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Review of WSDOT's Implementation of Design-Build Project Delivery

RECOMMENDATIONS AND PRELIMINARY IMPLEMENTATION STRATEGIES

Prepared for:
State of Washington
Joint Transportation Committee

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Introduction

This white paper, prepared as a deliverable for Tasks 4 and 5, documents recommendations for improvement of WSDOT's design-build program, and preliminary implementation strategies for these recommendations.

The recommendations and implementation strategies are organized into the following key topic areas identified below:

1. Staffing and Career Development

2. Training

3. Programmatic Documents (policies and procedures)

4. Project Development

5. Project Delivery and Procurement

6. Performance Monitoring (Measurement)

7. Budgeting

8. Project Execution

Each topic provides background with the problem statement or best practice related to the topic area, followed by recommendation(s), and the suggested strategies for implementing each recommendation.

Programmatic Documents (Templates and Guidelines)

The growth of Design-Build (DB) has prompted many DOTs to develop DB manuals, guidance documents, and standard procurement and contract forms. The development of these programmatic documents accomplishes several important goals:

- It enables the agency to clearly and adequately define its specific DB policies and procedures, particularly for roles and responsibilities related to design, quality, third-party coordination, and similar requirements that are different than other delivery systems.
- It allows industry groups to provide input into the development of these policies and procedures.
- It helps transfer and preserve DB knowledge and promotes consistency in procurement and contract administration, and is the basis for training the agency's employees in the DB process.
- The procurement and contract forms developed from this process help reduce the effort needed by the agency to develop and review solicitation and contract documents for

specific projects. Perhaps equally important, the familiarity and comfort level afforded by the repeated use of standardized documents can facilitate industry's bidding processes and lead to better proposals, especially if industry groups had some involvement in the initial development of these the forms.

WSDOT has recognized the importance of having a current set of programmatic DB documents, including an updated DB Manual, Project Delivery Method Selection Guidance (PDMSG) and DB Standard Specifications. Simply stated, having a robust and current set of programmatic documents is a necessity for a DOT that has a major DB program. We recommend that WSDOT give the highest priority to completing the programmatic documents, as it is the predicate to many of our other recommendations, particularly training.

WSDOT has been working closely with industry groups to review standard contract language and template documents, and these documents are nearing completion. Once they are complete WSDOT should establish their consistent use throughout its program.

As noted in our Task 3 report, WSDOT has recognized the importance of having a current DB manual. Given the delivery expectations surrounding Connecting Washington projects, the development of an updated design build manual is necessary, given that WSDOT's current DB manual is almost 12 years old and requires updating to be of greater value to WSDOT and industry. Among other things, the development of the manual's content will enable WSDOT to address several outstanding policy issues, particularly relative to procurement, that are discussed in other recommendations.

Finally, we recommend that WSDOT devise an effective strategy for rolling out the standard DB documents internally and with industry. The internal rollout of the documents can be partially accomplished through the training program we recommend later in this report. We recommend that industry rollout be accomplished through industry meetings and by having the programmatic documents published online. We also recommend that WSDOT develop a process for ensuring that WSDOT project teams are using the procedures contained therein (i.e., a process for ensuring accountability).

Recommendations:

1. Develop and/or update WSDOT's procurement and contract forms.

   Implementation: Our understanding is that contract document templates are approximately 80% complete. WSDOT senior leadership should continue to characterize this as a high priority, and commit the internal and external staff resources to complete these templates and ensure the DB Manual will be consistent with the templates. Part of this process should be to determine how to make the templates scalable to various project sizes or procurement approaches.

2. Update WSDOT's DB manual, and ensure that the manual reflects the policies and procedures needed to promote the consistent and effective use of DB.

Implementation: Updating the manual is largely dependent upon WSDOT senior leadership supporting this as a high priority, and committing the internal and external staff resources to make this happen in a reasonable time period. The development of this manual should not be viewed as a ministerial or administrative task. Much of the content (e.g., policies and procedures) still needs to be developed and this should be done with senior, experienced, WSDOT and industry resources.

