Washington State

Capital Projects Advisory Review Board Report Regarding Review of WSDOT Projects Pursuant to ESBH 2134

Part 1: SR 18 – Widening – Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199)

June 3, 2024

Presented to:

The Washington State Office of Financial Management,

The Washington State Department of Transportation, and

The Joint Transportation Committee of the Washington State Legislature

Contents

1. Introduction and Executive Summary

RECOMMENDATION:

CPARB has reviewed the information for the project and for the reasons set forth below recommends that Washington State Department of Transportation (WSDOT) continue with the use of the Design-Build delivery method pursuant to RCW 47.20.785 for the SR 18 – Widening – Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199) project.

BACKGROUND:

The Washington State Legislature passed Engrossed Substitute House Bill 2134. Section 304(25) of ESHB 2134 requires the Washington State Capital Projects Advisory Review Board ("CPARB") to undertake the following task:

> "Prior to initiating new advertisements or requests for qualifications for the following projects: SR9/March Road to 2nd Street Vicinity (N00900R), SR 526 Corridor Improvements (N52600R), US 395 North Spokane Corridor (Moo800R), and SR 18 – Widening – Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199), the capital projects advisory review board shall review the planned procurement methods for these projects. The board shall provide recommendations on procurement methods to the office of financial management, the department, and the transportation committees of the legislature for project L1000199 by July 1, 2024, and projects N52600R, N00900R, and M00800R by December 1, 2024. After the board provides recommendations, the department may initiate new advertisements and requests for qualifications, incorporating the recommendations, as appropriate."

The remainder of Section 304(25) instructs WSDOT to do the following:

> "The department shall structure the advertisements, requests for qualifications, and requests for proposals, for projects referenced in this subsection, in a manner that provides a high degree of certainty that bids come in as expected according to engineer estimates made through the cost estimate valuation process. The department may request bid offers with alternatives for components of a larger project so that the department may present to the legislature modified options for projects to minimize project delays and stay within appropriated funding resources. If alternatives provided are at or below the engineer estimates, the department may proceed with the project award.
>
> If bid proposals exceed engineer estimates by more than five percent or $10,000,000, the department shall report this information to the transportation committees of the legislature within two weeks of receiving the bid proposals and pause award and contract execution."

CPARB was established pursuant to RCW 39.10.220 and consists of twenty-one voting members representing a variety of industry groups and public agencies as well as four non-voting member representatives from the Washington State Senate and House of Representatives. CPARB members are appointed either by the Governor's office or through identified industry groups. CPARB's stated mission is as follows:

> To provide an evaluation of public capital projects construction processes, including the impact of contracting methods on project outcomes and to advise the legislature on policies related to public works delivery methods and alternative public works contracting procedures.

More information regarding CPARB, its members, and its work can be found online.[1] CPARB created a Task Force to complete the task outlined above, the WSDOT Project Delivery Method Review Task Force ("WSDOT PDM Review Task Force"). Task force members were appointed specifically with transportation/heavy civil project experience to provide expertise, collect information, and develop recommendations from the industry:

Linneth Riley-Hall Task Force Co-Chair	CPARB member Representing Transit
Tom ZamZow Task Force Co-Chair	Public member representing the Associated General Contractors (AGC)
Bob Armstead	Public member representing Minority Business Enterprises
Lekha Fernandes	CPARB member representing Office of Minority and Women Business Enterprises
Bobby Forch Jr.	CPARB member representing Disadvantaged Business Enterprises
Metin Keles	Public member representing Women Business Enterprises
Joseph Kline	Public member representing Public Owners
Santosh Kuruvilla	CPARB member representing Engineers
Stuart Moore	Public member representing AGC
Jessica Murphy	PRC member representing Cities\Public Owners
John Salinas II	CPARB member representing Specialty Subcontractors
Robynne Thaxton	CPARB member representing Private Industry

This report reviews the planned procurement method and provides recommendations for the SR 18 – Widening – Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199) project. CPARB met on June 3, 2024 to review, discuss and adopt recommendations for the report. CPARB commends WSDOT on its full and extensive cooperation in gathering information and answering questions relating to the project and their use of various alternative delivery methods.

2. Delivery Methods Available to WSDOT

Washington law allows WSDOT to utilize a number of delivery methods. WSDOT has developed a Project Delivery Method Comparison Spreadsheet to further explain the delivery methods.[2] Below is a brief explanation of each available delivery method.

2.1. Delivery Methods Pursuant to RCW Title 47 and RCW 39.04

WSDOT delivers most of its projects pursuant to RCW Title 47, the WSDOT authorizing legislation in conjunction with RCW 39.04, the design-bid-build authorizing legislation. WSDOT is authorized to procure projects using the Design-Bid-Build or Design-Build under RCW Title 47 delivery method under these statutes without obtaining additional approvals.

2.1.1. Design-Bid-Build

The design-bid-build (DBB) delivery method consists of a multi-step contracting process to complete a public project. WSDOT either designs or hires an engineering firm to produce 100% designs. RCW 39.80. These designs are then advertised for competitively procured public bids. RCW 39.07; RCW 47.20.050 The award of the project must go to the lowest responsible bidder, unless WSDOT has rejected the bid for good cause. RCW 47.28.090. Bid submitted in DBB are a single lump sum and usually contain costs for individual bid items that may be either unit costs or lump sum costs.

Pursuant to RCW 47.28.070, WSDOT requires all bidders to submit financial data once per year to demonstrate that the bidder has the following qualifications to perform the work:

> (1) Adequate financial resources or the ability to secure such resources;
> (2)The necessary experience, organization, and technical qualifications to perform the proposed contract;
> (3) The ability to comply with the required performance schedule taking into consideration all of its existing business commitments;
> (4) A satisfactory record of performance, integrity, judgment, and skills;
> (5) Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

All projects qualify to be able to use the DBB delivery method, and DBB is the most common way that WSDOT procures construction services. WSDOT has been using this delivery method since the inception of the agency and has developed extensive processes to be able to implement this delivery method.

2.1.2. Design-Build

Design-Build (DB) is a delivery method where WSDOT hires a single entity to both design and construct a project. WSDOT is authorized to use DB pursuant to RCW 47.20.785, which provides as follows:

> The department of transportation is authorized and strongly encouraged to use the design-build procedure for public works projects over two million dollars when:
>
> (1) the construction activities are highly specialized, and a design-build approach is critical in developing the construction methodology; or
>
> (2) The projects selected provide opportunity for greater innovation and efficiencies between the designer and the builder; or
>
> (3) Significant savings in project delivery time would be realized.

