Qualifications to Provide Design and Construction Support for the State Route 3 Freight Corridor – New Alignment

Submitted to
Washington State Department of Transportation
Tumwater, Washington

22 October 2018
**1A. Expertise of Project Team**
The BergerABAM team has been working with the Washington State Department of Transportation (WSDOT) for over 50 years on highways, interchanges, bridges, and transportation projects throughout Washington. The table to the right summarizes each team member firm proposed to support the State Route 3 (SR 3) Freight Corridor New Alignment project.

**BergerABAM**
BergerABAM will serve as prime consultant, providing project management, roadway design, drainage and hydraulics, utilities, environmental and permitting, and construction support for either design-build or design-bid-build delivery method.

**1 Alliance Geomatics (DBE/MBE)**
1 Alliance Geomatics will provide surveying and field data collection as necessary. They are a certified Disadvantaged Business Enterprise (DBE) and Minority-Owned Business Enterprise (MBE).

**Archaeological Investigations Northwest**
Archaeological Investigations Northwest (AINW) will provide cultural resource consulting services as required for the project.

**CivilTech Engineering (DBE/MBE)**
CivilTech Engineering will provide structural engineering support and structural site data analysis for this project. They are a certified DBE and MBE.

**Concord Engineering (DBE/MWBE)**
Concord will provide traffic modeling, signal and illumination design, and traffic operations modeling for this project. They will validate travel projections and land use changes by comparing historical and existing traffic volumes and patterns. They are a certified DBE and Minority- and Woman-Owned Business Enterprise (MWBE).

**EnviroIssues (DBE/WBE)**
EnviroIssues will provide public outreach and involvement, as well as assist with any meeting facilitation and strategic communication. They are a certified DBE and Woman-Owned Business Enterprise (WBE).

**Fehr & Peers**
Fehr & Peers will provide traffic modeling, including travel demand forecasting, and corridor operations modeling.

**HWA Geosciences (DBE/MWBE)**
HWA Geosciences will provide geotechnical engineering services as required for the project. They are a certified DBE and MWBE firm.

**Michael Minor & Associates (DBE/MBE)**
Michael Minor & Associates will provide noise and air quality consulting services required as part of the environmental assessment update. They are a DBE- and MBE-certified firm.
Team Organizational Structure

The BergerABAM team is committed to working with Minority, Small, Veteran, and Women Business Enterprises (MSVWBE) and is committed to meeting the 26 percent MSVWBE goal for this project. The organizational chart below shows the proposed team and the respective roles each firm will provide.

1B. Office Locations of Each Team Member Firm

BergerABAM and our team member firms have a vast presence within the state of Washington, including the greater Portland metropolitan area. The graphic below depicts number of employees and types of expertise that is available at each office location.
1C. Prime Consultant and Subconsultant Projects within Last Three Years

BergerABAM has a past and/or current working relationship with each team member firm. Within the last three years, a few projects we have collaborated on are shown below, followed by our team’s relevant project experience that demonstrates we have the required expertise to successfully execute this project.

1D. Current Availability of Key Staff

The BergerABAM team is organized to serve and work closely and responsively with WSDOT. The BergerABAM team uses project planning tool that shows current and projected availability for all assigned project staff so that adjustments can be made, if needed, to meet project deliverables. The project manager will allocate the appropriate amount of resources in the early stages of the project to sufficiently execute the scope of work.

After review of present commitments and anticipated workloads, the following availability has been determined for the key personnel and other staff resources. The information is presented as hours available per month for the length of the project, as requested.
1E. Project Team Experience

City of Fife | I-5 and Port of Tacoma Road Interchange and Freight Corridor, Fife, WA | 2009 to Present | $1.5 million

The City of Fife retained the services of BergerABAM to prepare an Interchange Justification Report (IJR) and National Environmental Policy Act documentation and construction documents at the Interstate-5 (I-5)/Port of Tacoma Road interchange. The project included an extensive alternatives development and screening process to identify necessary improvements to provide efficient movement of traffic into the Port and improve access safety and reliability. The study included preliminary geometric design for over a dozen alternatives and a 30-year horizon Travel Demand Forecasting and VISSIM micro-simulation modeling. The proposed project will substantially improve congestion and provide the added benefits of limited impacts to Port-bound traffic during construction.