Given this, we suggest that: (a) an individual from WSDOT be assigned to creating this manual; (b) an implementation schedule be developed and committed to by all key DB personnel within WSDOT; and (c) the individual assigned to this make a recommendation as to what, if any, work should be outsourced to an external resource. We believe that an appropriate target for the completion of these materials is 9-12 months after the individual charged with running this activity has been assigned.

We also recommend that a series of substantive workshops with industry and WSDOT personnel be scheduled, where the topics for the manual will be discussed and policies finalized. Possible subjects include project development, project selection and scoping, front-end investigations, risk assessment, procurement, design development, QA/QC, and the use of performance specifications.

3. Develop an internal and external rollout strategy for the programmatic documents that will accomplish the goals of educating WSDOT and industry partners about WSDOT's DB policies, procedures and philosophies.

   Implementation: This needs to be implemented by coordinating with the training initiatives discussed below, and with industry outreach. Using WSDOT's website to disseminate this information is consistent with how other DOTs are handling this.

Training

It is widely recognized that the successful implementation of a DB program requires that the owner's organization be trained on fundamental DB principles affecting procurement, contracting and project execution. The importance of training is highlighted throughout DBIA's best practices publication, and most of the agencies interviewed for this report have instituted some type of formal training program. DOTs have routinely developed classroom DB training modules addressing project development, procurement and contracts, and post-award contract administration. Some have also formally used peer-to-peer information exchanges as a way to transfer DB knowledge to targeted audiences.

As noted in our Task 3 Report, WSDOT currently lacks a formalized DB training program. Training efforts are largely *ad hoc*, with most staff learning on the job through the mentoring efforts of experienced project managers. To broaden the application of DB, particularly to areas of the state that have less DB experience, we recommend the implementation of a strategic ***programmatic, statewide training program***. This will not only have the effect of articulating and reinforcing WSDOT policies on important DB issues that arise during execution (e.g., the design review and comment process), but will also promote consistency of the application of DB practices. We envision this training as having a peer-to-peer component, with the classroom

training being conducted, in part, by the participation of those within WSDOT who are experienced in DB.

We also recommend that WSDOT supplement this programmatic training with ***project-specific training*** for large or complicated projects. While this is being done on an *ad hoc* basis to some extent currently, we recommend that it be considered a fundamental part of WSDOT's project development process. This will help inform the WSDOT project team about specific project issues, risks and application of the contract during project execution, and ready the team for effective management of the project.

<u>**Recommendations**</u>:

1. Develop formal statewide training materials, to include DB basics and modules for project development (scoping), procurement, contract development, design reviews, field quality procedures, and other specialty topics.

   Implementation: Development of training materials is dependent upon, among other things: (a) completion of WSDOT's contract templates and developing an updated DB Manual; (b) determining whether the training materials will be created by in-house or external resources; and (c) determining whether the trainers will be in-house, external, or a combination of both. The first step is to answer these questions and then create a schedule that reflects the importance of this activity. Note that the training should also address project execution issues, such as design reviews, inspection, quality verification, responses to requests for information/clarification, change management, payment, and documentation requirements.

   Given WSDOT's current staff limitations, there are compelling reasons to use external resources for developing the training materials. To ensure that this is delivered timely and effectively, WSDOT should use external resources to help develop at least segments of the training program. We believe that training can be started concurrent with the DB Manual with a target for finalizing these materials approximately three months after completion of the updated DB Manual.

2. Conduct DB training of WSDOT and select consultant staff.

   Implementation: WSDOT should determine who will be trained and over what period of time. The first cohort of students should begin courses immediately after the training materials are developed. It is particularly important to determine who will participate in the training and prioritize this. Consistent with our comments in Recommendation 1, we believe that WSDOT should use external resources to present at least segments of the program. We also believe that WSDOT instructors need to be committed to the training process and capable of conducting the workshops effectively.

