

After the Design-Builder is selected in the procurement phase and a contract is executed, the project enters into the implementation phase.

The term implementation phase is used instead of construction phase because this phase includes both design and construction elements of the project. These two elements of work are typically performed in overlapping schedules, resulting in project management processes that are unique to design-build delivery.

7-1 Project Organization: Key Personnel

As the project transitions from procurement to implementation, the organization will transition from a WSDOT team to a joint WSDOT/Design-Builder team.

Each Request for Qualifications (RFQ) will list the required Design-Builder personnel for a project. These Key Personnel are typically:

- **Project Manager**

The Design-Builder's Project Manager (PM) will be responsible for the overall design, construction, schedule, budget, quality management, and contract administration for the project. It is the PM's responsibility to ensure that the project is managed and delivered in accordance with the contract requirements and to be available to assist in issue resolution. The PM will be assigned to the project full-time from Notice to Proceed (NTP) to Physical Completion. The PM can also be the Design Manager or the Construction Manager, but cannot be both. While these positions are unlikely to be combined on large projects, smaller projects might benefit from combining these positions.

- **Design Manager**

The Design-Builder's Design Manager (DM) will be responsible for ensuring that the overall project design is completed, design criteria are met, and the design is managed and delivered to meet or exceed the project goals. The DM is assigned to the project full-time, from NTP through completion of the design effort, and will be available, as needed, during construction activities.

- **Construction Manager**

The Design-Builder's Construction Manager (CM) will be responsible for all project construction. It is the CM's responsibility to ensure that the construction is managed and delivered in accordance with the contract requirements and to ensure that the work meets or exceeds the project goals. The CM makes sure that construction is consistent with the project design. If changes to the design are needed during construction, the CM reevaluates the design to ensure that the as-constructed product will remain consistent with the contract requirements.

The CM will have experience with managing a diverse group of subcontractors and coordinating with project stakeholders to comply with Local Agency and environmental issues and requirements. The CM will be available for design package reviews and project meetings during construction. The CM is assigned to the project full-time during construction activities.

7-1.1 *Other Project Personnel*

Some projects, depending on scope, risk, and complexity, may benefit from requiring additional Key Personnel such as:

- Construction Quality Assurance Manager (CQAM)
- Design Quality Assurance Manager (DQAM)
- Document Control Manager (DCM)
- Drainage Design Lead Engineer
- Environmental Compliance Manager
- Geotechnical Group Manager
- Materials Approval Engineer
- Project Quality Manager (PQM)
- Quality Testing Supervisor (QTS)
- Structural Lead Engineer
- Water Resources Engineer

7-2 **Project Startup**

7-2.1 *Award, Contract Execution, and Notice to Proceed*

In the final steps of the procurement phase, the proposals are reviewed and the Apparent Best Value Proposer is announced. Contract award will typically occur within 60 calendar days of the Proposal Due Date. After the contract is awarded, the successful Proposer has 20 calendar days to submit all required documents for execution of the contract. The documents include the signed contract, insurance certification, contract bond, and other pre-award information required by the contract, as well as registration as a contractor in the State of Washington.

Within 7 calendar days of contract execution, and prior to issuing NTP, the WSDOT Engineer and the Design-Builder shall discuss the merits of a Practical Design Workshop. Refer to Request for Proposal (RFP) Section 1-04.3 for further information on Practical Design Workshops.

NTP is written authorization issued by WSDOT that permits the Design-Builder to commence performance of the work. NTP is issued shortly after contract execution, but WSDOT may defer issuance of NTP for up to 30 calendar days after contract execution. NTP marks the start of contract days. For certain projects, such as those where the NEPA analysis has not been completed prior to contract execution or where phased authorization is required due to Governmental Body imposed restrictions, multiple NTPs (e.g. NTP1, NTP2, etc.) may be utilized.

Refer to the following flowcharts to review the steps taken after the Apparent Best Value Proposer is announced:

- [ABV to Award Flow Chart](#)
- [Award to NTP Flow Chart](#)

7-2.2 Co-Location

Co-location can greatly facilitate collaboration between WSDOT and the Design-Builder. The size, location, and complexity of a project should be considered when determining the level of co-location needed. It might not be practical for smaller, simpler projects to provide co-location. Generally, the Design-Builder will provide and maintain all building space, including office space for WSDOT, facilities, equipment, and vehicles necessary to construct the project and to meet the requirements of the RFP. Sufficient space will be provided in the Design-Builder's project office for simultaneous occupancy by both construction and design personnel. Specific office requirements are specified in the RFP.

At project startup, the Design-Builder is encouraged to co-locate its staff with WSDOT into a single project office, with the Design-Builder and WSDOT staff integrated by discipline. The Design-Builder will coordinate with WSDOT prior to securing data or phone connections for a co-located office. Refer to RFP Section 2.1 for further information on co-location.

7-3 Contract Meetings, Hold Points, and Milestones

7-3.1 Contract Meetings

7-3.1.1 All Meetings

The Design-Builder is responsible for providing meeting facilities and the development and distribution of meeting agendas and minutes. Refer to RFP Section 2.1 for further information.

7-3.1.2 Orientation Meeting

Within 14 calendar days of NTP, the Design-Builder will schedule an orientation meeting between the Design-Builder and WSDOT Engineer to address documentation requirements. Refer to RFP Section 2.1 for further information.

7-3.1.3 Kick-Off Meeting

As soon as possible, but not more than 30 calendar days after NTP, the Design-Builder will schedule a kick-off meeting with WSDOT Engineer to discuss the project, exchange information as described in the *WSDOT Construction Manual M 41-01*, and cover topics relevant to design phase of the contract. The orientation and kick-off meetings may be combined if the Design-Builder and WSDOT Engineer agree. Refer to RFP Section 2.1 for further information.