In addition to showing the merits of the selected alternative over the starting point plan, the produced VISSIM simulations were used as an important piece in presentations with the City Council and other project partners. The simulations were also instrumental in gaining consensus with WSDOT and Federal Highway Administration (FHWA). In addition to public involvement, IJR, NEPA and SEPA, BergerABAM produced a hydraulics report, bridge plans for approval, full WSDOT documentation, right-of-way plans, cost estimating, phasing plans, and full design-bid-bid services for construction. The first phase of the project is currently under construction. BergerABAM has recently begun design of the second phase of the project.

WSDOT | Southbound HOV I-5/Portland Avenue to Port of Tacoma Road | Tacoma, WA | 2012 to Present | $2 million

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BergerABAM has supported the Olympic Region as lead designer and RFP for design-build developer for the I-5 southbound High Occupancy Vehicle (HOV) project; which is the last project in the Tacoma/Pierce County HOV Program. The project improves traffic flow through the area by increasing capacity and realigning I-5 to remove sharp, closely spaced curves in the alignment. A new southbound bridge over the Puyallup River provides additional lane capacity along the new alignment.

BergerABAM focused on the early identification of a construction staging and phasing plan that minimized impacts during construction. The complex and detailed staging plan included the demolition of the two existing bridges over the Puyallup River, demolition of the L Street bridge, and replacement of all the existing portland cement concrete pavement while maintaining the existing I-5 lane count and realigning four northbound and southbound ramp connections. Following the completion of the 30 percent design of the overall project and 90 percent construction staging, the BergerABAM team completed a detailed practical design/least-cost planning evaluation that resulted in a savings of more than $100 million—a reduction of more than one-third of the original project cost. BergerABAM produced multiple cost estimates, prepared RFP for design-build procurement. Currently, under a new contract, BergerABAM is serving as WSDOT’s lead program manager and reviewer of all design-builder produced submittals.

BergerABAM served as colead designer for the SR 520 floating bridge replacement. The design team on this $750 million design-build project was responsible for all civil/roadway designs, including geometric design, InRoads modeling, channelization plans, deviations, design documentation checklist documentation, construction staging, traffic maintenance, and staged temporary erosion and sedimentation control. BergerABAM designed connections into an in-line flyer stop to serve eastbound and westbound transit. The team was also responsible for intelligent transportation systems (ITS), all electronic tolling, coordination and infrastructure, electrical and mechanical systems, and bridge architecture elements. Other design components included a bridge maintenance facility and a boat dock designed to fit beneath the bridge, floating bridge superstructure, pontoon interfaces, floating bridge anchors, transition spans, Pier 36 (western-most pier), east approach bridge, roadway tie-ins, and the extension of the regional path along the north side of SR 520.
Subconsultant Experience

1 Alliance Geomatics
1. WSDOT | I-405/SR 167 Interchange Direct Connector, Renton, WA | 2015 to 2017 | Approximate amount received: $651,000. The project included constructing a new flyover ramp connecting the High-Occupancy Toll (HOT) lanes on SR 167 to the carpool lanes on I-405, and widening the existing I-405 bridge. This ramp will improve the traffic flow and safety at this critical interchange. The 1 Alliance team provided mapping and surveying services, including construction staking, channelization, generation of MicroStation electronic topographic base map, and InRoads existing ground surface model.

Archaeological Investigations Northwest
2. WSDOT | State Route 502 Corridor Widening, Battle Ground, WA | 2006 to 2015 | Approximate amount received: $556,000. AINW conducted the cultural resource study for the SR 502 connection between Battle Ground, Washington, and the I-5 interchange near the Gee Creek rest area. A total of 20 archaeological resources were identified and 89 historic resources were documented. Between 2014 and 2015, AINW conducted archaeological monitoring during construction.