When using DB pursuant to RCW 47.20.785, WSDOT uses a traditional or “Best Value” approach to the procurement of the project. Under a Best Value approach, WSDOT creates a conceptual design that is approximately 30% complete along with a basic configuration that provides information regarding the land on which the project will be constructed. WSDOT will then advertise the project pursuant to RCW 47.20.780. WSDOT uses a two-step procurement process that includes a Request for Qualifications (RFQ) and Request for Proposals (RFP). During the Request for Qualifications, submitters provide their qualifications to be able to perform the type of project being advertised, including the resumes of the Key Personnel proposed for the project. WSDOT then develops a short list of no more than three to five finalists to proceed to the Request for Proposals (RFP) stage of the procurement.

During the RFP stage, WSDOT issues a detailed Instructions to Proposers (ITP) and meets with the short-listed proposers approximately weekly to answer questions regarding the ITP and review and approve Alternative Technical Concepts (ATCs). At the conclusion of the RFP process, proposers submit a design solution, project schedule, and lump sum price. WSDOT then evaluates the proposals based on the criteria established in the RFP and selects the proposer submitting the Best Value to the State. WSDOT pays an honorarium to each proposer to recognize the amount of effort expended during the procurement process.

WSDOT has performed many projects using the DB delivery method under RCW 47.20. In 2016, the Joint Transportation Committee commissioned Hill International, Inc., to review WSDOT's implementation of the Design-Build Project Delivery method.[3] Based on the recommendations from that study, WSDOT developed an extensive training program and a Design-Build Manual.[4] Prior to entering into any DB project, WSDOT implements a Project Delivery Method Selection Guidance (PDMSG) process to select the appropriate delivery method for the project.[5] The PDMSG typically includes a day-long workshop where WSDOT reviews the PDMSG checklist and the participants develop a PDM memo to obtain formal approval to utilize DB. Additionally, WSDOT has approximately 30 employees who are certified by the Design-Build Institute of America[6].

2.2. Delivery Methods Pursuant to RCW 39.10

All public agencies are authorized to utilize the alternative delivery methods in RCW 39.10, provided that the agency obtains permission from the CPARB Project Review Committee (PRC). The PRC may give permission to use an alternative delivery method on either a project-by-project basis or it may certify a public agency to be able to determine on its own whether projects are appropriate for the appropriate alternative delivery method. Pursuant to RCW 39.10.280, to qualify to use the design-build or GC/CM delivery method for an individual project, public owners must prove to the PRC the following:

1. The alternative delivery method provides a substantial fiscal benefit or the traditional method of awarding contracts in lump sum to the low responsive bidder is not practical for meeting desired quality standards or delivery schedules;
2. The project meets the requirements set forth in RCW 39.10.300 (for design-build) and 39.10.340 (for GC/CM); and
3. The public body has the necessary experience or qualified team to carry out the alternative contracting procedure including, but not limited to:

   (i) project delivery knowledge and experience;
   (ii) sufficient personnel with construction experience to administer the contract;
   (iii) a written management plan that shows clear and logical lines of authority;
   (iv) the necessary and appropriate funding and time to properly manage the job and complete the project; and
   (v) continuity of project management team, including personnel with experience managing project of similar scope and size to the project being proposed.
4. For design-build projects, the public body personnel or consultants are knowledgeable in the design-build process and are able to oversee and administer the contract.
5. The public agency has resolved any audit findings related to previous public works.

Pursuant to RCW 39.10.270, the PRC may certify a public agency so that it may use the delivery methods without obtaining the PRC's permission for a period of three years. The considerations are similar to obtaining permission on a project-by-project basis, except that to obtain certification, the qualified personnel must work directly for the public agency, and the public agency must have demonstrated management of at least one design-build or GC/CM project (as applicable) within the previous five years. WSDOT has not requested or received certification from the PRC for any alternative delivery

method; therefore, it must obtain permission on a project-by-project basis for any alternative delivery method not addressed in the agency's statutory authority under Title 47 RCW.

2.2.1. Progressive Design-Build

Although WSDOT may use the process outlined in Section 2.1.2 above to employ a Best Value Design-Build procurement approach under RCW 47.20, if WSDOT would like to use Progressive Design-Build (PDB), WSDOT has determined that it must do so under RCW 39.10 and obtain permission from the PRC to use the delivery method. Design-Build projects under RCW 39.10.300 must meet similar requirements to RCW 47.20.785 and show that at least one of the following criterion is met:

(a) The construction activities are highly specialized, and a design-build approach is critical in developing the construction methodology; or

(b) The projects selected provide opportunity for greater innovation or efficiencies between the designer and the builder; or

(c) Significant savings in project delivery time would be realized.

PDB is a form of design-build where the design-builder is selected prior to the establishment of the final design, price, or schedule. After selection of the design-builder, the parties progress through a series of steps to collaboratively develop a final scope, schedule, and price.[7] WSDOT then procures the project pursuant to the requirements in RCW 39.10.330, which includes a similar process as the one followed by WSDOT for the DB delivery method. WSDOT issues an RFQ and then short-lists proposers to move on to the RFP process. Unlike the DB procurement, the proposers are not required to provide a final design, schedule, or price for the project during the procurement. Instead, the final selection focuses on the proposer's management plan and approach to resolving the project's biggest risks as well as a price factor such as hourly rates, home office overhead and profit, and the level of effort to accomplish the first phase of the project.

The first step after project award. in a PDB project after award is a "validation" process where the design-builder validates WSDOT's scope, schedule, and budget and also examines the project's risks. The parties then agree on a reasonable scope and schedule that can be accomplished for the project budget, taking into account the project risks. The next step is design development where the parties collaborate to develop a final price, scope, and schedule. The form of contract is usually a cost reimbursable contract with a Guaranteed Maximum Price. These types of contracts require full cost transparency from the design-builder and robust communication and collaboration between the parties to finalize the project terms.

WSDOT has started utilizing PDB on a limited number of projects. WSDOT received project approval from the PRC to perform the following projects:

- US 101/SR 109 Remove Fish Barriers project on March 26, 2020
- Remove Fish Passage Barriers in Kitsap County project on July 28, 2022
- Thurston & Grays Harbor Counties Removal of Fish Barriers Project on September 28, 2023, and
- SR 167, I-5 to SR 161 New Expressway (Stage 2b) on January 26, 2024.

WSDOT has procured the design-builder and is fully underway with the US 101/SR 109 and Kitsap County Fish Barriers projects. WSDOT has not yet procured the design-

builder for the Thurston & Grays Harbor Counties Fish Barriers project. All of the Remove Fish Barriers projects are focused on the removal of individual fish barriers rather than construction of a length of highway. WSDOT's first highway PDB project is the SR 167, I-5 to SR 161 project, and WSDOT is currently in the middle of developing the contract and procurement documents for the use of PDB for a highway project. Because PDB is a new delivery method to WSDOT, the number personnel who are experienced in PDB are limited.

PDB is heavily used in non-transportation projects in Washington. Experienced users include the State of Washington Department of Enterprise Services, University of Washington, Washington State University, Western Washington University, and many Washington cities and counties. The City of Wenatchee is currently using PDB for its Confluence Parkway Project. PDB is also being used by other state departments of transportation including Maryland, Utah, Virginia, Kentucky, and Nevada.