7-3.1.4 Pre-Fabrication Meeting

A pre-fabrication meeting will be held prior to the fabrication of major items requiring WSDOT inspection and approval. The Design-Builder will be responsible for scheduling the pre-fabrication meeting, which is to be held at the facility where the fabrication will take place. The Design-Builder will arrange for WSDOT Fabrication Office inspection of all fabricated materials for the project. Refer to RFP Section 2.25 for further information.

7-3.1.5 Task Force Meetings

Task force meetings encourage close communication between WSDOT and the Design-Builder throughout the design and construction of the project. It is anticipated that this close communication will expedite project reviews and facilitate the incorporation of innovative project solutions. These meetings, combined with over-the-shoulder reviews, shall be an integral part of the process to discuss and resolve design issues outside of the formal review process. Task force meetings are required for specific disciplines as noted in the Technical Requirements of the contract. Some examples are Disadvantaged Business Enterprise (DBE) program, environmental, close out, and design task force meetings. Refer to RFP Section 2.1 for further information.

7-3.1.6 Quality Assurance Task Force Meetings

The WSDOT Engineer and Design-Builder will form a Quality Assurance (QA) Task Force that will provide the initial forum for quality issue resolution in the design-build process. The QA Task Force's responsibility is to remedy all non-conforming work in the field identified by Non-Conformance Reports (NCRs) or Non-Conformance Issues (NCIs). They will also be required to address issues that either directly or indirectly affect project quality.

Once the Design-Builder has formed a QA Team with individuals responsible for QA activities, the QA Task Force shall begin weekly meetings. WSDOT will form its own quality team and will participate in these meetings. These meetings will discuss, address, and correct quality related issues. Potential quality issues include but are not limited to the following: design, inspection, substandard material, deficient QA and Quality Control (QC) processes, test results that are out of tolerance, variations between QA and Quality Verification (QV) test data (F&t analysis), future quality concerns, as well as other issues that the Design-Builder or WSDOT may have regarding quality of the project.

Meeting frequency may decrease if quality issues decrease. If, however, contract performance becomes substandard, the Design-Builder could be required to increase the frequency of the meetings until project quality issues improve.

Either the PQM, DQAM, or CQAM will schedule meetings, develop agendas, document the meeting minutes, and distribute minutes to attendees. Refer to RFP [Section 2.28](#) for further information.

7-3.1.7 Close Out Task Force Meetings

Close Out Task Force meetings will include the PQM, DCM, PM, DM, and the WSDOT Engineer at a minimum. It is important that close out efforts commence immediately after NTP and proactively continue throughout the duration of the project. Therefore, Close Out Task Force meetings will be held monthly starting after NTP, earlier if proposed by the Design-Builder, and continuing through Substantial Completion. After Substantial Completion is given, meetings occur weekly from Substantial Completion through Completion. Refer to RFP Section 2.12 for further information.

7-3.1.8 Pre-Activity Meetings

The Design-Builder will hold pre-activity meetings to ensure that all project personnel have a thorough understanding of the work to be accomplished prior to beginning construction on a work activity. Refer to RFP [Section 2.28](#) for further information.

7-3.2 Milestones and Hold Points

7-3.2.1 Milestones

Form D, of the Instructions to Proposers, is the Design-Builder's proposal on contract time commitments for completion of the listed milestones. Upon contract execution, the contract time/milestone completion deadlines shown on Form D become contractual requirements.

All schedules by the Design-Builder shall include contract milestones that include those listed on Form D of the Design-Builder's proposal and completion milestones (Completion Date and Final Acceptance Date). Refer to RFP [Section 1-08.3\(2\)](#).

7-3.2.2 Hold Points

RFP Section 2.28 defines the deliverable requirements for Hold Points. The Hold Point procedure is used to enhance the level of control at specific construction milestones. WSDOT requires construction QA personnel to use Hold Points to ensure that an individual phase of construction is complete and in accordance with the contract before moving on to the next phase of work. The Design-Builder's QC or production group is responsible for resolving outstanding NCRs and NCIs. Construction QA personnel also use Hold Points to restrain, remediate, and refocus QC/production when the Design-Builder has not completed QC/production work before moving on to the next stage of work (working at risk).

Hold Point refers to pausing construction activities until a QA inspection is accepted. Construction QA inspection Hold Points are particularly important when work cannot be inspected later because a problem or non-conformance could be covered up.

Hold Points are also defined for critical inspections when cost of re-work would be high if problems are identified later. Pre-activity meetings are Hold Points.

7-3.2.3 Hold Point Inspection

1. Hold points shall be identified in the construction process where critical characteristics are to be measured and maintained and at points where it is impractical to determine the adequacy of either materials or workmanship once work proceeds past these points.
2. Pre-activity meetings shall be included in the Design-Builder's Quality Management Plan (QMP) as Hold Points.
3. Hold Points shall be established where required QA inspection is mandatory.
4. The Design-Builder shall provide 3 calendar days' notice to WSDOT prior to each Hold Point so that WSDOT, at its discretion, can observe or visually examine a specific work operation or test.
5. Work shall not proceed until inspection is completed and a written release is granted by the Design-Builder's QA organization.
6. The Engineer of Record (EOR) and the Designer of Record shall submit specific Hold Points with the Released for Construction (RFC) Documents.
7. The CQAM shall establish Hold Points per RFP Section 2.28. The QMP shall identify all additional Hold Points necessary to certify compliance.
 - a. The Hold Points listed in the RFP provide the Design-Builder's QA organization notice of the minimum expected or owner-predicted hold points that are required.

As mentioned in item 6, the EOR shall expand this list to reflect the RFC plans and specifications.

Hold Points should be listed on all inspection and test plans so that QV/QA/QC personnel will all know when Hold Points are to be in effect. A hold status indicator should also be used to indicate when the inspection is passed. The code inspection green tag is a well-known example of a hold status indicator.

Appropriately used, Hold Points are an effective tool to monitor production and ensure quality.