CivilTech Engineering
3. SDO | Northgate Pedestrian Bridge, Seattle, WA | 2016 to 2018 | Approximate amount received: $295,000. The Seattle Department of Transportation (SDOT) plans to construct a new pedestrian and bicycle bridge over I-5 and 1st Avenue Northeast to improve non-motorized access within the Northgate community. A 30 percent design concept was developed during the preliminary phase, but construction costs exceeded SDOT’s available budget. CivilTech was part of the final design team that reviewed the preliminary concept and looked for ways to reduce construction costs. After the structure type and alignment was finalized, CivilTech was responsible for designing the east and west approaches of the bridge and retaining walls.

Concord Engineering
4. City of Bellevue | Bellevue Way Southeast High Occupancy Vehicle Lane/112th Avenue Southeast “Y” to Interstate 90, Bellevue, WA | 2016 | Approximate amount received: $116,000. The Bellevue Way Southeast HOV project evaluated the impacts of widening the roadway in order to provide a southbound HOV lane and an outside shoulder to increase person-capacity in the corridor and to improve transit speed and reliability. Concord led the operational analysis of proposed roadway configuration alternatives. Concord documented the results of the operational analysis in the transportation discipline report for SEPA, completed a lighting analysis of the corridor, and prepared the 30 percent design for signals, lighting, and signage modifications for the preferred alternative.
EnviroIssues
5. **Mason Transit Authority | Comprehensive Service Analysis, Mason County, WA | 2017 to 2018 | Approximate amount received: $15,500.** Mason Transit Authority (MTA) conducted a comprehensive service analysis to ensure continued safe, reliable, and efficient transit across the county. EnviroIssues implemented targeted outreach tactics by partnering with transit planners and MTA to raise project awareness and encourage public feedback. EnviroIssues held open houses to share information and collect input from current and future riders. Through online surveys and in-person meetings, feedback was gained and used to develop transit solutions focused on meeting community needs.

Fehr & Peers
6. **Kitsap Transit | State Route 305 Corridor, Kitsap County, WA | 2017 to 2018 | Approximate amount received: $73,550.** Fehr & Peers led the travel demand modeling and analysis for multimodal access through the SR 305 corridor, including non-motorized access to transit. Fehr & Peers also provided support for the needs analysis using the WSDOT multimodal framework measures and metrics and the safety improvement analysis using the Highway Safety Manual procedures. A key feature of the project was the use of StreetLight data to identify existing circulation issues.

HWA Geosciences
7. **City of Lynnwood | 228th Street Southwest Corridor Improvements, Lynnwood, WA | 2014 to 2016 | Approximate amount received: $77,000.** HWA Geosciences provided geotechnical engineering recommendations for the extension of 228th Street from SR 99 to 76th Avenue. The project involved designing various transportation improvements including back-to-back mechanically stabilized earth walls over soft compressible soils, underground stormwater vaults and signalization improvements. HWA’s settlement analysis was critical in designing the proposed improvements and associated temporary shoring systems required to protect adjacent structures.

Michael Minor & Associates
8. **WSDOT/City of Kelso | West Main Street Realignment, Kelso, WA | 2009 to 2011, 2018 (new reevaluation in process) | Approximate amount received: $35,000.** The West Main Street realignment project stems from concerns over growing traffic, congestion and accidents along the West Main Street corridor. Michael Minor & Associates performed a detailed traffic noise study for this project which included monitoring noise levels within the project corridor, performing existing and future traffic noise projections using Traffic Noise Modeling, and conducting a detailed noise mitigation analysis. Michael Minor & Associates also performed an air quality analysis and found no significant air quality impacts and met the conformity requirements of the Clean Air Act.
Jilma Jiménez  
Project Manager  
BergerABAM