3. Conduct project-specific training for large or complicated projects (e.g. projects >$100M or projects with complex geotechnical features, structures, or staging).

   Implementation: WSDOT should determine which projects are of the type that would benefit from specific training to the project team on contract administration, execution

risks, etc. and develop a program to provide such training. There should also be project-specific training on projects involving challenging procurements, including specific training to facilitators, evaluators, technical support staff, and observers.

4. Expand mentoring, shadowing, and peer-to-peer exchanges.

   Implementation: Continue to conduct peer-to-peer exchanges between experienced DB PMs and potential PMs from regions with no DB experience to share lessons-learned and DB management best practices. This can be done as part of the training programs, on a "lunch-and-learn" type of basis, or on specific project, in conjunction with Recommendation 3. Also, consider exchanges with other states/agencies with DB experience, or attendance at DBIA, FHWA, or AASHTO DB forums. This may entail out-of-state travel as an additional training expense.

Staffing and Career Development

Staffing addresses the key personnel (both DOT and consultant staff) that are needed to support the successful management and execution of the DB program. DB projects represent a significant percent of WSDOT's construction program to date in terms of dollars expended (38% from 2000-2015). With the new Connecting Washington legislation, WSDOT senior management anticipates that the DOT will continue to use DB delivery as a significant part of the program. At the time of this study, the dedicated DB staff at HQ was 1-1/2 full time equivalents (FTE). WSDOT has subsequently committed to increase HQ staff from 1-1/2 to 2 FTEs.

DB expertise is not widely dispersed across WSDOT staff. Staff experience is primarily concentrated in the Northwest and Olympic Regions, where most of the DB projects have been located. However, even within these regions, most staff outside of those working directly on DB projects have limited DB knowledge or experience.

Given the importance to all organizations, including WSDOT, of retaining valuable personnel, we recommend that WSDOT implement a thoughtful *career development training* process for those personnel involved in the DB program. Public sector personnel experienced in DB are valuable resources to both the private sector and other public agencies, and it is incumbent upon agencies to create career development paths to retain such personnel.

With the new Connecting Washington funding, the mandate is to create a sustainable core workforce at current staffing levels. The program size with the new legislation will also necessitate the use of DB and alternate delivery methods and supplemental consultant staff to deliver the program in the required time frame. Although outside consultants can provide much needed assistance, particularly during the early development and expansion of a DOT's DB program, overreliance on consultants can stunt the growth and development of the DOT's own staff, creating a void of sufficient DB experience and qualifications to provide meaningful project-level decision-making.

Recommendations:

1. *WSDOT has increased HQ DB staff to two fulltime equivalents.* Use dedicated full-time staff in the near term to support:

   a. A statewide DB training program
   b. Completion of procurement and contract forms
   c. DB manual development (currently at 5%),
   d. Procurement support
   e. Project level technical support, and
   f. Public and Industry outreach
   g. Lessons-learned/performance database

   Implementation: Supplement HQ staff with consultant resources if needed to develop statewide DB training materials and DB manual in the near term (approximately 12 months).   , As part of a long-term implementation strategy (approximately 2-3 years) use HQ and regional staff to present DB training to all regions. After the updated DB manual and training program is rolled out, reevaluate staffing levels at HQ and adjust based on needs of the Regions.

2. Supplement HQ staff with part-time DOT HQ or Regional technical staff (i.e. bridge, roadway, geotechnical, environmental, etc.) to serve as subject matter experts (SME) trained in DB development and execution.

   Implementation: Identify technical staff candidates in the relevant technical disciplines. Provide specialized DB training to technical staff candidates to address DB for specific technical topics (i.e. environmental, geotechnical, structural, roadway, utilities).   These may include scoping, use of performance criteria/requirements, evaluation criteria, ATCs, design reviews.

3. Enhance the skills (and increase the number) of DB Project Managers (PM) in Regions outside of Puget Sound area (e.g. Eastern, Southwest, North and South Central) through formal training, mentoring or shadowing, and peer-to-peer exchanges. Require a dedicated WSDOT DB Project Manager and key staff for the larger DB projects.