Hold Points allow all obligated stakeholders the opportunity to review plan and specification compliance. The Design-Builder's QA organization is obligated to identify all quality incidents, non-conformances, and field design changes. In the case of pre-activity meetings, work plans can be discussed, augmented, adjusted, or curtailed, dependent on specific needs that may have not been initially apparent.

7-4 Contract Submittals

7-4.1 Document Control Work Plan

The Design-Builder will submit a document control work plan within 30 calendar days of NTP or prior to the first design submittal, whichever occurs first. Reference RFP Section 2.1 for further information.

7-4.2 Quality Management Plan

The QMP is one of several submittals that are required to be approved in writing by the WSDOT Engineer (a complete list of WSDOT approvals can be found [here](#)). The QMP shall be consistent with the Design-Builder's proposal. A draft QMP is to be submitted to the WSDOT Engineer for review within 30 calendar days of NTP.

The WSDOT Engineer will not accept RFC design submittals until the Design-Builder's final QMP for design has been approved in writing by the WSDOT Engineer. No construction work activities that require QA/QC inspection or testing will commence until the Design-Builder's final QMP for construction has been approved in writing by the WSDOT Engineer.

The QMP will remain in effect until all requirements of the contract have been fulfilled and the project is accepted.

Refer to RFP [Section 2.28](#) for further information on all the different technical discipline submittals the QMP addresses.

7-4.3 Environmental Compliance Plan

The Design-Builder will submit an environmental compliance plan in accordance with RFP [Section 2.8](#).

7-4.4 Design Documentation

The Design-Builder is required to submit a draft Project Development Approval (PDA) within 60 calendar days of the last RFC design submittal. The WSDOT Engineer will Review and Comment within 25 calendar days. All comments have to be resolved before the PDA is finalized and submitted to the WSDOT Engineer for approval.

Prior to Physical Completion or termination of the contract, the Design-Builder will collect and submit all design documents prepared in the performance of the contract.

The final design documents will include, at a minimum, the following:

- Design Documentation Package, Project File, and technical memoranda
- PDA
- Updated electronic MicroStation and InRoads files in accordance with the WSDOT Electronic Engineering Data Standards, including all RFC sheets, reference files, and base mapping (topography, including survey updates).

Refer to RFP [Section 2.28](#) for further information on preliminary design submittals. Refer to RFP [Section 2.12](#) for further information on final design submittals.

7-4.5 Released for Construction Documents

RFC documents are the primary documents that define the construction of the project. To leverage the design-build advantages of a parallel and overlapping design and construction, RFC documents are usually issued in multiple packages to allow for the early start of construction before the design for the project as a whole is completed.

However, what is to be constructed must have supporting designs that are complete and final. WSDOT generally reserves acceptance authority over revisions to RFC documents. Acceptance can be withheld if partial or incomplete designs are included in the revised documents. This puts the risk of continuity and compatibility of subsequent RFC documents on the Design-Builder. Throughout the course of the project, the Design-Builder will maintain in the Design-Builder's project office and make available for WSDOT review RFC documents and revised RFC documents. The QA and QC procedures in the QMP will identify procedures for RFC.

7-4.6 Non-Conformance Report and Non-Conformance Issue

The Design-Builder's QA organization assesses the performance of the Design-Builder's QC organization and identifies and documents all elements of work that have not, or are believed to have not, been performed in accordance with approved drawings, specifications, and other contract documents. This documentation along with the reason for non-conformance will be captured in an NCR. The NCR will be submitted to the WSDOT Engineer in writing within 24 hours of identification and a copy will be sent to the DM.

For every instance of non-conforming work that is cited by the Design-Builder or by the WSDOT Engineer, the Design-Builder will perform remediation to bring the work into conformance with the contract. If the WSDOT Engineer does not agree with the remedial actions set forth in the NCR, the WSDOT Engineer has the authority to call for removal of the non-conforming work, or to stop work within that area until the corrective action plan has been approved by the WSDOT Engineer. The CQAM will maintain a log of all NCRs and corrective action plans and present them at QA Task Force meetings. If, in the design/construction process, WSDOT identifies elements that do not conform with contract requirements, WSDOT should document its own NCIs based on its observance of the work.

7-4.7 **As Builts**

Prior to Physical Completion of the project, the Design-Builder is required to update and re-release all RFC and Design Documents affected by significant revisions made during construction. All revisions to RFC documents will be performed by, or under the direct supervision of, the EOR.

For significant revisions, each re-issued sheet of the revised RFC plans and the cover of each of the re-issued revised RFC Technical Specifications will include the Licensed Professional Engineer's stamp and signature. The Design-Builder shall outline the threshold for these changes in their QMP. MicroStation and InRoads files will be updated with all significant revisions to show the as-constructed conditions, incorporating all revisions made during construction. The As Built plans will reflect the same degree of detail as the RFC documents.

As Built plans shall be submitted as a complete package in sequence, including all RFC sheets, both those with significant revisions and those without, in accordance with the numbering and naming conventions as defined in the *WSDOT Plans Preparation Manual* M 22-31 and *WSDOT Construction Manual* M 41-01. There may additional As Built requirements if compensatory wetland or stream mitigation is required for the project. The U.S. Army Corps of Engineers and the Washington State Department of Ecology typically require an As Built report with photos and other information (the project-specific environmental commitments list should include any environmental specific As Built requirements. The WSDOT Engineer will Review and Comment on the submittal and advise the Design-Builder of acceptance or provide comments to be resolved. Comments will be addressed as outlined in the Design-Builder's QMP. Once comments are addressed, the final As Built submittal is sent to the WSDOT Engineer. The WSDOT Engineer's approval is required prior to Completion.

Refer to RFP Section 2.12 for further information on the As Built submittal.

7-4.8 **Final Records**

The Design-Builder will submit final temporary and permanent final records for the project in accordance with RFP [Section 2.12](#).