**EDUCATION**
- BS, Engineering, Walla Walla University  
- MS, Engineering, Wright State University

**LICENSES/CERTIFICATIONS**
- Professional Engineer: WA, 1998  
- Certified Erosion and Sediment Control Lead: WA, 2010

**YEARS OF EXPERIENCE**
- 30

Jilma is a highly respected and effective manager in the design, project management, and review of highway and interchange projects. Her areas of expertise include roadway geometrics and channelization design, variance inventory, deviations, environmental review, drainage and utility coordination and design, and public outreach. Jilma is experienced with managing projects with multiple stakeholders, jurisdictions, and community groups; local, state, and federal environmental documentation and permitting requirements; and constructability and phasing. She also has extensive experience in the design and coordination of projects that must obtain WSDOT approval and involves WSDOT’s complex Electronic Data Standards. This section describes her experience as project manager on WSDOT and similar projects.

As illustrated in the graphic below, she has relevant experience managing projects with the same features and issues that will be encountered in the planning, design, and construction of the SR 3 Freight Corridor new alignment project.
2A. Experience on Similar Projects

**WSDOT | Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA | 2012 to Present**

Project manager for this project that is part of the Tacoma/Pierce County HOV Program, a series of highway projects to provide operational improvements and HOV lanes on I-5, SR 16, and SR 167 for WSDOT. Led all phases of design phases, including the all civil/roadway elements, channelization plans, 3-D InRoads modeling, deviations, demolition, girder erection plans, traffic modeling, and RFP development. Jilma led the practical design evaluation that identified $100 million in project savings. She also led the development of a complex and detailed staging plan, which included demolition of two existing bridges over the Puyallup River, demolition of the L Street Bridge, and replacement of all the existing portland cement concrete pavement while maintaining the existing I-5 lane count and realigning four northbound and southbound ramp connections. Jilma is currently leading the program management and review support during the design-build procurement.

**City of Fife | I-5 and Port of Tacoma Road Interchange and Freight Corridor, Fife, WA | 2009 to Present**

Project manager for this interchange redesign, including an IJR and NEPA documentation, and full plans, specifications and estimates at the I-5/Port of Tacoma Road interchange. Managed an extensive alternatives development and screening process to identify necessary improvements. Led the design, stakeholder coordination, limited access hearing, right-of-way plans, and permitting functions. The project includes an analysis of the interchange, the local street network, existing and future traffic, and potential improvements. Directed the study that included preliminary geometric design for over a dozen alternatives and a 30-year horizon (2040) Travel Demand Forecasting and VISSIM micro-simulation/ modeling. A one-way diamond couplet was identified as the preferred configuration. The first phase of the project is currently under construction.


Project manager responsible for managing the completion of detailed traffic modeling, alternatives analysis, an IJR, and environmental documentation for this $235 million project, and the $80 million PS&E for Phase 1 for WSDOT. This effort included the study of 12 interchange alternatives and over three dozen alternatives for a new off-ramp connecting the freeway system to the local network. The project was initially unfunded. Working together with WSDOT and the City of Federal Way, Jilma led meetings that demonstrated the value of the selected alternative to decision makers and key stakeholders that resulted in the authorization of $100 million in funding for the first phase of the project. Other relevant project elements included an extensive public involvement campaign; a Technical Advisory Committee; channelization plans; full WSDOT documentation (including five deviations); and wetlands, fish and stream mitigation designs.
2B. Familiarity with Relevant State and Federal Regulations

Jilma has served as project manager on some of the most complex transportation improvement projects in Washington, involving concept design, environmental studies and documentation, traffic analysis, and public outreach and facilitation. Through this experience, she has gained extensive knowledge and familiarity with numerous state, WSDOT, federal, and local agency regulations and procedures.

Specifically, having led the design on numerous roadway and highway projects, Jilma is very knowledgeable of WSDOT's Design Manual, Plans Preparation Manual, Standard Plans, Standard Specifications, Manual on Uniform Traffic Control Devices, AASHTO Green Book, and Roadside Design Guide. She has gained experience with WSDOT's practical design and Least Cost Planning guidelines while managing the design of the I-5/Southbound HOV project. She is very familiar with WSDOT's Environmental Procedures Manual, having managed numerous NEPA and SEPA reviews. Additionally, because of her work with multiple local agencies, Jilma knows the Local Agency Guidelines (LAG) Manual and many other regional guidelines.