2.2.2. General Contractor/Construction Manager

To be able to use the General Contractor/Construction Manager (GC/CM) delivery method, WSDOT must follow the process outlined in RCW 39.10, including requesting permission to use the delivery method from the PRC. The project requirements for use of GC/CM under RCW 39.10.340 are that at least one of the following criteria must be met:

(1) Implementation of the project involves complex scheduling, phasing, or coordination;

(2) The project involves construction at an occupied facility which must continue to operate during construction;

(3) The involvement of the general contractor/construction manager during the design stage is critical to the success of the project;

(4) The project encompasses a complex or technical work environment;

(5) The project requires specialized work on a building that has historic significance; or

(6) The project is, and the public body elects to procure the project as, a heavy civil construction project. However, no provision of this chapter pertaining to a heavy civil construction project applies unless the public body expressly elects to procure the project as a heavy civil construction project.

In the GC/CM delivery method, the public owner hires a designer to develop the project scope, and early in the project, the owner separately hires a GC/CM through a competitive process outlined in RCW 39.10.360. The statute states that the GC/CM should be selected at a time in the project when the GC/CM's participation provides value, typically early in the design, so that the GC/CM can provide early input with respect to the construction process, including constructability, pricing, and sequencing. The parties collaborate to develop a Maximum Allowable Construction Cost ("MACC") once the construction documents and specifications are at least ninety percent complete. RCW 39.10.370. Subcontractors are selected using either a public bidding procedure under RCW 39.10.380 with optional pre-bid determination of subcontractor eligibility under RCW 39.10.400, or, if the public owner obtains specific permission from the PRC, an alternative subcontractor selection process that is similar to the selection of the GC/CM pursuant to RCW 39.10.385. Under non-Heavy Civil GC/CM (see below), the value of the work that is self-performed by the GC/CM may not exceed 30 percent of

the MACC. RCW 39.10.390(3). The GC/CM must bid on the self-performed work and be the lowest responsible bidder.

There is a version of GC/CM set forth in RCW 39.10.908 that is intended for use for heavy civil projects (Heavy Civil GC/CM). Owners have been able to use "Heavy Civil" GC/CM since 2014. In 2021, "Heavy Civil" GC/CM was separated into its own statute. Heavy Civil Projects are defined in RCW 39.10.210 as "a civil engineering project, the predominant features of which are infrastructure improvements." The nature of Heavy Civil GC/CM projects are that a significant portion of the construction work is performed by the GC/CM's own forces or "self-performed"; therefore, the allowable percentage of self-performed work in Heavy Civil GC/CM is 50 percent of the value of the construction cost. There is an additional process in the procurement of projects under RCW 39.10.908 that includes a specific statement regarding a) why the owner is using Heavy Civil GC/CM, b) a minimum percentage of the cost of the work for construction that will be self-performed by the GC/CM, c) whether the public body will allow the GC/CM's percent fee to apply to the negotiated self-performed work, and d) require proposals to indicate the GC/CM's fee for negotiated self-performed work. There are also additional requirements regarding the submission of a proposal for and negotiation of the self-performed work. WSDOT has performed one project utilizing GC/CM. This delivery type has been used by public agencies for heavy civil projects.

WSDOT has limited experience with GC/CM, as it has only used GC/CM for one project: the Seattle Multimodal Terminal at Coleman Dock Project. That project was an overwater trestle replacement with a vertical building rather than a typical highway project. Most of the work consisted of marine construction such as trestle replacement and complex phasing to maintain terminal operations at all times; therefore, the Heavy Civil GC/CM procedure was applicable.

3. WSDOT PDM Review Task Force Process

The WSDOT PDM Review Task Force held five meetings from March 27, 2024 to May 22, 2024. Because the report on the SR 18 Project was due on July 1, 2024, the Task Force concentrated its initial efforts on reviewing the SR 18 Project. During these meetings, the Task Force gathered information from WSDOT, asked WSDOT personnel questions, reviewed the delivery method selected by WSDOT, and discussed recommendations regarding delivery methods. In addition to the Task Force members, members of the construction industry participated in the discussions. Hard copies and links to the minutes of these meetings can be found in Appendix A to this Report. In addition, WSDOT has fully participated and provided information requested by the Task Force. The Task Force will continue to meet regularly to complete the task outlined in ESHB 2134 by the deadline outlined in the statute for the remaining three identified projects.

4. SR 18 – Widening - Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199)

4.1. Project Description

Details of the SR 18 – Widening – Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199) Project ("SR 18 Widening Project") can be found at the WSDOT link for the project[8]. WSDOT provided additional details to the Task Force at the April 10, 2024 meeting.[9] In addition,

WSDOT personnel answered questions regarding the SR 18 Widening Project posed by Task Force members at various meetings. A summary of the SR 18 Widening Project follows.

4.1.1. SR 18 Widening Project Budget and Scopes of Work:

- The Design-Build Delivery Method was selected through WSDOT's Project Delivery Method Selection (PDMS) checklist process. A copy of the PDMS checklist for the SR 18 Widening Project is provided in Appendix B along with an electronic link to the document.
- The current cost range for the design-build contract is between $400 and $500 million. WSDOT completed the Cost Estimating Validation Process (CEVP) for the project in November 2023. A CEVP workshop is a multi-day workshop where WSDOT reviews and estimates the risk for each project pursuant the WSDOT Project Risk Management Guide.[10]
- The Project includes the following elements:
  - 4 barrier-separated lanes between milepost 23.04 (West of Tiger Mountain Summit) to MP 25.68
  - 2 roundabouts at the Issaquah-Hobart Road Interchange
  - 5 fish-passable structures, which also facilitates wildlife crossings
  - Installation of intelligent transportation system (ITS) elements, including buried power supply conduits and electrical vaults
  - Stormwater retrofit and environmental mitigation work.
  - SR 18 is considered a "Level 3 Approval", a designation that is given to projects that are lacking in one or more critical elements to be a biddable project for design-bid-build, but there is a clear and overwhelming need to begin the advertisement for the project.

4.1.2. SR 18 Widening Project Current Status:

- Environmental Documentation:
  - 4f, 6f, Section 106 and SEPA Determination of Non-significance (DNS) checklist scheduled have been completed.
  - Biological Opinion(BP)/Endangered Species Act (ESA) is pending, expected by June 1, 2024. Biological Assessment (BA) was submitted in early 2023.
- Agreements:
  - Letter of Understanding (LOU) with Puget Sound Energy signed on 11/3/2023.
  - Federal Land Transfer with Bonneville Power Administration (BPA) to create BPA parcel and access for WSDOT on R/W plan could take up to 2 years. The parcel could be excepted out in the RFP with availability date.
  - Government Contract Agreement with King County for dedicated liaison for permits and Traffic Control Plan's review and approval.
- Procurement Documents:
  - The 90% Conceptual Plan is complete. The Final Conceptual Plan (approximately 30% design level) is scheduled to be completed for the RFP.
  - RFQ and RFP documents are being developed with the RFQ anticipated to be advertised on 8/1/24.
- Expenditures:

- WSDOT has spent $23.6 million of the $33.5 million budget for engineering costs, the remainder anticipated to be provided by the design-build team.

