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APPENDIX D1 ROLES & RESPONSIBILITIES RELATED TO BRIDGE DESIGN

D1.1 Key Personnel

The following is a list of 'key' roles and responsibilities related to the design of a bridge. This is not an exhaustive list of responsibilities and duties for the positions noted. This list is intended to supplement the ODOT [Project Delivery Guide](#) (PDG), not supersede it. Also see [PDLT Operational Notice PD-01](#).

State Bridge Engineer

- The role of the State Bridge Engineer is to provide management and leadership of the State's Bridge Engineering Section.
- The State Bridge Engineer is responsible for:
 - Overseeing the Bridge Program and Standards Unit.
 - Overseeing the Bridge Operations and Load Rating Unit.
 - Overseeing the Bridge Preservation and Design Unit.
 - Overseeing the Bridge Design Unit (located in the Region Tech Centers).

Bridge Program and Standards Manager

- The role of the Bridge Program and Standards Manager is to provide management and leadership of the State's Bridge Program and Standards Unit.
- The Bridge Program and Standards Manager is responsible for:
 - Developing and programming the Bridge Program STIP.
 - Approving final scope of work for Bridge Program projects.
 - Approving changes to and funding for Bridge Program projects.
 - Providing Subject Matter Experts for Bridge Designers and CAD Techs to consult with during the development of projects.
 - Maintaining the Bridge Design Quality Program, and providing Quality Auditors to audit bridge designs.
 - Maintaining the Bridge Design Manual and Bridge CAD Manual.
 - Maintaining the Bridge Standard Drawings and Details.
 - Modifying existing or developing new standards for design.
 - Providing technical training to bridge designers and CAD technicians.
 - Local Bridge Program.

Bridge Operations and Load Rating Manager

- The role of the Bridge Operations and Load Rating Manager is to provide management and leadership of the State's Bridge Operations and Load Rating Unit.
- The Bridge Operations and Load Rating Manager is responsible for:
 - Performing bridge condition inspections
 - Reporting bridge inspections to FHWA
 - Performing load ratings of bridges and culverts
 - Reporting load ratings to FHWA

Bridge Preservation and Design Manager

- The role of the Bridge Preservation and Design Manager is to provide management and leadership of the State's Preservation and Bridge Design Unit.
- The Bridge Preservation and Design Manager is responsible for:
 - Developing the Bridge Corrosion, Moveable Bridge, Historic Bridge, and Structural Health Monitoring Programs.
 - Satisfying the staffing needs of the various bridge preservation programs by providing the appropriate resources.
 - Developing and implementing strategies to ensure the sustainability of the bridge preservation design technical discipline statewide.
 - Satisfying the staffing needs of the various bridge and structural analysis needs by providing the appropriate resources in coordination with the Bridge Design Manager.

- Developing and implementing strategies to ensure the sustainability of the bridge design technical discipline statewide in coordination with the Bridge Design Manager.

State Bridge Design Engineer (Bridge Design Manager)

- The role of the Bridge Design Manager is to provide management and leadership to the State's Bridge Design Unit that is located throughout and in the Region Tech Centers.
- The Bridge Design Manager is responsible for:
 - Satisfying the statewide staffing needs of the various bridge and structural analysis needs by providing the appropriate resources.
 - Developing and implementing strategies to ensure the sustainability of the bridge design technical discipline statewide.
 - Performing as Bridge QA Reviewer to meet a Region's QCQA Plan.

Regional Bridge Lead Engineer (RBLE)

- The role of the Regional Bridge Lead Engineer is to represent the Bridge Design Managers in the regions, and perform bridge and structure related services requested by the region they are located in.
- The Regional Bridge Lead Engineer is responsible for:
 - Performing lead engineer duties for the region they are located in, associated with the Regional Bridge Design sub-Units.
 - Performing Lead Worker duties per AEE CBA and the AEE Lead Worker Assignment form, for the Bridge Design Managers, when assigned by the Bridge Design Managers.
 - Performing as Bridge QA Reviewer when allowed in a Region's QCQA Plan.
 - Additional duties as described in the RBLE Expectations paper.