BergerABAM has performed five IJR/studies in the last 10 years with Jilma's involvement as project manager or task lead on most of them. As such, our team members know the codes and standards that apply and those that are most important to WSDOT and FHWA reviewers. What is most important to our clients is that the experienced team knows how to satisfy the codes and standards, plus WSDOT and FHWA approval requirements, with minimal effort and maximum efficiency.

For example, the BergerABAM environmental team is accustomed to preparing environmental documentation using WSDOT reader-friendly guidelines. Also, because stormwater drainage is such a sensitive environmental issue today, and when roadways are added to improve interchange movements to existing facilities, BergerABAM's civil engineering staff, with Jilma's leadership, is adept at preparing the associated hydraulics report for WSDOT's timely approval.

The knowledge of current WSDOT and AASHTO highway design standards, coupled with extensive staff experience using MicroStation and InRoads Digital Terrain Model on numerous interchange projects, allows BergerABAM civil engineers to be highly efficient. Under Jilma's direction, the team will be able to quickly and accurately develop interchange alternatives with multiple alignments, horizontal and vertical spatial constraints, and within limited rights-of-way while still meeting WSDOT/AASHTO standards.

2C. Ability to Manage Projects

With her diverse background in project management, communications, subconsultant coordination, technical design, and client advocacy, Jilma has the expertise and knowledge required to execute this project in an effective and professional manner. The table on the next page further demonstrates her ability to manage complex projects.

2D. Professional Licenses and Accreditations

Jilma's licenses can be found on page 8.
<table>
<thead>
<tr>
<th>CRITERIA 1</th>
<th>CRITERIA 2</th>
<th>CRITERIA 3</th>
<th>CRITERIA 4</th>
<th>CRITERIA 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CRITERIA 2: Qualifications of Proposed Project Manager</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Project Manager’s Ability to Manage Projects

- **Schedule**
- **Scope Creep**
- **Budget Issues**
- **Project Changes**

#### Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA

- Led the team in a new design process that focused on the early identification of a construction staging and phasing plan to minimize impacts during construction. Because of this proactive approach, the project was completed on schedule.
- Worked with the team to create a cost estimating tool for WSDOT to determine what scope items can be added and/or removed from the project design to meet available funding based on unknown legislative changes.
- Managed budget by producing monthly earned-value curves and comparing the original plan to actual progress and expenditures. Any deviations from the original scope were immediately addressed and corrected to avoid impact to the overall budget.
- In response to a reevaluated project funding priority scheme, Jilma led the team in completing a detailed practical design/least-cost planning evaluation and design phase to identify options while making the best use of available infrastructure. Despite the funding changes, the result was a project that completed the items necessary to meet the goals of the program and saved more than $100 million (a reduction of more than one-third of the original project cost).

#### I-5 and Port of Tacoma Road Interchange and Freight Corridor, Fife, WA

- Created and is tracking each task using NewForma project information software that allows each issue, change, or risk item to be tracked separately; linked to other supporting project documentation; and assigned to designated individuals for action. This provides Jilma up-to-date information on project progress to keep each task on schedule.
- After FHWA rejected a proposed conceptual redesign of the interchange, BergerABAM conducted a “blank slate” analysis of options that would substantially improve congestion and would limit impacts to Port-bound traffic during construction. As a result, FHWA quickly endorsed the project.