- Anticipated Schedule:
  - Request for Qualification: August 2024
  - Request for Proposals: November 2024
  - Notice to Proceed: July 2025
  - Substantial Completion: 2031
- Funding Sources
  - Move Ahead WA gas tax.
  - Federal Funds, with requirements for Buy America and DBE participation.
  - Note that there are no spending deadline restrictions.

4.1.3. SR 18 Project Risks and Opportunities

- Project Risks:
  - The wall design are high risk because of unstable slopes, historic landslide activity, and adverse subsurface hydraulic conditions.
  - There are approximately 32 wetlands and 50 streams within the project limits which requires working with third party agencies to develop offsite mitigation, which has limited capacity. A delay in the schedule could result in mitigation requirements increasing and exceeding the current plan, causing the project to be more expensive.
  - The stormwater collection, conveyancing, and treatment is in mountainous terrain which is challenging.
  - The Geotechnical permits have taken up to 16 months during preliminary engineering. Delays in receiving the drilling permits will impact the design and permitting completion as well as the start of construction.
  - This is a heavily traveled state route with a high percentage of trucks, which requires complex construction staging and maintenance of traffic strategies to limit impacts.
  - Right of Way acquisition has not been completed.
  - Market conditions such as construction cost escalation and market saturation and competition with other projects. Competition from other projects impacts the bidding climate, the Contractor's access to labor, equipment and materials, agency staff resources to review permits such as National Environmental Policy Act (NEPA) documents, and WSDOT staffing level for contract administration and inspection. Staff shortages in these areas cause lengthy review times and increase the schedule.
- Project Opportunities
  - Innovation from a design-builder could result in smaller, less costly wall types.
  - A design-builder could provide innovation in both project staging and sequencing as well as construction means and methods to accelerate the schedule and minimize impacts on traffic.
  - The design-build procurement process allows for the innovations desired above to be weighted and scored so that aspects of the project such as innovative design, approach to construction means and methods, and reducing traffic impacts can be evaluated in addition to the project price.
- Impact of Project Delay

- The Conceptual Design Approval and most of the environmental documentation have a three-year limit for use. With the time required to complete the design to 100% and deliver the project using Design-Bid-Build rather than Design-Build, the three-year limit will be exceeded.
- The Marbled Murrelet Bird Survey that was done for the project has a five-year period before it has to be re-done. A delay would require a new study to be conducted, and the study takes 2 years to complete.[11]
- The injunction deadline to remove the fish passage barriers by 2030 will not be met.[12]
- Project cost will increase with inflation, anticipated to be approximately $20 million per year.[13]

4.1.4. Project Goals

WSDOT established the following Project Goals for the SR 18 Widening Project as of May 16, 2024:

1. Disadvantaged Business Enterprise (DBE) participation

   a) Meets or exceeds DBE requirements throughout the life of the Project with an integrative approach to maximize DBE participation.

2. Minimize Impacts

   Promotion of public and employee safety is a key value of WSDOT's Strategic Plan. Minimizing impacts to the traveling public must be balanced with the need to provide work zones where the safety of both the traveling public and workers is prioritized. This goal will be evaluated based on successful experience performing the following activities:

   a) Reduction of worker exposure to traffic hazards by utilizing positive protection devices such as truck mounted attenuators, temporary barrier, or movable barrier, managing overall worker exposure to traffic hazards by selecting and proposing efficient closure/detour strategies, and incorporating smart work zones devices and applications to manage work zone traffic and improve worker safety.

   b) Minimize impact to traffic by maintaining highway operations, minimizing the number and/or duration of traffic shifts, full roadway closures, lane closures, and through safe, effective maintenance of traffic strategies and construction staging.

   c) Provide timely and effective communications plan, aimed at notifying the public about construction work, freeway and ramp closures, and traffic delays.

3. Project Management

   a) Effectively manage the Project schedule, budget, and risks to identify and resolve issues early and effectively at the lowest level in partnership with owners.

b) Effective communication and partnering relationship with local and government agencies, tribes, project partners, emergency services, local school districts, local recreational organizations and stakeholders, and utilities.

4. Environmental Stewardship and Collaboration

a) Successfully design and construct a project that complies with the Injunction to mimic natural stream processes and maximize stream function through the inclusion of natural stream elements.

b) Successfully manage and obtain the environmental permits that meet the Project requirements and schedule, by successfully developing plans and exhibits required by the permitting agencies, without the need for re-submittals.

4.2. WSDOT Rationale for Using Design-Build

WSDOT completed a Project Delivery Method Selection ("PDMS") Checklist on January 10, 2023[14]. The checklist following the project requirements for the use of design-build in RCW 47.20.785 and documents the following reasons for WSDOT's selection of the design-build delivery method. The PDMS Checklist scores each project with points allocated to use of the design-build and design-bid-build delivery method. For the SR 18 Widening Project, design-build received a score of 10 and design-bid-build received a score of 3, indicating design-build as the preferred delivery method according to WSDOT's processes. The PDMS Checklist notes the following rationale for selecting design-build.

- Schedule:
  - Third party agreements with local governments and agencies do not require a full design.
  - There are long lead and lengthy environmental permits or right of way issues that would delay the start of construction. The design-builder would be responsible to prepare the Joint Aquatic Resources Permit Application (JARPA) documents. *Note, the PDMSG Checklist favors the DBB delivery method for this criterion.*
  - Early obligation of the funding is necessary to include the money in the 2023-2025 biennium. A delay will cause the funding to be short due to inflation.
  - There is not time to prepare a 100% design and still meet the documentation for the various permitting requirements.
  - Compression of the schedule will improve traffic on a T1 truck route highway.
  - Funding limits restrict the start schedule because of the impact on inflation. *Note, the PDMSG Checklist favors the DBB delivery method for this criterion.*
- Complexity and Innovation:
  - Significant risks such as JARPA documentation, construction risk, and mitigation of geotechnical risk could be better managed by a design-build team.
  - The project involves specialty engineering to mitigate the risks with the landslides and difficult terrain.
  - The project requires complex phasing and staging to mitigate public and freight movement.
  - SR 18 is a T1 truck route and is on the National Highway System. Some access points along the corridor need to remain open during the construction for the public and access by the Department of Natural Resources. There will be no

truck climbing lanes and the project will be required to keep one lane open in each direction.
    - WSDOT is willing to give up control of the design and construction to obtain innovation and efficiencies from the design-builder and reduce implied risk to the owner.
    - There are critical third parties who have involvement and likely changes during the design and construction such as the Department of Natural Resources, Tribes, Washington Department of Fish & Wildlife, and local agencies. *Note, the PDMSG Checklist favors the DBB delivery method for this criterion.*
- Cost
    - Early cost certainty for the project is important. Complexity of the project is a major risk that can be better mitigated through design-build instead of the risk for substantial change orders using the design-bid-build delivery method.