Bridge Reviewer [QC]

- The role of the Bridge Reviewer is to perform the QC design review from prior to Project Initiation through Project Award.
- The Bridge Reviewer is responsible for:
 - Checking in with, and mentoring, the Bridge Designer and Checker at key points in time to ensure work is progressing in a satisfactory manner to meet or beat schedule and budget.
 - Reviewing work and deliverables prepared by the Bridge Designer and Bridge Design Checker.

Bridge Engineer of Record

- An individual in responsible charge of all bridge structural aspects of the design of the structure including the design of all of the bridge's systems and components. The Engineer of Record normally seals and signs the final contract plans and specifications.

Bridge Designer

- The role of the Bridge Designer is to provide structural analysis and design for the Agency's bridge design related needs, including bridge maintenance.
- The Bridge Designer is responsible for:
 - Performing structural analysis and design, and contract plan preparation for bridges.
 - Performing structural analysis and design for other highway related structures, as agreed to in the Bridge Design Work Order.

CAD Technician (CAD Tech)

- Collaborates with the Bridge Designer to prepare plans and details for contract and maintenance projects.
- The CAD Tech is responsible for:
 - Assuring project plans are prepared according to ODOT and Bridge CAD Standards.

Bridge Design Checker

- The role of the Bridge Design Checker is to perform the QC bridge design check of the structural analysis and design for bridges and other highway related structures.
- The Bridge Design Checker is responsible for:
 - Performing the QC bridge design check of the structural analysis and design for bridges and other highway related structures.

Bridge Design Project Lead (when assigned)

- The role of the Bridge Design Project Lead is to lead and coordinate the bridge design on projects with multiple bridge designers or bridges.
- The Bridge Design Project Lead is responsible for:
 - Coordinating design, estimating and specification writing among the bridge designers on the bridge project design team.
 - Reviewing bridge designs throughout the design phase to ensure consistency is maintained between bridge designs.
 - Attending Project Team meetings and representing the bridge project design team.

ODOT Transportation Project Manager

- The role of the Transportation Project Manager is managing in-house transportation projects and project teams.
- The Transportation Project Manager is responsible for:
 - Scope, schedule and budget for projects developed using ODOT staff.

Resident Engineer – Consultant Project Manager

- The role of the Resident Engineer - Consultant Project Manager is managing outsourced transportation projects and in-house project review teams.
- The Resident Engineer - Consultant Project Manager is responsible for:
 - Scope, schedule, budget, and quality of contracted projects/work.

Local Agency Liaisons

- The role of the Local Agency Liaison is to manage project development for local government projects.
- The Local Agency Liaison is responsible for:
 - Delivery of local government projects, including local bridge projects.

Region Tech Center Manager

- The role of the Region Tech Center Manager is to provide management and leadership to the Region Tech Center.
- The Region Tech Center Manager is responsible for:
 - Managing technical staff assigned to the Region involved in project development.
 - Developing and implementing a design quality control program within the Region Tech Center.
 - Ensuring project work is consistent with the Region Quality Plan.
 - Monitoring quality assurance performance.

Resident Engineers (formerly Construction Project Managers)

- The role of the Resident Engineer is to administer contracts for construction.
- The Resident Engineer is responsible for:
 - Construction management for in-house and outsourced projects.

Area Manager

- The role of the Area Manager is to oversee the complete project lifecycle including: scoping, project initiation, project development, project design, and construction phases of work.

- The Area Manager is responsible for:
 - The delivery of projects in their area.

A&E Bridge Design Consultant

- May be contracted to perform the design duties associated with the Bridge Project Lead, Senior Bridge Engineer, Bridge Engineer, Bridge Designer, Bridge Design Reviewer, or Bridge Design Checker for individual projects or “program” of projects.
- Should not be contracted to perform “Owner” duties of the State Bridge Engineer, Bridge Program and Standards Manager, Bridge Operations and Load Rating Manager, Bridge Preservation and Design Manager, Bridge Design Manager, or Regional Bridge Lead Engineer.