#### I-5/SR 161/SR 18 Triangle Interchange Improvements, Federal Way, WA

- Led the production of the schedule following WSDOT’s Project Delivery Information System standards and Master Deliverables List. The resource-loaded schedule allowed the state to obtain current project information at all times, served as an integrated budget and schedule monitoring tool, and allowed internal review/reporting of the interchange project’s progress alongside all other state projects.
- The interchange project design proceeded well in accordance with a carefully developed workplan that produced a 25 percent savings in design fees for WSDOT.
- During the 60 to 90 percent design phase, WSDOT wished to take advantage of the tight-bid market by adding a second flyover to the Phase 1 project. WSDOT bridge staff were not available to take on the design of the second flyover. Jilma crafted a plan that offered the state the ability to include the design of the new flyover without an increase in consultant design fees and within the same design schedule to meet the ad date.
- A significant challenge for the project was identifying and designing a maintenance of traffic (MOT) plan that maintained the existing lane count on each facility during peak hours, even through the construction and erection of girders over I-5. To address the MOT challenge, Jilma led the design team in preparing detailed construction staging and traffic control plans that included a concurrent work matrix and over 250 plan sheets. These plan sheets detailed a 45-stage construction staging, traffic control, and detours plan to construct the new flyover ramps and structures across I-5 with minimal traffic disruptions. The plan included concurrent work-and-stage road closure matrices. Originally viewed by some as too detailed, this plan was quickly endorsed by WSDOT traffic engineers, who recognized it to be a valuable tool to minimize potential conflicts during construction.
3A. Key Team Members Qualifications

Bob Fernandes
Quality Assurance/Quality Control Advisor
BergerABAM

**RELEVANT PROJECT EXAMPLES**
**City of Fife | I-5 and Port of Tacoma Road Interchange and Freight Corridor, Fife, WA | 2004 to 2015:** Project executive for the Port’s interchange redesign with I-5 for the City of Fife. Project components also included public involvement, channelization plans preparation, preliminary right-of-way identification, cost estimating, and phasing plans development.

**WSDOT | Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA | 2012 to 2015:** Project executive for operational improvements that included a new L Street bridge, new realigned ramps connecting southbound I-5 to East 27th Street/Portland Avenue/Bay Street, removal of an existing I-5 structure and placement of lightweight fill spanning large existing utilities buried in areas containing poor soils.

**WSDOT | SR 509/East D Street Slip Ramps, Interchange Justification Report, Tacoma, WA | 2012 to 2014:** Project executive to improve reliability of traffic access and mobility, especially for freight and trucks, while maintaining safety of the adjoining local, state, and federal facilities. This work included Travel Demand Forecasting, VISSIM modeling of the preferred alternative, and completion of an IJR.

**UNDERSTANDING OF WSDOT:** Bob has served as a key technical leader on various WSDOT projects throughout the state and has experience leading design and management services for multiple phase and design-build projects. He was co-chair of the WSDOT/American Council of Engineering Companies structures subcommittee with a key role in the development of recommendations for submittal review requirements that were adopted by WSDOT.

**Ray Outlaw**
Communications Lead
EnviroIssues

**EDUCATION**
- BS, Environmental Science, University of Washington Tacoma

**LICENSES**
- International Association of Public Participation, Certificate in Public Participation

**YEARS OF EXPERIENCE**
- 12

**RELEVANT PROJECT EXAMPLES**
**WSDOT | SR 3/SR 16 Bremerton Economic Development Study, Bremerton, WA | 2008 to 2009:** Public involvement specialist to support WSDOT’s planning study to assess current and future transportation needs and provide recommendations to address short- and long-term safety and mobility deficiencies. Responsible for developing electronic and print communications materials; planning, coordinating, and staffing community events; and reviewing and analyzing public comments for stakeholder review.

**WSDOT | SR 167 Extension Project, Puyallup and Tacoma, WA | 2007 to 2008:** Public involvement specialist responsible for managing government relations, community outreach, and public involvement project activities. Responsibilities included preparing communications materials, presentations and talking points and monitoring legislative activities and preparing summaries. Drafted dialogue center responses and coordinated events, as well as staffed informational booths at community fairs and festivals.