5. CPARB Review of Delivery Method Selection for SR 18 Widening Project

The WSDOT PDM Review Task Force reviewed the information from WSDOT and asked a number of questions during the meetings. The Task Force unanimously determined that WSDOT selected the correct delivery method from those available to WSDOT when the PDSM Checklist was created in January 2023 as well as the legislative goals at the time of the selection.

5.1. Review of Available Delivery Methods

5.1.1. Design-Bid-Build

WSDOT is statutorily allowed to perform this delivery method because WSDOT has the option of utilizing DBB for any project. WSDOT also has a great deal of experience using the DBB delivery method with established processes and training. However, CPARB found that DBB would not be an effective delivery method for the SR 18 Widening Project for the following reasons:

a. WSDOT would not be able to take advantage of the speed of the DB delivery method, and a delay in the SR 18 Widening Project would likely cause i) a substantial increase in the cost of project based on the delay in entering into the contract; and ii) the requirement to repeat critical environmental studies and permitting activities, thus exacerbating the delay to the project.

b. There would be less innovation and flexibility regarding addressing critical risks such as the complexity of the design of portions of the project, construction sequencing and scheduling, and addressing environmental impacts.

c. DBB only allows WSDOT to select the contractor based on a single factor: the price of the project. DBB does not allow WSDOT to evaluate and select based on a proposer's past experience and project plan to achieve project goals such as collaboration, good project management, innovation, meeting DBE goals, or good environmental stewardship.

d. The SR 18 Widening Project is extremely large for a DBB project. The risk on the contractor in such a large project may limit the willingness of contractors to bid on the project.

5.1.2. Design-Build Pursuant to RCW 47.20.785

WSDOT is statutorily allowed to perform this delivery method because it meets the requirements set forth in RCW 47.20.785. CPARB found DB to be an effective delivery method for the SR 18 Widening Project at the time the PDSM Checklist was performed for the following reasons:

a. WSDOT has a great deal of experience using DB under RCW 47.20 and has developed manuals, processes, and a training program for the use of DB. In addition to its internal training program, many of WSDOT's personnel have undergone formal design-build training through the Design-Build Institute of America and the Associated General Contractors, as well as other industry organizations.

b. DB allows WSDOT to not only consider the final price, WSDOT can evaluate and select based on the following factors that are important in meeting the Project Goals:

i. Innovative design and risk mitigation regarding the complexity of the design in areas such as the retaining wall, the stormwater system, and the difficult Geotechnical issues.

ii. The experience and expertise of specialty subcontractors performing particularly risky work and the innovation they can bring to the project.

iii. Innovation in construction means and methods as well as sequencing of the project to mitigate traffic disruption on a busy T1 Truck Route

iv. Experience with compliance with complex rules regarding design and construction near the many adjacent streams and in performing fish passage work.

v. Experience and management plans on very large projects that promote collaboration and good project management.

c. Changing the project delivery method would cause a delay of approximately 2 years, which would be detrimental to the viability and budget of the project.[15]

i. Design:

- WSDOT would be required to re-negotiate the agreements with its current consultants to incorporate the design for the project. The current designer's risk and liability would substantially increase as the designer would be required to provide an engineer's stamp for the drawings. Further, DBB requires a larger internal team to perform this work.[16]
- The delay in the completion of the design would require WSDOT to re-perform significant studies that have a limited grace period before the start of the project.
- Completing the design to 100% would delay the project by 2 years.[17]

ii. Permitting

- WSDOT has obtained the NEPA permit which is tied to the use of DB for the project; therefore, portions of the permitting work would have to be re-opened.

iii. Cost

- WSDOT would lose the cost of the work that it has done to prepare the project for the design-build delivery method and would have to expend additional funding to prepare the project for design-bid-build.[18]
- WSDOT would have to re-do its CEVP at a point in time when the design is approximately 80-90% complete.[19] Delays in pricing the construction cost would likely increase the costs outlined in the CEVP by $20 million a year.

d. Given the language of Section 304(25) of ESHB 2134, one of the issues that the legislature appears to be concerned with is the impact of the delivery method on the likelihood that proposal prices will be in excess of the WSDOT Engineer's Estimate. Of course, each project must stand on its own; however, there have been a number of studies performed by industry groups, other departments of transportation, and universities regarding the impact of the delivery method on a number of factors that are relevant to this review. Citations to relevant research are in Section 6.3 below.

i. DB is an effective delivery method with respect to cost certainty in both the award and the final cost of a project.

ii. The cost of DB projects is comparable or less to the cost of projects using other delivery methods.

iii. DB projects on average have a faster schedule than projects using other delivery methods.

iv. Projects that value collaboration and good management are more likely to result in less cost and schedule growth than projects that are selected based solely on low bid.

e. Pursuant to RCW 47.20.785, "The department of transportation is authorized and **highly encouraged** to use the design-build procedure for public works projects over two million dollars when" the projects meet the criteria in the statute. [emphasis supplied.]

5.1.3. Progressive Design Build Pursuant to RCW 39.10.300

Although WSDOT is statutorily allowed to perform this delivery method, and the project would meet the requirements of RCW 39.10.300, CPARB does not recommend the use of PDB for the SR 18 Widening Project for the following reasons:

a. WSDOT is in the early stages of using PDB as a project delivery method. WSDOT has successfully pursued PDB for two of the fish passage projects and has received approval from the PRC to use PDB for the third schedule fish passage project. WSDOT has also received approval for the use of PDB for a highway project that is not solely focused on a series of fish passages; however, this project is still in its early

stages, and WSDOT has not completed the development of the contract and procurement documents for non-fish passage projects. The agency's decision to evaluate its experience with the projects done under PDB, particularly its first highway project, before using it for more projects is sound.

b. WSDOT is still working through issues such as development of a contract and procurement documents for a PDB project for other than fish passage projects. It would be required to delay the SR 18 Widening Project until these documents are ready for use. Further, because this project is receiving funding from the Federal Highway Administration (FWHA), WSDOT would be required to obtain approval of the change in contracting methods from FHWA before proceeding. The impact of delays in the project is discussed under Section 4.1.3 of this report.

c. WSDOT is taking a deliberative approach in developing the appropriate processes to be able to manage multiple horizontal PDB projects. WSDOT is also developing the experience with its own personnel in managing PDB projects. Because WSDOT is currently using PDB on a large horizontal project[20], Art McCluskey, the WSDOT State Design-Build Program Manager, noted in the May 8, 2024 meeting that using PDB on an additional project similar in size and complexity to the SR 18 Widening Project would not be possible at this time as WSDOT does not currently have the in house processes or capacity to manage such a project.[21]

d. Although departments of transportation in other states are using PDB, PDB is a relatively new delivery method for Heavy Civil transportation projects. It is a reasonable choice to follow and learn from the experience that other DOTs have had with PDB.