   Implementation: See Training Recommendations

4. Tie training to a thoughtful DB career development process with recognition of how to retain experienced DB staff through career advancement and a more competitive compensation structure.

   Implementation: Washington State Department of Transportation's (WSDOT) 2016 Recruitment and Retention Study report indicated that there is a perception among current or former WSDOT staff that with the transition from DBB to DB, WSDOT engineers will become contract managers in charge of overseeing consultant engineers rather than

functioning as DOT engineers performing engineering work that they were hired for. This perception led to a recommendation in the Recruitment and Retention Study report that WSDOT should have a portion of key projects designed by DOT engineering staff.

In fact, WSDOT engineering staff will continue to perform design work for DB projects, and for small projects may advance this design work to higher levels. Furthermore, consistent with recommendation 5 below, consultant engineers should be used to augment DOT staff for larger projects, allowing DOT engineers to develop higher level management and decision making skills as part of executing DB projects. It could be argued that DB projects will accelerate the career development of DOT engineering staff by placing them in leadership positions earlier in their career trajectories.

WSDOT should recognize those employees who are gaining DB experience and ensure that there is a formal career development process in place that not only has such employees gaining on-the-job experience, but also receiving continuing education that will enhance their careers. These individuals should become active in national or local DBIA and TRB activities and be encouraged to take leadership roles. Aside from training, WSDOT should ensure, to the best it is able, that experience and talent is being recognized and compensation is in line with other local public agencies. Use the WSDOT Recruitment and Retention study results to update the overall compensation structure and determine the value of DB credentials and experience.

5. Optimize the role of consultants with regard to decision-making and supporting DOT staff for DB projects

    a. Use consultant staff for strategic programmatic support of HQ DB staff.

    b. Use experienced DB consultant staff to in a supporting role to supplement DOT project staff for day-to-day execution of larger DB projects or projects requiring special expertise.

Implementation: Use consultant support and expertise in short term to assist with development of training materials and DB manual. After the decision is made to use DB for a larger project, assess project staffing requirements and augment DOT staff with experienced consultant staff to support project execution phase (i.e. design reviews, construction inspection, responses to RFIs, quality management, etc.).

Project Development and Scoping

Project scoping is of critical importance for DB projects as it provides the basis for project pricing and subsequent design development and project execution by the DB team. The scope must strike a balance between the use of performance-based and prescriptive requirements. Performance criteria/specifications are generally viewed as a best practice for DB to provide the greatest opportunity for contractor flexibility and innovation. However, WSDOT and other DOTs often use more prescriptive specifications and greater design detail to satisfy the environmental requirements and accommodate project constraints or third party (or joint jurisdictional) issues. In

lieu of performance specifications, DOTs may use a resource intensive Alternative Technical Concepts (ATC) process to achieve innovation.

DOTs have experienced change orders stemming from inadequate scoping or conflicts with standard design or construction requirements. While preliminary design work ideally should not be advanced too far by the owner in DB to allow for DB teams to innovate, appropriate front-end tasks (e.g., geotechnical/environmental investigations, third party coordination, etc.) must still be performed to ensure a realistic understanding of the project's scope and budget, and to provide proposers with information that they can reasonably rely upon in establishing their price.

Recommendations:

1. Allow for appropriate front-end investigations needed for DB projects. The level of front end investigation and design (i.e. scoping definition) will depend on project goals, risk allocation, and procurement approach. Ensure that the risk management process (CRA/CVEP) considers the potential for more work to be done before starting the procurement, and the extent of front-end investigations.

   Implementation: Using the results of a risk assessment, set the internal budget and schedule to allow for a level of front end subsurface, utility, or other investigation of the site required to accurately define the required scope of work for a DB project. The higher the risk rating, the more resources should be applied to front end investigation and vice versa.