7-5 Partnering

WSDOT encourages partnering among WSDOT, the Design-Builder, and its subcontractors. The partnering process is intended to draw on the strengths of each organization to help identify and achieve reciprocal goals, including achieving Completion of the work on time, within budget, and in accordance with its intended purpose.

A primary consideration of partnering is the prompt and equitable resolution of issues affecting the conduct of the work under the contract and the rights and responsibilities of the respective parties.

Partnering is an integral part of the QMP. A partnering agreement will be included in the QMP for handling disputes related to quality.

Refer to RFP [Section 1.09.10](#) for further information on partnering schedules, cost, scheduling, and workshops. Also, refer to RFP [Section 2.28](#) for further information on partnering.

7-6 Design Development

WSDOT's intention is to allow the Design-Builder flexibility in design and construction by accommodating the processes, procedures, and innovative techniques that are preferred by the Design-Builder, as long as they are consistent with the Basic Configuration, site conditions, accepted engineering practices, environmental commitments, and the standards, guidelines, and procedures identified in the contract.

7-6.1 Process

After award, the design responsibility of the project is transferred to the Design-Builder. The owner remains involved in the design process through joint task force meetings, during formal reviews of milestone design submittals, and as the design is further refined during the construction of the project.

The intent of design submittals is to provide a formal opportunity for WSDOT, the Design-Builder, various design team disciplines, and other approved project stakeholders to review the construction documents in order to ensure that:

- The design is progressing appropriately and proceeding in accordance with contract requirements
- The plans reflect the Design-Builder's requirements for construction
- The design features are coordinated
- That there are no fatal flaws within a given discipline or between disciplines
- The necessary WSDOT Engineer approvals are received (i.e. Design Analysis, maximum extent feasible, etc.) prior to incorporation into the project

The minimum contents of design submittals for each discipline shall be:

- As specified in each discipline's respective RFP section
- As specified in RFP [Section 2.28](#)
- As mutually agreed by members of the applicable task force (or by agreement between the WSDOT Engineer and the Design-Builder if no specific task force applies.)

7-6.2 Design Quality Assurance and Quality Control

The QA and QC procedures for each type of Design Document and RFC document are organized by engineering discipline in the QMP.

Refer to RFP [Section 2.12](#) and [Section 2.28](#) for further information on design submittals (preliminary, final, and RFC), QA and QC responsibilities, and Design Documentation.

7-7 Construction Processes

Unless exclusively stated in the RFP documents any reference of the Project Engineer (PE) in the WSDOT *Construction Manual M 41-01* shall mean the WSDOT Engineer.

7-7.1 Testing, Inspection, and Materials Quality Assurance

It is the responsibility of the CQAM to implement quality planning, oversee the QA testing and inspection, and coordinate with WSDOT's verification testing, inspection, and Independent Assurance (IA) requirements. All duties listed in Section 9-1.4 of the WSDOT *Construction Manual M 41-01* are the responsibility of the CQAM.

The Design-Builder will designate a Materials Approval Engineer having authority for the approval of all materials. The Materials Approval Engineer will review and approve all materials submitted through Request for Approval of Materials (RAM), Qualified Products List (QPL), and proprietary items for the project in accordance with Section 9-1.3 of the WSDOT *Construction Manual M 41-01*. The Materials Approval Engineer reports directly to the DM. The Materials Approval Engineer could also be the PQM or the DQAM, but cannot have responsibility for construction production.

The Design-Builder will provide a QTS who may be an employee of the Design-Builder's QA testing laboratory or of the independent testing laboratory hired to perform the QA testing. The QTS or their representative will be at the site where the testing is being performed. The QTS schedules, reviews, and verifies for compliance all test reports performed by the QA testing laboratory. The QTS report to the CQAM. The QTS cannot have responsibility for construction production or be the CQAM.

QA Testing Technicians performing the field and laboratory QA sampling and testing will be employed by the Design-Builder or an agent's laboratory. QA Testing Technicians will not be affiliated with or employed by materials suppliers, subsidiaries, or the QC organization. QA Testing Technicians will not perform QC testing and they will report to the CQAM or the QTS.

QA Inspection Technicians will inspect, verify materials, and document all construction activities for compliance to the contract. QA Inspection Technicians will not be affiliated with or employed by materials suppliers, subsidiaries, or the QC organization. QA Inspection Technicians will not perform QC inspection. QA Inspection Technicians report to the CQAM.

All QA testing that will be used for acceptance of materials will be performed by a laboratory approved by the WSDOT Engineer. The QA Laboratory Manager reports directly to the QTS. The Design-Builder or a subcontractor employs the laboratory personnel. The materials testing laboratory that is used for QA testing will not perform QC testing and will not be owned, operated, equipped, or staffed by material suppliers. The laboratory will meet the requirements of AASHTO R-18 for qualified testers and calibrated/verified equipment and be able to accomplish the testing according to the test procedure they are performing.

QA Testing Technicians and construction inspectors may attend the instructional courses WSDOT provides its personnel on a space-available basis, at no cost to the Design-Builder.

Refer to RFP [Section 2.28](#) for further information.

7-7.2 Statistical Analysis of Materials

The Design-Builder is required to input all QA testing data that is categorized in RFP [Section 2.25.12.6](#). This table replaces the frequency table in the WSDOT *Construction Manual* M 41-01. Once that data is input in Statistical Analysis of Materials (SAM), there is direction in RFP [Section 2.25.12.6](#) as to whether or not F&t Analysis is required for acceptance of the Design-Builder's QA testing. The Design-Builder is also required to make the F&t comparisons using SAM and report during the QA Task Force meeting whether or not there are differing means or variabilities within the constituent portions of each material mix design.

7-7.3 F&t Analysis

RFP [Section 2.25.5.2](#) requires QV to validate QA test results through F&t analysis on WSDOT design-build projects. QV test results act as either the validation or the rejection vehicle for WSDOT as they are no longer self-performing acceptance or QA testing. Validation through F&t analysis helps develop a confidence level in testing results with few exceptions. As WSDOT is bound to comply with [23 CFR 637](#), we are also required to validate all agents performing QA on our behalf.