Notwithstanding CPARB's agreement with WSDOT's decision not to use PDB for the SR 18 Widening Project, CPARB recommends that WSDOT continue to develop its PDB program and expertise and consider the use of PDB in future projects. Many of its current policies and processes regarding DB under RCW 47.20.785 can be applied to PDB.

5.1.4. GC/CM and Heavy Civil GC/CM

Although WSDOT is statutorily allowed to use these delivery methods, and the SR 18 Widening Project would meet the criteria set forth in RCW 39.10.340, CPARB does not recommend the use of GC/CM or Heavy Civil GC/CM for the SR 18 Widening Project for the following reasons:

a. WSDOT has limited experience with GC/CM, as it has only used GC/CM for one project: the Seattle Multimodal Terminal at Coleman Dock Project. That project was an overwater trestle replacement with a vertical building rather than a typical highway project. Most of the work consisted of marine construction such as trestle replacement and complex phasing to maintain terminal operations at all times; therefore, the Heavy Civil GC/CM procedure was applicable. WSDOT has never performed a highway project using the Heavy Civil GC/CM delivery method; therefore, WSDOT does not have either the internal personnel or the established processes to effectively manage the GC/CM delivery method[22]. GC/CM has very specific requirements regarding the selection of subcontractors, and WSDOT would need substantial additional time to develop its processes around the delivery method, including its contracts, specifications, and procurement documents.

b. WSDOT would have to completely modify the structure of the current contracts it holds with the consultants for the SR 18 Widening Project and not only hire a designer to complete the design, but it would also be required to hire a consultant with experience with Heavy Civil GC/CM to assist with the management of the Project and train WSDOT staff in this methodology. Without an outside consultant with Heavy Civil GC/CM experience and staff training, WSDOT would not satisfy the RCW 39.10.280 requirement to have an experienced and qualified team to manage the project.[23]

Although CPARB does not recommend the use of Heavy Civil GC/CM for the SR 18 Widening Project, CPARB encourages WSDOT to explore the use of Heavy Civil GC/CM for future projects, including conducting industry outreach, discussions with consultants familiar with Heavy Civil GC/CM, and discussions with other public owners who implement Heavy Civil GC/CM on their projects. Other public owners who have used the current GC/CM statute include the Department of Enterprise Services, Western Washington University, the City of Seattle, Sound Transit, the Port of Seattle, and numerous school districts.

6. CPARB Recommendations For Use of Alternative Delivery Methods

CPARB makes the following recommendations to improve WSDOT's selection and use of project delivery methods:

6.1. Design-Build Delivery under RCW 47.20

- WSDOT ~~sh~~could consider reaching out to the greater construction contracting community, including stakeholders, subcontractors, and small businesses to obtain feedback on the impact of the risk allocation in each project.
- In design-build projects, WSDOT ~~should~~ could consider allowing finalists to provide input to WSDOT during one-on-one meetings regarding pricing and possible escalation in costs since the development of the CEVP. Suggestions on how such communications could occur include:
  - A request from WSDOT for proposers to identify any portion of the project requirements that unnecessarily increase the cost of the project and suggestions to mitigate the problem.
  - A question from WSDOT to proposers~~, contracting community, stakeholders, and others~~ to identify any specific issues with escalation that may impact the project cost.
  - A question from WSDOT early in the RFP process to proposers regarding whether the published cost range for the project is reasonable.
  - Early communication to the industry and possible modification of the RFP documents to reflect escalation or other changes in the project that may impact cost after the development of the CEVP.
- WSDOT ~~should~~ could examine its current CEVP (cost estimating) practices and determine whether there are other areas that could be improved on the estimating process.
  - Review justification to award memos to adjust future estimates.
  - Conduct the CEVP in a timely manner and as close to the advertisement for the project as possible.
  - Include consideration of the delivery method as part of the CEVP.

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- WSDOT ~~should~~ could foster robust communication with the construction industry early in the project development regarding potential issues with supply chain, escalation, or other price based issues so that these risks can be included in the CEVP process.
- WSDOT ~~should~~ could consider the use of a budgeting technique that establishes a fixed upper limit for the project budget and treats the scope of the work as a variable, much like an "accordion". Suggestions to utilize this technique include:
    - WSDOT identifies project requirements that are fixed and must not be changed and the project requirements that could potentially be varied. WSDOT could then use the one-on-one meetings to modify the scope to come within the budget.
    - WSDOT could identify a base scope and then identify alternates with optional scope. Proposers would put together a package to maximize the scope under the budget.
    - For this technique to be successful, WSDOT would base the selection, in part, on the best overall scope within the fixed budget.
- WSDOT could conduct candid discussions review the risk and commercial terms such as bonds and warranties with the proposers during the RFP process and modify the terms to make the assignment of risk more attractive, less expensive, and more efficient.
- WSDOT ~~should~~ could examine national trends on risk transfer in large design-build projects and review risk with the industry including the following:
    - Splitting projects into manageable projects
    - Eliminating inequitable risk transfer
    - Options for insurance packages
    - Difficulties with the inability of contractors to bond large projects.
    - Discuss issues with the inability of contractors to bond large projects.
- Discussions within WSDOT should be specific to each project and ~~should~~ could be broader to include the industry.
- Consider adding a question in the checklist that asks whether the agency has sufficient budget to use the delivery method.
- If project costs start to outweigh the benefits or allocated budget, WSDOT ~~should~~ could be more willing to stop and re-think the viability of the project. WSDOT ~~should~~ could include adherence to the budget as part of the process of evaluating the delivery method.
- WSDOT ~~should~~ consider splitting mega projects into smaller projects to increase competition and reduce risk to the parties proposing on the projects. Construction companies will have difficulty obtaining the required statutory bond for more than $500 million. When projects are very large, design-builders and contractors will include additional cost as a continency to reflect the increased risk for the project.
- ~~The statute sets a very low threshold regarding the difference between the engineer's estimate and the price proposals for the purpose of reporting to the transportation committee. For example, $10,000,000 represents roughly 2.5 percent of a $400 million bid proposal, which is not reasonable. At a minimum, the Legislature should consider increasing this amount to at least ten percent of the engineer's estimate.~~
- ~~The Legislature should re-examine the requirement to pause the award of the project if the costs come in above the engineer's estimate. Even the prospect of a delay in the award after the submission of price proposals could cause an increase in the price to protect against escalation of prices while WSDOT reports the information. Further, such~~

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~~a delay could also complicate the payment of stipend and impact a design builder's or contractor's decision to propose on the project.~~

6.2. Delivery Under Other Alternative Delivery Methods

CPARB is examining the use of other delivery methods by WSDOT and will provide recommendations with its final report.