D1.2 Large or Multiple Bridge Projects

Large design projects with multiple or complex structures usually involve several Designers and CAD Techs. Often, these large projects can be done more efficiently if a Bridge Design Team Lead Designer and a Lead CAD Tech organize and manage the bridge design and drafting.

The following are guidelines for the Bridge Design Team Lead Designer. (*BCM* discusses guidelines for the Lead CAD Tech.) Before the project kick-off the Lead Designer and CAD Tech should review these guidelines and meet with the Bridge Reviewer to discuss the project and these duties.

Project Initiation (Kick-Off) – The Bridge Design Team Lead Designer should:

- Communicate to project team members and other ODOT units as well as outside organizations that they will be the bridge design contact person for the project
- Obtain available design information

Preliminary and Final Design Phases – The Bridge Design Team Lead Designer should monitor design and drafting work, which includes:

- Attend Project Team meetings
- Be aware of the status of design and drafting in relation to lead-time required to meet submittal deadlines and bid-opening dates (Request help as needed to meet deadlines.)
- Maintain project records and update the project team by keeping:
 - A file of correspondence and decisions that affect design
 - Project team members informed, by memos or meetings, of any decisions or changes
 - Bridge Reviewers aware of project status and any changes that develop
- Be available to project team members, especially new designers, and encourage them to ask questions and share some of their assumptions for design and analysis before they start on a major modeling and design task
- Coordinate preparation of Bridge deliverables
- Review Bridge Plans for uniformity of design/drafting practices and detailing
- Review Bridge deliverables for completeness before submittal to Bridge Reviewers
- Stay informed about what is happening with all project bridges in order to answer questions from others in the absence of other bridge design team members

APPENDIX D2 –BRIDGE DESIGN ROLES & RESPONSIBILITIES

D2.1 Bridge Designer

The purpose of the Bridge Designer is to design, engineer and ensure the utmost in quality of the Bridge deliverables prepared for publication, contract, or construction.

Near the start of the Project Initiation Phase, or when resourced to the project:

- Meet with and discuss the goals and objectives of the project and the bridge design with the Bridge Reviewer (aka, Bridge Design “kick-off” meeting).
- Review the Bridge Design Work Order (for outsourced work also see the statement of work of A&E contract).
- Review project schedule.
- Know who the assigned Bridge Checker is.
- Prepare to attend the project kick-off meeting.

After the Bridge Design “kick-off” Meeting:

- Prepare bridge design criteria and table of Bridge Design Standards
- Identify alternatives/options.
- Vet out each alternative/option to a point that can make decision to keep or drop.
- Prepare preliminary calculations, as needed.
- Start TS&L Narrative or Bridge Strategy Memo, estimates, plan sheets, design deviations/exceptions.

At end of Project Initiation Phase / Design Verification Package:

- Meet with Bridge Reviewers (if not already doing); review the status of the design and the progress of the Alternatives Study (Are the right alternatives/options being studied? Are there other alternatives/options that should be included?), TS&L Narrative or Bridge Strategy Memo, plan sheet(s), engineer’s estimate, and design deviations/exceptions.
- Review Bridge Design Work Order / Statement of Work or Project Guide and ensure that the “problems/deficiencies” are actually getting addressed. (It is always easier to make corrections in the “path forward” when they are identified earlier than later!)

Approaching DAP Milestone:

- Complete TS&L Report or Bridge Strategy Memo (plan sheet(s), and Engineer’s Estimate @ TS&L, Bridge Design Criteria & Standards Assessment, Design Deviations and Exceptions, and Alternatives Study) and submit to Bridge Reviewers for review.
- Receive written review comments from Bridge Reviewers. Prepare responses to review comments.
- Hold meeting with Bridge Reviewers and review responses to review comments. Reach consensus.
- Update TS&L Report.
- Complete Bridge Designer QC Form.
- Submit complete TS&L Report to Bridge Reviewers and Transportation Project Manager (for DAP).