WSDOT's role in design-build requires F&t analysis for all processed materials being incorporated into the project. F&t analysis takes into account the variability and populations of materials being tested by both QV and QA. The "F" test deals with variability while the "t" test deals with populations or means of the test sample populations for both QV and QA.

7-7.4 Testers and Inspectors Quality Control

The Design-Builder will be responsible for QC, which is defined as activities performed by the Design-Builder, the producer, or the manufacturer to ensure that a product is of uniform quality, meeting the contract requirements. Components of QC may include inspecting and obtaining material certifications, materials handling, construction procedures, calibration and maintenance of equipment, production process controls, and all sampling, testing, or retesting conducted for these purposes.

The Design-Builder will perform, control, and ensure that operational techniques and activities provide acceptable quality and comply with the contract. The Design-Builder's QC personnel will be a separate organization within the Design-Builder's organization from the Design-Builder's front line supervisors. They may be suppliers, producers, or manufacturers, but in no case may they be associated with the Design-Builder's QA organization. The Design-Builder's QC personnel will be trained and provided the necessary tools, testing procedures, and inspection checklists to ensure that the work product meets the contract requirements. The QC testers and inspectors report to the CM or designee but that designee cannot be the CQAM.

7-7.5 Independent Assurance

The IA is an independent verification performed by WSDOT, which includes an observation of sampling and testing procedures, a review of the qualifications of the tester, and a verification of the testing equipment used to perform acceptance-testing activities. The IA will validate both the Design-Builder's QA processes and WSDOT's QV processes. The IA may include auditing of acceptance testing records, observing the tests being performed by the Design-Builder's technicians, or taking split samples with the Design-Builder on a random basis for verifying the Design-Builder's testing equipment. WSDOT will enter findings of all IA observations into the Construction Audit Tracking System (CATS). Deficiencies will result in a NCI. The Design-Builder will take corrective action immediately for all noted deficiencies.

7-7.6 Quality Assessment

WSDOT will perform non-scheduled quality assessments of the Design-Builder's work, including sampling, testing, and documentation reviews.

7-7.7 Quality Verification

QV is a combination of inspections, independent sampling, and testing performed by WSDOT, or their agent, to validate that the Design-Builder is following approved QA procedures and that such procedures appear to be effective in assuring quality.

Refer to RFP [Section 2.28](#) for further information on QV.

7-8 WSDOT Auditing Processes and Non-Conforming Work

It is important to recognize that workmanship is as fundamental an element of overall project quality as materials. The quality of workmanship is demonstrated through the Design-Builder's process control procedures, QC inspections, and through WSDOT's auditing program.

WSDOT's program to assess workmanship on design-build projects centers on compliance with the specifically stated requirements of the contract documents. For the most part, these are the project Technical Requirements and the Standard Specifications. To be effective in their role, WSDOT auditors should have an intimate familiarity with the requirements of the contract Documents and be able to cite specific requirements that are or are not in compliance.

7-8.1 WSDOT Audits

The Design-Builder's wage, payroll, subcontractors, materials, testing, equipment, working drawings, material laboratories, fabrication plants, and cost records on this contract will be open to inspection or audit by representatives of WSDOT during the life of the contract and for a period of not less than 3 years after the date of Final Acceptance. The Design-Builder will retain records identified in RFP Section 1-09.12(3) for that period. The Design-Builder is to guarantee that the wage, payroll, and cost records of all subcontractors and all lower tier subcontractors will be retained and open to similar inspection or audit for the same period. The audit may be performed by employees of WSDOT or by an auditor under contract with WSDOT. Refer to RFP Section 1-09.12 for Design-Builder required audit documents.

WSDOT will periodically audit the field performance of the Design-Builder's QA organization, testing frequencies, and acceptance testing results. The WSDOT Engineer will conduct oversight inspection audits to verify the adequacy of the Design-Builder's inspection activities and testing procedures.

7-8.1.1 Quality Verification Audits

QV audits are WSDOT's tool to evaluate the day-to-day, week-to-week, and month-to-month operations of a design-build project. CATS is WSDOT's software or tool for documenting the audit findings. Inside CATS, there are Headquarters (HQ) checklists that reflect the construction requirements in Divisions 2, 4, 5, 6, 7, 8, and 9 of each version of the Standard Specifications. Each design-build project is responsible for turning their RFP into PE checklists.

Each of these types of checklists provides audit criteria that are extracted from the "shall" statements. "Shall" statements are found throughout the general requirements, Technical Requirements, Standard Specifications, appendices, proposal Betterments, management plans, and permit requirements.

"Shall" statements give the Design-Builder direction and supply WSDOT auditors with audit-verifiable items. The contract-specific documents should be studied and explored for their specific shall statements.

- Each “shall” statement is made into a question. You do this by first stating each “shall” statement verbatim and then asking, “Was this requirement met?”
- Each RFP chapter, appendix, or permit requirement is made into a PE checklist;
- Each checklist becomes table from which a situation-specific audit can be assembled.
- Frequency of audits:
 - 2 to 5 times per week for the first 6 to 9 months of a long duration project (1½ years and greater). Once the QV team is confident that QA is performing their function adequately, this frequency could drop off to 1 to 3 times per week.
 - 2 to 5 times per week should be maintained throughout the life of the project for short duration projects (single season construction).

Note: Auditors should also maintain an electronic or hard copy diary for those days that audits are not performed (an Inspector’s Daily Report narrative section or PE diary are good formats).