2. The scoping definition and level of design will depend on project goals, risks, and procurement approach. Make informed and conscious decisions regarding the use of performance versus prescriptive specifications during project development. When appropriate, use performance criteria/specifications for projects or project elements to allow bidders to work with less-than-complete designs to develop bid packages that both meet the needs of WSDOT and benefit from innovation and creativity

   Implementation: Provide guidance in DB Manual and formalized training on when to use or not to use performance criteria, how to coordinate with standard design manuals, and best practices for performance specifying. Reach out to the design and construction communities to get feedback on where to be prescriptive and where to be performance-based [See SHRP 2 R-07; Volume I, Strategies for Implementing Performance Specifications: A Guide for Executives and Project Managers, and Implementation Guidelines, Volume II, Developing and Drafting Effective Performance Specifications: A Guide for Specification Writers].

   The current DB templates (Book 2) addressing technical requirements generally cite mandatory prescriptive standards (i.e. design, materials, construction manuals, standard specifications) for various design elements. If WSDOT intends to allow the DB team more flexibility through the use of performance specifications, which also may require

exceptions to standard practices, it will need to articulate specific areas or elements of the work where the DB team may consider alternative solutions or options. These alternatives may entail design exceptions or identifying where there may be flexibility in the current WSDOT standards that would satisfy the contract requirements.

Project Delivery Strategies

WSDOT currently procures DB services using a two-step best-value approach. Several of the DOTs with more mature DB programs have the ability to implement DB in different ways based on project types or characteristics. If WSDOT continues to expand the use of DB to smaller, less complex projects, the use of a more streamlined DB procurement options, including a one-step procurement process, low bid DB, multiple award task order contracts, or bundling of multiple projects, may help achieve efficiencies in project development and procurement.

<u>Recommendations</u>:

1. Continue to use DB for smaller, less complex projects (i.e. < $10M or possibly larger, non-complex projects <$25M). However, streamline the procurement of these projects (e.g., Bundled DB, or a one-step procurement process with selection based on low bid or best-value).

   Implementation: Modify procurement process [e.g. Procurement documents for DB] to reflect a shorter one-step process or an accelerated two-step process. The DB Manual outline currently has a description of a one-step process. DOTs typically create separate contract templates for a one-step, or qualified low bid process [see FDOT Low Bid template, or CDOT Streamlined DB]. A one-step process eliminates the Request for Qualifications RFQ and shortlisting step; it may also forgo the use of ATCs and stipends unless beneficial to include during the ad period. The ad period would be similar to that for a bid-build process – 6-10 weeks. Typically a one-step process requires the submission of separate sealed technical and price proposals. Selection is based on the lowest price for proposers that meet responsiveness requirements. The responsiveness check may include a pass/fail or scored criteria including qualifications and experience, and technical ability. If using a two-step process, consider expanding the short list (e.g. 4) to allow for more competition.

2. Experiment with alternative DB delivery strategies that improve the efficiency of delivery for high risk, complex projects and smaller projects. Alternative DB strategies for high risk or complex projects could include progressive DB, while alternative DB strategies for smaller projects could include bundling or multiple award task order contracts. Bundling small projects (e.g. small bridge rehabilitation, fish passages) under a single DB contract can accelerate delivery and achieve efficiencies in accelerated procurement, design, environmental permitting, construction sequencing, and overall time savings.

Implementation: Use an objective consistent process with established criteria to determine the most appropriate delivery method. The PDSMG selection process should be refined to as needed address alternative DB delivery strategies. For example, adapt the PDSMG to address the DB delivery options available for procuring high risk, complex projects where scope definition and early price certainty is difficult to achieve. Similarly, develop options for smaller DB projects, including a specific set of procurement procedures. Continue to use pilot programs as an approach to test and validate the use of alternative DB delivery strategies

Applications for bundled DB projects would be for statewide small or low impact bridge rehabilitation/replacements, selected fish passage culverts in close proximity, or for projects near each other where efficiency can be gained by one contractor mobilization for multiple projects. Implementation of these options, for example a one-step responsive low bid process, may require revisions to current Washington DB legislation. Alternatively, WSDOT can use the current price less technical credits best-value process. See NCDOT Express DB program for examples of guidelines for a two-step DB procurement process for bundled low impact bridges in NC.

