define requirements that the design and construction must satisfy.

During the design process, the Design-Builder shall develop Project Specifications and Design Plans based on the Contract Documents that are applicable to the specific Materials, products, Equipment, procedures, and methods that the Design-Builder intends to use.

During the Design Reviews, the Design Plans and Project Specifications will be evaluated by the LA DOTD to determine if they meet the Contract requirements.

DB 111-19.1 Plans

The Work must be performed in accordance with the details as shown on the Design Plans prepared by the Designer and those Working Plans prepared by the Design-Builder. The Design-Builder shall provide Working Plans of such a nature as to develop a finished product in accordance with Design Plans, Project Specifications, and Contract requirements. The Design-Builder shall verify pertinent dimensions in the field prior to conducting a Working Plan review. Participation in the review of the Design-Builder's Design Plans and/or Working Plans by the LA DOTD (or Stakeholders, if invited by the LA DOTD) will not relieve the Design-Builder of the responsibility for the satisfactory completion of the Work.

Working Plans must be reviewed and approved in writing by the Designer before beginning the construction Work and will not thereafter be amended or altered without prior written approval of the Designer and the LA DOTD's Consultation and Written Comment. Prior to moving forward with any construction, the LA DOTD's Consultation and Written Comment must be resolved to the satisfaction of the LA DOTD.

All readiness for construction design, final design, and As-Built Plans must be signed and stamped/sealed by the appropriate Responsible Engineer and must include on the title sheet for the plans certification signatures of the Design Manager and the Design-Builder's Design QC Manager (the title sheet can be formatted to cite the appropriate certification requirements of DB 111-2.4 and 111-12.5).

DB 111-19.2 Design and As-Built Plans Format and Organization

The Design-Builder shall organize and format Design and As-Built Plans in a logical and orderly fashion, and in accordance with generally accepted practices in the State of Louisiana. The As-Built Plans must be submitted in hard copy for signature by the Chief Engineer as per Louisiana Revised Statutes Section 36:508 and 48:92.

DB 111-19.3 CADD Standards

CADD formatting for Design and As-Built Plans must be consistent and logical for all plans created by the Design-Builder and must comply with the most recent version of the LA DOTD's "Electronic Standards for Plans" found at http://www.dotd.la.gov/highways/project_devel/design/electronic_standards_disclaimer.asp. The Design-Builder shall install updates to appropriate software as instructed by the Department's Project Manager.

As-Built Plans must be delivered on CD-ROM or DVD media, and labeled with media-compatible indelible ink on separate lines as follows:

State Project Nos. 454-01-0047 and 454-02-0025
As-Built Plan Submittal
Electronic Deliverables
[Design-Builder's name]

The Department's Project Manager may require delivery of the As-Built Plans by other methods, including, but not limited to, upload to the LA DOTD's ProjectWise repository.

DB 111-19.4 Project Specifications

The Design-Builder shall prepare Project Specifications based on Contract requirements. The Design-Builder may perform the following activities:

- A) Use the Louisiana Department of Transportation and Development's Standard Specifications for Roads and Bridges 2006 Edition, supplemented as needed by the Design-Builder; and/or
- B) Prepare new specifications to cover Work.

Project Specifications, including the LA DOTD's Standard Specifications for Roads and Bridges 2006 Edition, if used, will be reviewed by the Design-Builder and the LA DOTD during Design Reviews to verify that the Project Specifications provide a level of quality that meets or exceeds the Contract requirements and are suitable and appropriate to control the Work. The Design-Builder shall be responsible for demonstrating that the Project Specifications meet or exceed the standard of quality established by the LA DOTD's Standard Specifications for Roads and Bridges 2006 Edition. Any deviation that results in a lesser standard of quality will require LA DOTD Approval and may require the execution of a Change Order. The LA DOTD will determine, at its sole discretion, if the Project Specifications meet the Contract requirements.

Project Specifications must define the type and frequency of QC sampling and testing to be conducted for the Work covered by a Project Specification. The Design-Builder shall use DB Section 112 to determine the type and frequency of QC sampling and testing.