- Each audit should contain between 5 to 15 questions or audit items.
 - Single audit item audits (cherry picking) tend to only note non-conformance and should only be used when the WSDOT Engineer, the Lead Auditor, or both agree with the auditor that this format is appropriate to the issue in question.
- Those audit items pertain to the work which:
 - Has been completed to that point; or
 - Is ongoing that requires certain intermediate steps (Hold Points) be completed prior to the work being completed.
- Each audit item has an “Observations” area or box that allows the auditor to document their observations regarding the specifics of conformance/non-conformance.
- Each audit item has an “Accepted” area or box where there are three options that you can select: “Yes”, “No”, or “N/A”.
 - Each audit item that receives a “Yes” means that, by the auditor’s observation, the work meets contract requirements.
 - Each audit item that receives a “No” means that, by the auditor’s observation, the work does not meet contract requirements and is an NCI.
- QV audits should examine all phases of the QA and QC work or processes in:

| | |
|-----------------|----------------|
| – Quality | – Construction |
| – Design | – Business |
| – Environmental | – Materials |

QV audit questions should pertain to the deliverable function of the work or process:

- Who was doing the work: Design-Builder, subcontractor, vendor, laboratory, consultant, QA, QC, or production?
 - Was this who should have been doing the work?

- What work was being done?
 - This is where the auditor discusses what was observed.
- Where was the work being done?
 - Was the location in conformance with the requirements?
- When did it happen?
 - Date and time, especially if the aspect is time critical.
- Why was the work being done in the manner it was?
- How was the work being done?
 - Was the work completed in conformance with the requirements?

The WSDOT Engineer will perform an on-site evaluation of the Material Testing Laboratory, in accordance with WSDOT Standard Practice QC 3, Quality System Laboratory Review, in the WSDOT *Materials Manual* M 46-01, to ensure that all work is being performed according to the contract. The evaluation will include audit and inspection functions, review of training, equipment calibration, verification of records, and observance of testers as they perform the test procedures. Refer to RFP [Section 2.28](#) for further information.

The QMP describes the procedures for auditing and checking conformance with working drawings and the distribution to the WSDOT Engineer for Review and Comment. Refer to RFP [Section 2.28](#) for further information on working drawing reviews and audits.

WSDOT will periodically audit the field performance of the Design-Builder's QA organization, testing frequencies, and acceptance testing results. The WSDOT Engineer will conduct oversight inspection audits to verify the adequacy of the Design-Builder's inspection activities and testing procedures. Refer to RFP [Section 2.28](#) for further information.

The Design-Builder and its subcontractors will provide adequate facilities acceptable to WSDOT for the audit during normal business hours. The Design-Builder and all subcontractors will cooperate with WSDOT auditors. Refer to RFP [Section 1-09.12](#), for further information.

7-8.1.2 Construction Audit Tracking System

WSDOT began development of CATS software in 2005 to give staff a tool for QV audit tracking in design-build projects. In the design-build project delivery model, WSDOT no longer leads QA inspection/acceptance processes but, rather, verifies that those processes are taking place. WSDOT recognized that an audit system needed to be developed to facilitate the capture of frequent snapshots in time and the oversight of progress in design-build projects. This was important so that the agency could verify that quality requirements were being met within reasonable conformance with the RFP.

7-8.1.3 How Do I Start?

In the case of the project office, take Chapters 1 and 2 of the RFP and search (Ctrl-F) for all of the “shall” statements. These are the requirements or deliverables through which you assess the Design-Builder’s conformance, processes, and end products. Do yourself a favor and highlight all of the occurrences of “shall” in the Microsoft Word documents or PDFs of the RFP.

7-8.1.4 Where Do I Start?

You will look in the General Provisions for administration or business requirements. RFP Chapter 2 is where the Technical Requirements are spelled out for each discipline specific criteria. Think of these as if they were the amendments to the Standard Specifications and Special Provisions. These requirements spell out the contract as it is to be administered. The discipline-specific chapters of RFP Chapter 2 also outline the Mandatory Standards required for use in design, environmental, quality, and construction facets of the project.

7-8.1.5 When Do I Start?

As soon as you have conformed RFP documents in electronic form, begin to develop your PE checklists for use in CATS. It works best if you initially develop your audit questions offline in a spreadsheet. The Construction Division’s Design-Build Quality Manager (DBQM) has a spreadsheet template specifically created for this purpose. Plan on spending approximately 20-40 hours to develop your PE checklists.

7-8.1.6 Why Do I Start?

CATS is a unified, Standard Specifications-based auditing software system that provides WSDOT management with unbiased, at-a-glance assessments of auditing and reporting status through various summary reports.

7-8.1.7 Entering a New Design-Build Project into CATS

Enter the contract/work order into the “Contract Info” page of CATS by clicking the “Add New Contract” button.

In the work order field, enter your six-digit contract number (using leading zeroes as needed). Next, type in the project title as it appears on the WSDOT Construction Office’s Design-Build website. Then type in the “Orgcode”. Click the “Save” button. After a successful save, the system will respond, “Data saved successfully.”

Type in the “Award Date”.

To type in the “Spec Book Version”. Use the one listed in the conformed appendices - usually B1 or D18.

Type in the “Prime Contractor” and their email address. Click the “Save” button.

7-8.1.8 Headquarters Audit Types, Disciplines, and Sub-Categories

The DBQM has an extensive list of audit types to choose from that were established over the history of the CATS program's use. After many years of use, the following audit types have become most prevalent:

- Inspection (Catch all for most field observations)
- QMP or Quality (Process-oriented audits of QA)
- Design (Through all stages of development: over-the-shoulder, preliminary, final, and RFC)
- Business (contract administration)
- Environmental (Everything short of an environmental compliance assurance procedure)
- Maintenance of Traffic (MOT)
- Documentation (RAM, Record of Materials, and QPL review)
- Materials (Region IA inspector observations)

7-8.1.9 Headquarters Checklists

HQ checklists are developed from the construction requirements of the Standard Specifications Divisions 2, 4, 5, 6, 7 and 8. The requisite "shall" statements are copied into the checklist. In order to convert the "shall" statements into audit questions, the checklist editor appends each "shall" statement with "Was this requirement met?" See the PE checklists section below for an example.