After DAP is approved thru Preliminary Plans Milestone (or internal Progress Plans if project schedule does not include Preliminary Plans Milestone):

- Start Final Design.
- Start Preliminary/Progress Plans package.
- Complete Final Design calculations.
- Prepare Preliminary Plans plan sheets to a 70% level of completion. Show the basic geometry of all major elements; do not have to show all detail necessary for bidding and construction.
- Prepare Engineer’s Estimate at Preliminary Plans.
- Create a special provision list (SPLIST is available to download at webpage of special provision templates) and identify applicable special provisions. (This is a good time to actually review the 100 sections, particularly SP110 and SP190. Understanding these sections can help complete quantities and other aspects of the package.)

- Submit Preliminary Plans package to Bridge Reviewer and Transportation Project Manager.
- Complete Bridge Designer QC Form.
- Start Advance Plans package.

After Preliminary Plans Milestone thru Advance Plans Milestone:

- Complete final design edits to calculations.
- Prepare Advance Plans plan sheets to a 99% level of completion. Show all geometry and details necessary for bidding and construction.
- Prepare Engineer's Estimate at Advance Plans.
- Prepare special provisions (in some cases, this may be required to be completed at the Preliminary Plans milestone; check with Transportation Project Manager and RBLE).
- Submit Advance Plans package to Bridge Reviewer, Bridge Checker and Transportation Project Manager.
- Answer questions from Bridge Checker and Bridge Reviewer and finalize design calculations plan sheets, special provisions and estimate.
- Receive written review comments from Bridge Checker and Bridge Reviewer. Prepare responses to review comments.
- Hold meeting with Bridge Checker and Bridge Reviewer and review responses to review comments. Reach consensus.
- Update Advance Plans package.
- Submit complete Advance Plans package to Bridge Checker.
- Submit complete Advance Plans package to Bridge Reviewer and Transportation Project Manager.
- Complete Bridge Designer QC Form.

After Advance Plans Milestone thru Final Plans Milestone:

- Complete final Checking edits to calculations.
- Prepare Final Plans plan sheets to a 100% level of completion. Show all geometry and details necessary for bidding and construction.
- Prepare Engineer's Estimate at Final Plans.
- Review special provisions package.
- Submit Final Plans package to Bridge Reviewer, Bridge Checker and Transportation Project Manager.
- Work with Bridge Checker, Bridge Reviewer and any others to resolve all review comments.
- Update Final Plans package.
- Submit complete Final Plans package to Bridge Checker.
- Submit complete Final Plans package to Bridge Reviewer and Transportation Project Manager.
- Complete Bridge Designer QC Form.
- Work with Bridge Reviewer to ensure all Bridge-related PD-02 Final PS&E Submittal Checklist requirements are complete.
- Work with Transportation Project Manager to ensure all PS&E package bridge deliverables are complete.

After Final Plans Milestone thru PS&E Package Milestone:

- Complete Calculation Books to this point in time, pdf, and send pdf to Bridge Reviewer.
- Complete load rating.
- Work with Bridge Reviewer to ensure all bridge deliverables and Bridge Quality Documentation is complete.

After PS&E Package Milestone:

- Work with Transportation Project Manager to complete any bidding RFIs and Addenda Letters.
- Provide Construction Support.
- Complete "constructed" calculation book (typically an amended design calc. book)
- Complete the "constructed" load rating.

D2.2 Bridge Reviewer [QC]

Note: This sub-section is only applicable to the Bridge Reviewer. It is not applicable to the “Bridge Standards Reviewer” or the “A&E ‘Review & Acceptance’ Reviewer. (The latter two roles need similar write-ups developed in the future.)

[Internal] = Internal to ODOT

[External] = External to ODOT; eg, A&E Consultant

The following duties are relevant to a Bridge Reviewer employed by ODOT [Internal]. For external Bridge Reviewer duties see the approved A&E Design Quality Plan for the specific project.

The purpose of the Bridge Reviewer is to review and ensure the utmost in quality of the Bridge Design deliverables prepared for publication, contract, or construction. The Bridge Reviewer shall have a background in bridge design commensurate to the work being reviewed.