Procurement Process (i.e. qualifications, evaluation criteria, ATCs, Practical Design)

The evaluation criteria and associated weightings used by WSDOT to select the design-builder have not always provided for meaningful distinctions among proposers, particularly given the high weighting generally allocated to price. WSDOT does not appear to have standardized or repeatable guidance for evaluating proposals. A balance needs to be struck between low price and demonstrating value when an owner does not award based on low price; in other words making sure that the "best value" can be supported.

Some industry representatives commented that shortlisting of finalists is not consistent among the WSDOT regions. Also it was noted that lack of communication and coordination between internal DB teaming partners (i.e. the prime contractor and designer) hampered the execution of some DB projects.

Well-designed procurement processes focus on qualifications of DB teams (including the relationship of DB teaming partners), and the use of appropriate project-specific evaluation criteria that align with project goals and risks, and provide for a meaningful evaluation of proposers while not being overly burdensome. The process should provide for flexibility in the evaluation criteria to accommodate small project procurements (i.e. pass/fail with reduced experience thresholds). For large, complex projects, shortlisting, ATCs, and one-on-one meetings (all used by WSDOT) are best practices where industry innovation and creativity are sought.

Recommendations:

1. Refine evaluation criteria for the two-step best-value process.

a. WSDOT currently uses a two-step best-value process where the evaluation criteria is more weighted towards price (i.e. 90% price /10% technical). For high risk or technically challenging projects, include technical criteria (i.e. geotechnical, utilities, design features) with higher weightings for technical factors (i.e. 75% price/25% technical) based on the prioritization of project goals and risks.
b. Consider prior working relationships of DB teaming partners as a qualifications criterion for selected high risk projects where coordination is a key criterion.
c. For projects using a two-step process:
  i. Expand the short list where selection is primarily based on qualifications and price.
  ii. Consider pass/fail for key personnel qualifications (to meet a minimum standard), or add project understanding and approach criteria to allow proposers with less experience to compete.

Implementation: Decide what the final set of procurement policies are through workshops or other forums with senior staff and industry partners. Based on this dialog, develop guidance in the DB manual to identify and weight key evaluation criteria that align with project goals and risks, and provide differentiation among proposers. The PDMSG can be used as a guide for defining project goals and risks. For larger projects, conduct separate procurement assessments to identify evaluation and selection criteria and weightings based on prioritization of goals and risks. Eliminate apparent duplication in the current Instructions to Proposers (ITP) template (i.e. Quality: 3.3.7.2 and 3.3.13, Impacts: 3.3.8 and 3.3.17).

Adjust the Request for Qualifications (RFQ) template for smaller projects. Consider using pass/fail (P/F) or lower thresholds for experience and past performance, use point scoring as defined in the RFQ template for understanding and approach criterion, and expand the shortlist where selection is primarily based on price and the proposal effort is limited.

2. Optimize the efficiency of the Alternative Technical Concept (ATC) process and One-on-One Meetings

a. Encourage innovative ATCs in solicitation documents.
b. Optimize the efficiency of one-on-one meetings. Account for the significant effort associated with conducting these meetings on the part of DOT staff when planning procurement staffing needs and determining the number of firms to shortlist.
c. For one-on-one meetings, keep WSDOT participating staff small; require the contractor to develop an agenda for one-on-one meetings that includes a list of WSDOT staff needed to discuss/evaluate ATCs; and limit consultant support to ensure the strictest confidentiality.

Implementation: Address protocols for one-on-one meetings and set them forth in the DB Manual. Some DOTs prohibit members of the project proposal evaluation team from participating in proprietary ATC meetings, citing the need to prevent the appearance of

bias or a conflict of interest. Safeguards like non-disclosure agreements or restrictions on DOT or consultant personnel participation will promote sharing innovative ideas and increase the number and quality of ATCs.