To ensure statewide consistency, HQ checklists are developed and maintained by WSDOT HQ Construction Division.

7-8.1.10 Project Engineer Disciplines and Sub-Categories

Simply, these are the General Provisions, Technical Requirements, QMP requirements, and Betterments in an outline, bulleted format for database organizational purposes. WSDOT auditors choose from HQ audit types like; Betterments, QMP, materials, environmental, inspection (catch-all for field work), MOT, geotechnical design, public information, roadway design, project documentation, stormwater management, roadside restoration design, and so on.

7-8.1.11 Project Engineer Checklists

PE checklists are organized using the RFP's organizational structure (sections and subsections) as the basis of the for audit folder and subfolder organization.

For example:

Section 2.28 is titled, "Quality Management Plan", subsection 2.28.1 is titled, "General", Subsection 2.28.1.2 is titled, "Pre-Activity Meetings"

These are your audit type, discipline, and sub-category, respectively.

Once the checklist structure is defined, audit questions may be created as follows:

1. Identify contract requirements by looking for “shall” statements in the RFP, QMP, Betterments list, and any other source of contract requirements.
2. Copy each requirement verbatim, skip a line, and ask, “Was this requirement met?” For example:

The Design-Builder shall hold pre-activity meetings to ensure that all Project personnel have a thorough understanding of the Work to be accomplished prior to beginning construction on a Work activity.

Was this requirement met?

7-8.1.12 Scheduled Activities

This is where the scheduled activity numbers and descriptions from the baseline schedule, as submitted by the Design-Builder, are input into CATS. The schedule can either be copy and pasted into CATS one activity at a time or it can be sent to WSDOT’s IT helpdesk for batch uploading.

7-8.1.13 Work Locations

Each element of work’s location is defined with a primary location, a primary and secondary location, or a primary, secondary, and tertiary location. This is where the work is to be audited.

Note: Work locations can be refined even further with stations and offsets.

7-8.1.14 Associate Scheduled Activities and Work Locations

Tie work locations to scheduled activities. Audit scope is defined by specific scheduled activities that are paired or associated with specific work locations. Multiple scheduled activities may be paired or associated with common work locations. For example: preliminary, over-the-shoulder, final, and RFC audits could all be performed at a co-located office. Other activities and locations may have a one-off usage. For example, “Signal turn-on” would be paired or associated with the project’s only signalized “intersection” (primary) at “32nd St. SE” (secondary) in the intersection’s NW quadrant (tertiary).

7-8.1.15 Audit Plans (not part of CATS)

Audit plans are to be developed by each design-build PE's office. The PE, Lead Auditor, and auditors need to identify the areas of work where the greatest risk of failure is and then to place emphasis on auditing those areas more frequently. Lessons learned should play into every audit plan. Talk to experienced auditors in current design-build projects. These individuals have profound knowledge regarding the who, what, where, when, why, and how of a project's day-to-day operation.

If there are work elements that are known to frequently fall outside contract requirements, then those elements should require a greater level of scrutiny, dependent on the risk level associated with non-conformance. Namely, these would include items identified in the pre-approved corrective action plans described in RFP [Section 2.28.1.11](#).

Audit priorities need to be bulleted in an outline format and expanded to encompass the work. Prioritize each of the specific bullet points according to risk. Once the QV team reaches a consensus and agrees on the priority ranking, audit preparation may begin.

Auditing should be a matter of fact, "Did the Design-Builder comply with the contract requirement or not?"

- If the Design-Builder did, there is compliance.
- If the Design-Builder did not, there is a NCI.

NCIs should not be primarily considered a deficiency. They should be considered a learning tool.

For each NCI, the Design-Builder must provide a corrective action plan along with the repair, re-work, remediation, removal, or replacement of non-conforming work.

7-8.1.16 Prepare Audit

Once the QV team has studied the audit plan, they should review the work to be verified, be it design, business, environmental, quality, or construction and then pull related questions from the HQ or PE checklists. If the QV team helped assemble the PE checklist then they will have a far better grasp of the requirements or deliverables that need verification or oversight. The knowledge of both contract requirements and the audit plan should give the QV team insight into the elements of work that have the greatest risk of failure.

Initially, the Lead Auditor needs to be responsible for preparing audits as they should have a better feel for the aspects being audited. As experience and confidence are exhibited by the auditors, they should be given this task along with expectations of performance.

7-8.1.17 Perform Audit

Invariably, auditors will begin to build audits that have a great deal of content but, sometimes, are not entirely applicable to the work being audited. It is best, at least initially, to have auditors export their draft audits from CATS to PDFs using the “View Current Audit Items” radio button and the “Preview” button.

Bring the draft audit PDF to the audit site and determine which audit questions should be deleted or deferred. This goal is to ask only relevant audit questions. By doing this, “N/A” acceptance findings should be eliminated.

Armed with a relevant set of audit questions, you may now perform your audit. Sometimes audit questions can be answered with only a visual verification of conformance with requirements. Other audit questions require more coordination with the Design-Builder. In either case, the auditor needs to document their observations and determine the level of acceptance: “Yes”, “No”, or “N/A”.

7-8.2 Non-Conforming Work

Non-conforming work is work performed that does not meet the requirements of the contract. Auditors determine non-conforming work by identifying objective evidence that the finished product does not conform to a stated contract requirement. Objective evidence is evidence that directly relates to the Design-Builder’s fulfillment of a contract requirement and does not include opinion, commentary, or grievance. Refer to the General Provisions, for further information on non-conforming work.

Audit questions that result in an acceptance code of “No” will automatically generate NCIs. NCIs require the same review and ultimate closure as NCRs generated by the CQAM. Refer to RFP [Section 2.28](#) for further information.