Also, ODOT Bridge Reviewers should understand the different contracting methods for design and construction. They should understand Federal Aid, Federal participation, and Federal funding vs. State funding. They should understand “color of money” (funding) and how it affects the rules, regulations, and deliverables associated with the different contracting methods.

Throughout all design phases:

- Mentor bridge designers and checkers.

At Resource Planning Milestone [Internal only]:

- Review all STIP and Non-STIP projects for bridge work.
- Review pre- ‘Project Initiation’ project schedules (year, start, finish) for all STIP projects with bridge work.
- Review ODOT Project Business Case and Bridge Design Work Order for the anticipated type of bridge work/design. (If no Business Case (eg, a bridge through a program other than the Bridge Program), meet with Transportation Project Manager and Area Manager to discuss the nature of the structures work. Inform them that the purpose of this meeting is to better understand the work so the appropriate ‘level of experience’ can be made, and the Bridge Designer and Bridge Checker assigned.)
- Participate in assignment of Bridge Reviewer, Bridge Designer and Bridge Checker at BPG or other bridge design resource planning venue.

Near the start of the Project Initiation Phase, or when resourced to the project:

- Review Bridge Design Work Order (for outsourced work also see the statement of work of A&E contract, if available).
- Confirm project schedule.
- Confirm assignment of Bridge Designer and Bridge Checker.
- Meet with and discuss the goals and objectives of the project and the bridge design with the Bridge Designer.
- After meeting with the Bridge Designer, complete the Bridge Reviewer QC Checklist for Project Initiation.

At end of Project Initiation Phase / Design Verification Package:

- Check in with Bridge Designer (if not already doing); review the status of the design and the progress of the Alternatives Study (Are the right alternatives being studied? Are there other alternatives that should be included?), Bridge Design Category, Bridge TS&L Report or Bridge Strategy Memo, Plan Sheet(s), Estimate, Design Criteria, Table of Bridge Design Standards, and Design Deviations. (This one time check-in is appropriate for a designer experienced in the type of design/work. If the designer has not designed this type of work, or has limited experience with this type of work, the Bridge

Reviewer should be checking in on a more regular schedule (eg, monthly or weekly). (It is always easier to make corrections in the “path forward” when they are identified earlier than later!)

- For Bridge Program bridges, review ODOT Project Business Case and ensure that the “problems/deficiencies” are actually getting addressed.

Approaching DAP Milestone:

- For Bridge Program bridges, review ODOT Project Business Case and ensure that the “problems/deficiencies” are addressed.
- Review Alternatives Study. (Have the right alternatives been studied? Is the recommended alternative the correct choice?)
- Review Bridge Design Category, Bridge TS&L Report or Bridge Strategy Memo, Plan Sheet(s), Estimate, and Design Deviations. (Are all the alternatives in the study properly documented as to the rationale why 1) not selected as the recommended alternative, and 2) selected as the recommended alternative. Are design deviations approved by State Bridge Engineer?)
- Provide written review comments to Bridge Designer.
- Hold meeting with Bridge Designer and review responses to review comments. Reach consensus.
- Verify resolution of review comments (review updated documents against responses to review comments).
- Ensure Bridge Designer submits TS&L Report to Transportation Project Manager.
- Complete the Bridge Reviewer QC Checklist for Bridge TS&L Report.

At Preliminary Plans Milestone:

- Review Preliminary Plans package against list of possible Bridge Plan drawings.
- Review Preliminary Plans. (have all sheets been started and drafted to 60~70% so Bridge Design Reviewer can see the ‘skeleton’ of the project coming together?)
- Ensure Bridge Designer submits Preliminary Plans deliverables to Transportation Project Manager for use in the Preliminary Plans review package.