- ~~WSDOT should further develop its PDB processes and expertise and consider the delivery method for additional projects as it becomes appropriate.~~
- ~~WSDOT should explore the use of Heavy Civil GC/CM for future projects, including conducting industry outreach, discussions with consultants familiar with Heavy Civil GC/CM, and discussions with other public owners who implement Heavy Civil GC/CM on their projects.~~

6.3. Impact of the Delivery Method on Cost Certainty

CPARB recognizes the legislature's concern regarding cost certainty and consistency with the Engineer's Estimate in construction projects. The recommendations above are supported by ~~from CPARB to consider expanded use of alternative delivery methods to achieve cost certainty as well as other project benefits is supported by~~ research by universities, industry organizations, other departments of transportation, and the Federal Highway Administration. A summary of some of the findings is set forth below. Links to all of the studies can be found in the endnotes. Unique projects require unique solutions to achieve cost certainty and ultimately best value to taxpayers. The case studies and research listed below ~~should~~ could be used with critical evaluation to the specific applications of the specific project. If WSDOT would like a more thorough analysis of the impact of the selection of the delivery method on cost certainty, it ~~should~~ could consider hiring an outside consultant or conducting research through a university or industry group.

- *Alternative Contracting Method Performance in U.S. Highway Construction, FHWA Publication No. FHWA-HRT-17-100*, research performed by the University of Colorado, Boulder, the University of Kansas, and Hill International, Inc., April 2018.[24]
  - 291 completed highway projects
  - Comparison of DB/Low Bid, DB/Best Value, DBB, and CM/GC (comparable to GC/CM). Note that PDB is not included in this study.
  - Projects using DB and CM/GC have notably shorter durations than projects using DBB (p. 11-12)
  - Award growth (engineer's estimate to award). CM/GC has the highest award growth, but the cost certainty is slightly more accurate with CM/GC. There is no statistically significant difference between the award growth between DBB, DB/LB and DB/BV. (p. 15)
  - Cost growth (award to final). "[T]here is no statistically significant difference in cost growth between any of the contract methods at the 95-percent confidence level." (p. 16)
- *Examination of Project Duration, Project Intensity, and Timing of Cost Certainty in Highway Project Delivery Methods*, Arthur L.C. Antoine, Ph.D.; Douglas Alleman, S.M.ASCE; and Keith R. Molenaar, M. ASCE, Journal of Management in Engineering, ASCE, October 2, 2018[25]

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- 136 projects completed between 2004 and 2015
- Both CM/GC and DB have shorter average project durations than DBB.
- Alternative contracting methods provide much earlier cost certainty.

- *Revising Project Delivery Systems Performance from 1998 to 2018*, Bryan Franz, M.ASCE; Keith R. Molenaar, M. ASCE; Bradley A.M. Roberts, Journal of Construction Engineering and Management, ASCE, November 19, 2020[26].
  - "Most studies confirm that DB projects outperform Construction Manager at Risk (CMR) and DBB in the public infrastructure sector."
  - "DB and CMR outperform DBB in cost and schedule performance."
  - "With respect to unit cost and cost growth, DB has the best performance on average. When all other variables were held constant, projects using DB are expected to cost 1.9% less per square foot when compared to CMR, and 0.3% less when compared to DB. Similarly, projects using DB are expected to average 2.4% less cost growth than a similarly scoped project using CMAR and 3.8% less cost growth than a project using DBB."
  - "When all other variables were held constant, projects using DB are expected to have 3.9% less schedule growth than a comparable project using CMR and 1.7% less schedule growth than a project using DBB."
  - *Note: this study was also published in a joint effort by the Charles Pankow Foundation, the Construction Industry Institute, the University of Colorado, Boulder, and the University of Florida*
- *Design-Build Effectiveness Study*, *Final Report*, USDOT – Federal Highway Administration, January 2006[27].
  - "On average, the managers of design-build projects surveyed in the study estimated that design-build project delivery reduced the overall duration of their projects by 14 percent, reduced the total cost of the projects by 3 percent, and maintained the same level of quality as compared to design-bid-build project delivery."
- *Critical Comparison of Progressive Design-Build and Construction Manager/General Contractor Project Delivery Methods*, Transportation Research Board, Vol. 2673, 261-268 (2019) Douglas D. Gransberg, and Keith R. Molenaar[28]
  - Owner rationale for the selection of PDB includes incorporating the designer's expertise without having to create a baseline design, early verification of construction costs reduce surprises in the price, early integration of the owner, constructor and designer at the programming phase, and value analysis of project standards.
- *Design-Build State of Practice, Recommendations for Agencies and Industry on Effective Project Delivery*, ACEC Research Institute in partnership with the University of Colorado, October 2022[29]
  - Owners should select appropriate projects for the DB delivery method and avoid transferring outsized, inequitable risks to the DB team.
  - Owners who successfully implement DB projects have well-integrated teams who are educated in DB and the difference between DB and DBB.

6.4. Recommendations to the Legislature

CPARB provides the following recommendations to the Legislature regarding the statute:

- Design-Builders and Contractors include cost in each bid and proposal for risks that may be encountered. The statute requires WSDOT to pause the procurement and contract execution if the bid proposal is in excess of five percent or $10,000,000 of the engineer's estimate. This ~~The statute sets a very low~~ threshold is very low for large projects ~~regarding the difference between the engineer's estimate and the price proposals for the purpose of reporting to the transportation committee.~~ For example, $10,000,000 represents roughly 2.5 percent of a $400 million bid proposal, and a bid proposal that comes within 2.5 percent of the engineer's estimate is a reasonable amount. ~~which is not reasonable.~~ At a minimum, the Legislature ~~sh~~could consider increasing this amount to at least ten percent of the engineer's estimate.
- The Legislature should re-examine the requirement to pause the award of the project if the costs come in above the engineer's estimate. Even the prospect of a delay in the award after the submission of price proposals could cause an increase in the price to protect against escalation of prices while WSDOT reports the information. In such case, the measure the legislature included in the statute to increase the likelihood that bid proposals would come in near the engineer's estimate would have the opposite effect. Further, such a delay could also complicate the payment of stipend and impact a design-builder's or contractor's decision to propose on the project.