7-9 FHWA Audits

FHWA audits will be performed in accordance with the Stewardship and Oversight Agreement (executed on 2015-03-15 between the FHWA and WSDOT) and as authorized by the Federal Managers' Financial Integrity Act (FMFIA); 49 CFR 18.26; OMB Circular A-87, A-123, 133, 127; GAAP; Chief Financial Officers (CFO) Act of 1990; and DOT Order 8000 1C.

7-10 Change Orders

The change order process in design-build delivery differs significantly from that in design-bid-build (DBB) delivery. For the most part design-build contracts are lump sum based, and design-bid-build contracts are unit price based. Therefore, in design-build delivery, instead of relying on contractually set unit pricing, change order costs must be negotiated. The fact that the Design-Builder performs much of the design work further complicates the change order process.

As part of contract management, it is important that WSDOT maintain a conformed contract that reflects all changes to the contract documents because of change orders, regardless of which party initiates the changes. Maintaining a conformed contract ensures that all parties are working off the most updated contract requirements throughout the implementation of the project. At the end of the project, the conformed contract becomes part of the final record of the project and reflects the administration of the project.

7-10.1 Change Order

A change order can be described as a written amendment to the contract. Approved change orders are a legal part of the contract documents and are treated just like the original contract documents.

The intent of the contract documents is that the Design-Builder undertake full responsibility for delivery of the project. The contract documents do not provide details of design necessary to carry out the intent of the contract documents. Such detailed designs are the sole responsibility of the Design-Builder to develop.

WSDOT wants the Design-Builder to have flexibility in determining how best to design and construct the project. This must be done within the parameters established by the contract, unless WSDOT approval is granted for contract modifications. WSDOT's internal process for design-build contract modification approval and execution authority will adhere to the requirements detailed in this chapter and in the contract.

Contract modifications can be unilateral or bilateral, but bilateral modifications are always preferred.

7-10.1.1 Types of Change Order

- WSDOT-Initiated Change Order
- Design-Builder-Initiated Change Order

7-10.1.2 WSDOT-Initiated Change Orders

WSDOT reserves the right to authorize and/or require contract modifications in the work within the general scope of the contract as provided in RFP [Section 1-04.4\(1\)](#).

7-10.1.3 Design-Builder-Initiated Change Orders

It is the desire of WSDOT to allow the Design-Builder to have significant flexibility in determining how best to design and construct the project, within the parameters established by the contract documents. The Design-Builder is encouraged to propose changes whenever it identifies potential savings. The approval of a Design-Builder-Initiated change is at WSDOT's sole discretion. RFP [Section 1-04.4\(2\)](#) of the contract sets forth the requirements for a Design-Builder-Initiated change.

7-11 Construction Contracts Information System Database

The Construction Contracts Information System (CCIS) is a mainframe application designed to track contract information and generate reports for all WSDOT administered construction projects. The initial setup of contract information into CCIS is done automatically by using information in the Contract Administration and Payment System. However, after the initial setup, the project offices enter the majority of the contract information into the CCIS system. The data entered is then maintained and stored on the mainframe. For more information on CCIS see the WSDOT *Construction Manual M 41-01*, and the CCIS manual.

All design-build contract Category A and B Requirement changes will be entered into CCIS and may be changed only through Value Engineering Change Proposals or WSDOT-Directed Changes, and Category B Requirements may be changed only through Category B Change Proposals or WSDOT-Directed Changes.

Category A and Category B Changes

WSDOT approval is required with respect to any proposed changes in the Category A and B Requirements. Section 1-04.4 of the General Provisions sets forth the requirements applicable to requests for modifications in Category A and B Requirements submitted by the Design-Builder.

The requirements of the contract documents are designated as either "Category A Requirements" or "Category B Requirements" in accordance with the following table:

| Contract Requirement Designation | Change Category |
|--|-----------------|
| Chapter 1 General Provisions | Category A |
| Chapter 2 Technical Requirements - Mandatory Standards (Except the Standard Specifications) | Category A |
| Chapter 2 Technical Requirements - All except Mandatory Standards | Category B |
| Standard Specifications | Category B |
| Special Provisions | Category B |
| Amendments to the Standard Specifications | Category B |
| Proposal Documents | Category A |
| Basic Configuration | Category A |

7-12 Payments

7-12.1 Progress Payments

The Design-Builder shall submit monthly invoices to WSDOT on a mutually agreed date that is consistent with the progress payment cutoff date set by WSDOT. No payment item shall be included on an invoice for work that has been documented as deficient by the Design-Builder's QA organization.

If requested by WSDOT, the Design-Builder shall provide separate invoices for work subject to reimbursement by the Federal government or third parties. Such invoices shall be organized to meet all applicable reimbursement requirements and to facilitate the reimbursement process.

No invoice will be processed until WSDOT has received the documents required in the contract.

The invoice value will be based on the agreed upon progress for the contract schedule activities as outlined in RFP Sections [1-08.3](#) and [1-09.9](#).

WSDOT will simultaneously review each invoice and progress report in detail and then process the invoice for payment. Partial Payments will be made once each month. If WSDOT questions or disputes any item, it will redline the item and refer the item back to the Design-Builder for resolution before payment. WSDOT will deduct from the payment the value of the items not resolved to its satisfaction before the payment date.

Refer to RFP [Section 1-09](#) for further information on payments, invoices, and documents submitted with invoices.

7-12.2 Processing Liquidated Damages

There are two types of liquidated damages: contract time and miscellaneous. Refer to the *WSDOT Construction Manual M 41-01*, for further information on how to process these two types of liquidated damages.

7-13 Final Documents and Meetings for Close Out

Final Design Documents, As Builts, and construction document submittals are discussed in [Chapter 8](#) of this manual and in RFP Section 2.12. The Design-Builder will establish Close Out Task Force meetings to oversee and provide input on developing final Design Documentation and final permanent and temporary construction records. At a minimum, Close Out Task Force meetings shall include the PQM, DCM, PM, DM, and the WSDOT Engineer.