At Advance Plans Milestone thru Final Plans Milestone:

- Review PS&E documents (the plans, the specifications / special provisions, the cost estimate, the estimate of construction duration) against 1) Bridge TS&L Report, 2) DAP Report, 3) BDM, 4) design codes, and 5) other applicable guidance. Perform an Interdisciplinary QC review, including but not limited to:
 - Review against Geotechnical requirements.
 - Review against Hydraulic requirements.
 - Review against Environmental & Permitting requirements.
 - Review against Storm Water requirements. Ensure deck geometry is correct for satisfactory drainage of the bridge deck, and appropriate collection and transport of storm water away from the bridge and water body.
 - Review against Roadway geometrics (horizontal alignment, vertical alignment, superelevation, grades, deck elevations).
 - Review against design exceptions and design deviations.
 - Review against Survey topography (bridge length, width and height fits the contours of the existing and future (proposed) ground surface, foundations are at appropriate location).
 - Review against Right of Way (bridge is within limits of final right of way lines).
 - Review against Mobility requirements.
 - Review against Utility requirements.
 - Review against Railroad requirements.
 - Review against Public Involvement and Aesthetic requirements.
 - Review against Qualified Products List (QPL).
- Review against any revisions to these documents made during the Final Design Phase, and ensures changes are reflected in the Bridge PS&E documents.
- Review cost estimate for appropriate bid items, unit cost, and unit cost modifiers (quantities checked

- by Bridge Checker).
- Review estimate of probable construction durations. Ensures logical and of appropriate duration for assumed method of construction.
- Review that all reference special provisions are included for applicable project special provisions.
- Review changes to special provisions, other than ‘fill in the blank’ changes, are appropriate and adequate.
- Review that design and detailing practices used meet standards; or that rationale to deviate from standard is appropriate.
- Review that details are consistent between bridges on projects with multiple bridges; or that rationale for different details between bridges is appropriate.
- Review deliverables against project’s funding requirements. Ensure the requirements associated with that funding source are completed.
- Provide written review comments to Bridge Designer.
- Hold meeting with Bridge Designer and review responses to review comments. Reach consensus.
- Verify resolution of review comments (review updated documents against responses to review comments).
- Ensure Bridge Designer submits Advance Plans deliverables to Project Leader for use in the Advance Plans review package.
- Ensure Bridge Designer submits Final Plans deliverables to Project Leader for use in the Final Plans package.
- Complete the Bridge Reviewer QC Checklist for these milestones.

At PS&E Package Milestone:

- Verify that all review comments are resolved and closed out.
- Ensure Bridge-related PD-02 Final PS&E Submittal Checklist requirements are complete and coordinate with Bridge Designer, Transportation Project Manager, and PCO Quality Engineer (if necessary) before submitting PS&E package.
- Ensure Bridge Designer submits PS&E deliverables to Transportation Project Manager for use in the PS&E Package.
- Ensure all Bridge Design Quality Documents are complete and submitted.
- Complete the Bridge Reviewer QC Checklist and submit to Bridge Design Manager.

D2.3 Bridge Design Checker

The purpose of the Bridge Checker is to perform a “Quality Check” of the structural design.

At Project Initiation Phase:

- No action.

After the Bridge Design “kick-off” Meeting:

- No action.

At end of Project Initiation Phase / Design Verification Package:

- No action.

Approaching DAP Milestone:

- No action.

After DAP is approved Preliminary Plans Milestone:

- No action.

After Preliminary Plans Milestone thru Advance Plans Milestone:

- May start checking if doing “early checking”. Refer to the Bridge Design Work Order and discuss with the RBLE.

At Advance Plans Milestone thru Final Plans Milestone:

- Receive Advance Plans package.
- For Class III checks, receive pdf’s of all non-structural calculations and perform independent checks.
- For Class II checks, receive pdf of structural calculations to use to perform a ‘line-by-line’ check.
- For Class I checks, start to prepare independent calculations.
- Check plan sheets.
- Check quantities and cost estimate.
- Check estimate of probable construction schedule.
- Check special provisions.
- Complete calculations check.
- Provide written review comments to Bridge Designer.
- Hold meeting with Bridge Designer and review responses to review comments. Reach consensus.
- Verify resolution of review comments (review updated documents against responses to review comments).
- Complete Checker QC Checklist.