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List of Appendices

A. *Meeting Minutes* of CPARB Committee.
March 27, 2024: https://des.wa.gov/sites/default/files/2024-04/2024-03-27-WSDOT-PDMRTF-minutes.pdf
April 10, 2024: https://des.wa.gov/sites/default/files/2024-04/2024-04-10-WSDOT-PDMTF-minutes.pdf
April 24, 2024: https://des.wa.gov/sites/default/files/2024-05/2024-04-24-WSDOT-PDMTF-minutes.pdf
May 8, 2024: https://des.wa.gov/sites/default/files/2024-05/2024-05-08-WSDOT-PDMRTF-minutes.pdf
May 22, 2024: (Draft)
B. SR 18 Widening Project PDMS Checklist: https://des.wa.gov/sites/default/files/2024-03/2023-01-10-PDMSG-checklist-SR18.pdf
C. *Progressive Design-Build, a Design-Build Done Right Deeper Dive*, Design-Build Institute of America https://store.dbia.org/product/design-build-done-right-universal-best-practices-2023/

[1] Link to information regarding CPARB: https://des.wa.gov/about/committees-groups/capital-projects-advisory-review-board-cparb
[2] Link to WSDOT Project Delivery Method Attribute Comparison Spreadsheet: https://wsdot.wa.gov/sites/default/files/2021-10/PDM-Attribute-Comparison.pdf
[3] Review of WSDOT's Implementation of Design-Build Project Delivery, May 17, 2016, prepared by Hill International Inc., https://leg.wa.gov/JTC/Documents/Studies/Design%20Build/Task3_WhitePaper.pdf
[4] Link to WSDOT's Design-Build Manual: https://wsdot.wa.gov/engineering-standards/all-manuals-and-standards/manuals/design-build-manual
[5] Link to WSDOT's Design-Build Delivery Method Guidance Process: https://wsdot.wa.gov/engineering-standards/project-management-training/project-management/project-delivery-method-selection-guidance
[6] The DBIA Certification demonstrates that the recipient has taken three day long classes on design-build practice, contracts and risk management and successfully passed the DBIA Certification exam. Recipients with a full DBIA certification have also demonstrated to the DBIA Certification Board that they have a minimum number of years' experience with design-build projects. Recipients with an Associate DBIA certification either do not have the requisite experience or they are in an affiliated profession that does not typically work full time on design-build projects. Recipients with an FDBIA designation are DBIA "Fellows", which indicates at least 10 years' certification as well as demonstrated substantial impact within the industry.
[7] DBIA Progressive Design-Build, a Design-Build Done Right ® Deeper Dive, Appendix C.
[8] Link to SR 18 – Widening – Issaquah/Hobart Rd to Raging River – Phase 1 (L1000199) Project https://wsdot.wa.gov/construction-planning/search-projects/sr-18-issaquah-hobart-rd-deep-creek-widening
[9] Link to WSDOT Report to WSDOT PDM Task Force April 10, 2024: https://des.wa.gov/sites/default/files/2024-04/2024-04-10-SR18-Widening-TF-presentation.pdf
[10] WSDOT Project Risk Management Guide: https://wsdot.wa.gov/publications/fulltext/CEVP/ProjectRiskManagementGuide.pdf
[11] April 24, 2024 WSDOT PDM Task Force meeting minutes, p. 4.
[12] April 24, 2024 WSDOT PDM Task Force meeting minutes, p. 4.
[13] April 10, 2024 WSDOT PDM Task Force meeting minutes, p. 4.
[14] Link to PDSM Checklist for SR 18 Widening Project. https://des.wa.gov/sites/default/files/2024-03/2023-01-10-PDMSG-checklist-SR18.pdf.
[15] April 24, 2024 WSDOT PDM Task Force meeting minutes, p. 5
[16] April 24, 2024 WSDOT PDM Task Force meeting minutes, p. 4.
[17] April 10, 2024 WSDOT PDM Task Force meeting minutes, p. 5.

[18] April 24, 2024 WSDOT PDM Task Force meeting minutes, p. 4.
[19] April 24, 2024 WSDOT PDM Task Force meeting minutes, p. 5.
[20] WSDOT is using PDB on the SR 167, I-5 to SR 161 New Expressway (Stage 2b) Project
[21] May 8, 2024 WSDOT PDM Task Force meeting minutes, p. 4.
[22] May 8, 2024 WSDOT PDM Task Force meeting minutes p. 2.
[23] May 8, 2024 WSDOT PDM Task Force meeting minutes, p. 4
[24] *Alternative Contracting Method Performance in U.S. Highway Construction, FHWA Publication No. FHWA-HRT-17-100*, research performed by the University of Colorado, Boulder, the University of Kansas, and Hill International, Inc., April 2018. https://des.wa.gov/sites/default/files/2024-05/WDSOT-PDMRTF-TechBrief-FHWA-AltContMethodPerformance-04-2018.pdf
[25] *Examination of Project Duration, Project Intensity, and Timing of Cost Certainty in Highway Project Delivery Methods*, Arthur L.C. Antoine, Ph.D.; Douglas Alleman, S.M.ASCE; and Keith R. Molenaar, M. ASCE, Journal of Management in Engineering, ASCE, October 2, 2018 https://des.wa.gov/sites/default/files/2024-05/WDSOT-PDMRTF-ExaminationProjDurationIntensityTimingofCostCertaintyHwyProjDeliveryMethods-2019.pdf
[26] *Revising Project Delivery Systems Performance from 1998 to 2018*, Bryan Franz, M.ASCE; Keith R. Molenaar, M. ASCE; Bradley A.M. Roberts, Journal of Construction Engineering and Management, ASCE, November 19, 2020 https://des.wa.gov/sites/default/files/2024-05/WDSOT-PDMRTF-RevisitingPerformanceResearch-Cost-CII-Pankow2018.pdf
[27] *Design-Build Effectiveness Study*, *Final Report*, USDOT – Federal Highway Administration, January 2006 https://des.wa.gov/sites/default/files/2024-05/WDSOT-PDMRTF-USDOT-FHA-Design-BuildEffectivenessStudy.pdf
[28] *Critical Comparison of Progressive Design-Build and Construction Manager/General Contractor Project Delivery Methods*, Transportation Research Board, Vol. 2673, 261-268 (2019) Douglas D. Gransberg, and Keith R. Molenaar https://des.wa.gov/sites/default/files/2024-05/WDSOT-PDMRTF-CriticalComparisonDB-CMGC-Gransberg-Molenaar-2019.pdf
[29] *Design-Build State of Practice, Recommendations for Agencies and Industry on Effective Project Delivery*, ACEC Research Institute in partnership with the University of Colorado, October 2022 https://program.acec.org/hubfs/ACEC%20Research%20Institute%20Design-Build%20State%20of%20Practice%20-%20Final%20Report.pdf?utm_campaign=Design%20Build%20Study&utm_medium=email&_hsenc=p2ANqtz-8rcrLGw5V5tdbWjNjJVRFVpQ0O10BrWq3vl8D9vLc_97XW882zJ21voAePwfAEPO4IsQWEL3EIEnrh5NuPAfaA-Luu_A&_hsmi=229396031&utm_content=229396031&utm_source=hs_automation