The current WSDOT Instructions to Proposers (ITP) template addresses submittal and review of ATCs, and the DB Manual also provides guidance for the use of ATCs. Both documents address the concept of "equal or better" as the standard for acceptance of an ATC. The guidelines should also note that the solicitation documents should define areas where ATCs are allowed and where they are not allowed (i.e. some DOTs do not allow ATCs for pavement design, or impacts to third party agreements).

The current WSDOT documents require that design deviations must be approved before being incorporated into any ATC. Given that ATCs quite often involve designs that deviate from DOT design standards, some DOTs have developed pre-approved exceptions to design standards to streamline the approval process. Developing and maintaining a database of approved ATCs would assist WSDOT in expediting the evaluation of ATCs. It also may help build more flexibility into current WSDOT design standards.

3. Take advantage of Practical Design in the scoping/preliminary design phase for DB through adjustments to scope that do not compromise functionality or quality.

    Implementation: Practical Design (PD) encourages design flexibility to find lower cost design solutions that meet the project purpose and need. Chapter 110 of WSDOT's Design Manual, "Design-Build Projects," states that under Practical Design (PD), design flexibility is encouraged to develop designs tailored to performance needs.

    WSDOT is currently piloting a Practical Design process that occurs after contract award. Under this process, a Practical Design Review (PDR) will occur within seven days of Contract execution and before Notice to Proceed (NTP), also referred to as the "Practical Pause," before proceeding with the work.

    We recommend that WSDOT evaluate PD concepts as part of the preliminary design and scoping phase of DB projects. The WSDOT Design Manual M 22-01.12 dated November 2015 addressing Practical Design states that "Practical Design can be applied at all phases of project development, but is most effective at the scoping level or earlier where key decisions are made as to what design controls and elements are affected by alternatives, and how they can best be configured to meet the project and contextual needs."

    By implementing in preliminary design as early as possible in project development, the DOT will gain full advantage of PD during the scoping phase, where the DOT can consider design flexibility in the DB Request for Proposals to meet performance criteria and promote cost effective solutions. This will require a revision to language in RCW 47.01.480 (1) (c) (House Bill 2012, 2016 session) addressing Practical Design that states "For Design-Build projects, the evaluation must occur at the completion of thirty percent design."

Performance Monitoring

Efforts that DOTs across the country recognize to be good practices but which have not yet been widely implemented include:

- Developing a database of lessons learned that could assist with developing similar projects in the future.
- Capturing historical cost and schedule performance to assist with the development of realistic budgets and schedules.

WSDOT maintains a Construction Audit Tracking System (CATS). Although it is possible to mine the data, currently the data in the construction audit and tracking system (CATS) is used to evaluate compliance with project-specific contract requirements. It is not used to assess or compare DB to DBB (or GC/CM) project performance.

WSDOT collects project lessons-learned, but these are not collected consistently and disseminated to inform or improve future projects. More could be done to catalog or compile the data in a manner that could be used to inform future project development activities. WSDOT has an initiative underway to develop a lessons-learned database.

The Gray Notebook (WSDOT's quarterly performance report) generally addresses construction cost performance, focusing on Engineers Estimates (EE) compared to award amounts. A comparison of WSDOT EEs to award amounts for a small sample of its DB projects with a larger database compiled by FHWA research indicated that WSDOT EE for DB projects were higher on average.

<u>**Recommendations**</u>:

1. Conduct systematic comparisons of DB with Bid-Build and GC/CM and refine PDMSG and manuals as appropriate.

   Implementation: Develop a DB project performance tracking database considering cost growth (i.e. Engineers Estimate to Award Cost, and Award to Final Costs). Compare DB with similar Bid-Build projects (and GC/CM projects) considering project scope and cost. Additional performance metrics to be considered could include timing of award, overall project duration, construction duration, project intensity, change order impacts (by category), and non-conformances. Use the database in the long-term to assess whether PDMSG or DB Manual needs refinement.