At PS&E Package:

- When changes are made, check updated Special Provisions and revisions after PCO review.

D2.4 Bridge Subject Matter Expert (SME)

The purpose of the Bridge Subject Matter Expert (as it relates to the design of a project) is to ensure design standards and boilerplate special provisions are complete and up-to-date for the type of bridge work being designed and constructed today. The SME is also a reference to the Designer, Checker, Reviewer(s) and others throughout the entire cycle of bridge design, construction, inspection and maintenance of the State's bridge inventory. The SME also provides training (one-on-one, one-on-many, external provider, etc) as needed.

During development of a project:

Before a project even exists:

- Provide technical guidance during maintenance, deficiency identification, and project scoping as requested.
- Assist Bridge Program Manager to identify reasonable and feasible alternatives/options for Alternatives Study.

At Project Initiation (at least two weeks prior to the 'kick-off' meeting):

- Typically no action.

After the Project Initiation (kick-off) Meeting (0% Preliminary Design Phase):

- May attend the Bridge Design kick-off meeting with RBLE, Bridge Designer, et al.

At 50% Preliminary Design Phase:

- Provide technical guidance as requested.

At 85% Preliminary Design Phase thru DAP Milestone:

- Review and provide comments to Designer (with copy to the Reviewers).

After DAP is approved (0% Final Design) thru Preliminary Plans Milestone (50% Final Design):

- Provide technical guidance as requested.
- Review and provide comments to Designer (with copy to the Reviewer), as requested.

After Preliminary Plans Milestone thru Advance Plans Milestone (90% Final Design):

- Provide technical guidance as requested.
- Review and provide comments to Designer (with copy to the Reviewer and Checker), as requested.

At Advance Plans Milestone thru Final Plans Milestone (100% Final Design):

- Typically no action.

At PS&E Package (100% Final Design):

- Typically no action.

After a project is let and construction is complete:

- Provide technical guidance during inspection and maintenance as requested.

D2.5 Agency Bridge Reviewer (ABR)

An Agency Bridge Reviewer (ABR) will provide QV for outsourced projects with work on bridges and other structures. The assigned ABR is the bridge representative for the Contract Administrator (CA).

During development of a project:

At Project Initiation (at least two weeks prior to the 'kick-off' meeting):

- Review scoping, inspection, load rating files and business case.
- Help the Contract Administrator write in bridge specific language into the WOC.
- May aid the Contract Administrator with negotiating the WOC.

At 50% Preliminary Design Phase:

- Provide standards guidance as requested by the CA or consultant on bridge related matters.
- Review the DVP to verify it meets the intent of the bridge portion of the contract.
- Participate in discussion for Design Deviations and Exceptions.
- Setup meetings with Standard Engineer(s) and consultants to discuss elements outside of their experience level.

At 85% Preliminary Design Phase thru DAP Milestone:

- Provide standards guidance as requested by the CA or consultant on bridge related matters.
- Review the DVP to verify it meets the intent of the bridge portion of the contract.
- Participate in discussion for Design Deviations and Exceptions.
- Setup meetings with Standard Engineer(s) and consultants to discuss elements outside of their experience level.
- Coordinate review comments with SME/Standards engineers to provide one voice from bridge section.

After DAP is approved (0% Final Design) thru Preliminary Plans Milestone (50% Final Design):

- Provide standards guidance as requested by the CA or consultant on bridge related matters.
- Review the DVP to verify it meets the intent of the bridge portion of the contract.
- Participate in discussion for Design Deviations and Exceptions.
- Setup meetings with Standard Engineer(s) and consultants to discuss elements outside of their experience level.
- Coordinate review comments with SME/Standards engineers to provide one voice from bridge section.
- Perform a fatal flaw review of plans, specifications, and estimates.

After Preliminary Plans Milestone thru Advance Plans Milestone (90% Final Design):

- Provide standards guidance as requested by the CA or consultant on bridge related matters.
- Review the DVP to verify it meets the intent of the bridge portion of the contract.
- Participate in discussion for Design Deviations and Exceptions.
- Setup meetings with Standard Engineer(s) and consultants to discuss elements outside of their experience level.
- Coordinate review comments with SME/Standards engineers to provide one voice from bridge section.
- Perform a fatal flaw review of plans, specifications, and estimates.
- Verify that Specification concurrence is happening and set meetings as required.

At Advance Plans Milestone thru Final Plans Milestone (100% Final Design):

- Provide standards guidance as requested by the CA or consultant on bridge related matters.
- Review the DVP to verify it meets the intent of the bridge portion of the contract.
- Participate in discussion for Design Deviations and Exceptions.

- Setup meetings with Standard Engineer(s) and consultants to discuss elements outside of their experience level.
- Coordinate review comments with SME/Standards engineers to provide one voice from bridge section.
- Perform a fatal flaw review of plans, specifications, and estimates.
- Verify that Specification concurrence is finalized.

At PS&E Package (100% Final Design):

- Typically no action.

After a project is let and construction is complete:

- Typically no action.

D2.6 Bridge Design Coordinator

The purpose of the Bridge Design Coordinator is to track, pursue, and ensure all Bridge Quality Documentation is received from Reviewers and Checkers, and to ensure this data is entered, stored, retained, and managed in the utmost professional manner.

During development of a project:

At Resource Planning Milestone:

- Receive list of all STIP and Non-STIP projects with bridge work from Program Managers.

At Project Initiation:

- Receive Bridge Design Work Orders from RBLEs; enter in appropriate project tracker.
- Continue to collect/verify lists and other applicable data.

After Project Initiation:

- Continue tracking projects in coordination with the RBLEs.

At 50% DAP Design Phase:

- Continue tracking projects in coordination with the RBLEs.

At 85% DAP Design Phase thru DAP Milestone:

- Receive pdf of TS&L Report and pdf of QC Reviewer's review package (data and review comment form) from Reviewer.
- If project is not in ProjectWise, store in Bridge EDMS.

After DAP is approved (0% Plan Development) thru Preliminary Plans Milestone (50% Plan Development):

- Receive pdf of Preliminary Plans package and pdf of QC Reviewer's review package (data and review comment form) from Reviewer.
- If project is not in ProjectWise, store in Bridge EDMS.

After Preliminary Plans Milestone thru Advance Plans Milestone (90% Plan Development):

- Receive pdf of Advance Plans package and pdf of QC Reviewer's review package (data and review comment form) from Reviewer.
- If not in ProjectWise, store in Bridge EDMS.

At Advance Plans Milestone thru Final Plans Milestone (100% Plan Development):

- Receive pdf of Final Plans package and pdf of QC Checker and QC Reviewer's review packages (data and review comment form) from Checker and Reviewer.

- If not in ProjectWise, store in Bridge EDMS.

At PS&E Package (100% Plan Development):

- Receive pdf of PS&E Package and pdf of QC Reviewer's review package (data and review comment form) from Reviewer.
- Receive pdf of supplemental QC Checker's check package from Checker, if applicable.
- If not in ProjectWise, store in Bridge EDMS.

After PS&E Package:

- Receive the Reviewer's QC/QA Checklist for each project.
- Complete EDMS QC Checklist.

D2.7 Bridge Quality Assessor/Auditor

The purpose of the Bridge Quality Assessor/Auditor is to ensure design processes and standards were followed or that appropriate design deviations and exceptions were prepared to document why design processes and standards were not followed.

The Bridge Quality Assessor/Auditor has no role during development of a project:

After PS&E Package:

- Receive the Reviewer's QC/QA Checklist for each project.
- On a 'to-be-determined' schedule, identify 'X' projects per year to perform a Quality Assessment/Audit.
- Perform Quality Assessment/Audit.
- Prepare Findings Report.
- Hold meeting with State Bridge Engineer, and relevant Bridge Design Manager to go over Findings Report.
- Receive some form of assurance that findings will be addressed.
- Complete Quality Assessor/Auditor QC Checklist.