2. Establish a database of DB lessons-learned.

Implementation: Continue to develop a lessons-learned database for DB and all other forms of project delivery. This effort could include the creation of post-construction project report cards to evaluate the extent the project met stated performance goals, including feedback from the DOT staff and the DB industry team. The assessment could be used to determine whether the chosen delivery method using the PDMSG was appropriate. One approach could be to re-score the PDMSG matrix and compare with the original PDMSG matrix. Use the feedback in the long-term to assess whether PDMSG, contract templates, or DB Manual needs refinement.

3. Examine causes of higher Engineers Estimates (EE) and whether estimating process should be refined.

   Implementation: Review a larger sample of WSDOT DB projects, and determine whether WSDOT EEs for all DB projects are on average higher, and if so, was the cause due to market conditions, risk pricing or other reasons. .

4. Establish a database of ATCs and refine ATC process and standard manuals accordingly

   Implementation: Review existing ATCs for DB projects and develop a database of approved ATCs by category (i.e. materials, geometrics, bridge, traffic, walls, drainage, paving, geotechnical, etc.). Use the ATC data to develop pre-approved elements or options for standard designs that will expedite the ATC approval process and promote or introduce more flexibility in current design standards to allow for greater use of performance specifications.

Budgeting

The current funding appropriation process constrains the current effective use of DB delivery for selected projects. Given the uniqueness of the Connecting Washington legislation and state funding processes, it may be appropriate for WSDOT to work with key legislators and the legislative staff to discuss how to appropriate funds more effectively for DB projects.

Recommendations:

1. WSDOT should work with key legislators and legislative staff to effectively appropriate funds for DB projects.

   Implementation: Conduct an informational meeting between legislative staff, WSDOT and Office of Financial Management (OFM) to consider adjustments in appropriations to accommodate DB projects. Based on these discussions, propose changes to be formalized as an official budget request, Legislative staff would present the proposed budget revisions to legislative members for final approval through the normal budget and legislative process.

Project Execution

A key to effective communication includes consistency of staff. WSDOT has struggled with consistency on some projects.

WSDOT does not have any formalized guidance related to design oversight and compliance reviews. There is a balance that needs to be struck by a public owner between ensuring the public a good value and allowing a private entity to have control of the design process. WSDOT's staff has in some cases struggled with understanding their role in the final design process. The design staff have had difficulty with letting go of design preferences or the requirement for levels of design details typical for bid-build projects. Some administrative processes are formally defined (e.g., delivery method selection, procurement, project delivery) and encouraged by management, whereas others remain somewhat informal and may be inconsistently interpreted or applied by staff.

For smaller DB projects, having the design-builder assume QA responsibility may not be as efficient (due to the duplication of testing effort needed to ensure compliance with the FHWA verification requirements in 23 CFR 637).

Recommendations:

1. Dedicate qualified key staff as needed to the full project life-cycle (design and construction phases).

   Implementation: Make a commitment to the importance of this and develop processes to accomplish it. Addressing effective project management practices for administration of DB projects in the DB Manual will help implement this.

2. Dedicate experienced staff to design oversight functions.

   Implementation: Commit key experienced and trained staff for design oversight for the entire project duration including design and construction. Create design review templates and provide training, peer-to-peer interaction, and addressing effective practices for design administration and reviews for DB projects in the DB Manual will help facilitate this practice.

3. Optimize quality management for small DB projects.

   Implementation: Address effective practices for quality management of smaller DB projects in the DB Manual. This could entail the DOT reducing verification testing frequencies for low risk items or small quantities, taking back acceptance testing responsibility, or not using a third party firm to minimize duplication.

List of Recurring Abbreviations

ATC   Alternative Technical Concept

DB   Design-Build

DBIA   Design Build Institute of America

DOT   Department of Transportation

PD   Practical Design

RFQ   Request for Qualifications

RFP   Request for Proposals