**UNDERSTANDING OF WSDOT:** Ray brings experience leading comprehensive outreach and engagement efforts on a wide range of WSDOT projects. Having served as an extension of WSDOT staff as a colocated communications consultant on the SR 167 extension project, Ray brings an understanding of WSDOT policies and practices. He combines a comprehensive understanding of public involvement best practices, as defined by the International Association of Public Participation, with a unique ability to identify, develop and integrate online technologies that enhance projects.
Jose Suazo
Roadway and Construction Phase Task Lead
BergerABAM

RELEVANT PROJECT EXAMPLES
WSDOT | Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA | 2012 to 2015: Roadway design engineer with responsibilities that include performing roadway geometric verification and digital terrain modeling for the project. Developed multiple construction staging alternatives for the project’s Transportation Management Plan.

City of Fife | I-5 and Port of Tacoma Road Interchange and Freight Corridor, Fife, WA | 2004 to 2015: Project engineer for the development of channelization plans, geometric design, an interchange justification report, wetland and flood plain mitigation, a hydraulics report, MOT, and project schedule for development of Phase 1 PS&Es.

WSDOT | SR 520 Floating Bridge and Landings Design-Build, Seattle, WA | 2004 to 2015: Design engineer responsible for geometric review for the SR 520 Floating Bridge and Landings design/build project. Developed design deviations and other documents for the design documentation package and developed MOT plans for the project.

UNDERSTANDING OF WSDOT: Jose has 10 years of design experience in transportation engineering that includes knowledge of current WSDOT highway design standards and extensive experience with MicroStation and InRoads Digital Terrain Modeling. Jose has managed the geometric design on multiple projects from preliminary design through final design.

Duffy McColloch
WSDOT Documentation Reviewer and Roadway Designer
BergerABAM

RELEVANT PROJECT EXAMPLES
WSDOT | I-5/SR 510 Interchange (Marvin Road), Lacey, WA | 2018: Project engineer responsible for the maintenance of traffic and construction sequencing for this interchange project. Designed and reviewed construction sequencing, maintenance of traffic, and detour plans for the conversion of the interchange to a diverging diamond interchange. Developed the traffic management plan.

City of Bothell | SR 522 Stage 3 Improvements, Bothell, WA | 2014 to 2018: Lead design engineer for this phase of the improvements project for the City of Bothell. Developed design alternatives for the alignment of the roadway improvements for the widening project, including curb/gutter/sidewalk, driveways, trail, and undergrounding of overhead utilities in a joint utility trench. Completed the channelization plan for approval package that includes channelization design, maximum extent feasible for ADA ramp design, and design variance packages.

WSDOT | Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA | 2018: Task lead for roadway and maintenance of traffic plans for this design-build project. Reviewed maintenance of traffic, detour, and channelization plans to allow for timely construction scheduling. Worked closely with the contractor as a representative of WSDOT’s review team.

UNDERSTANDING OF WSDOT: Duffy has in-depth knowledge of local agency and WSDOT design procedures for roadway projects. Through multidisciplinary design teams, he has helped coordinate the development of channelization plans, construction sequencing and MOT plans, and design analysis and documentation packages. He has a successful history of providing geometric design on multiple projects from preliminary to final design, as well as following through during construction.
CRITERIA 3: Key Team Members Qualifications

RELEVANT PROJECT EXAMPLES

WSDOT | I-5 Northbound HOV Lanes, Tacoma, WA | 2011: Project engineer involved in the layout and design of various segments of drainage conveyance system. This project involved adding HOV lanes on I-5 between Portland Avenue to Port of Tacoma Road. For more than six months, directly worked out of WSDOT office in Olympia to design various stormwater best management practices.

WSDOT | I-405 Stage II Design-Build, Renton, WA | 2009 to 2011: Project engineer for the design of the mitigation stream channel. Prepared temporary erosion and sediment control plans/details for the project, including stabilization of multiple 50-foot-high bare steep slopes with two horizontal to one vertical slope; prepared stormwater pollution prevention plan; and spill, prevention, control, and countermeasures.

WSDOT | Alaskan Way Viaduct Conceptual Drainage Report, Seattle, WA | 2010: Drainage engineer for the development of a stormwater management scheme and concept-level drawings for the two-mile-long Alaska Way Viaduct tunnel project. Prepared conceptual level drainage plans showing conveyance system, detention and water quality treatment to support the project Environmental Impact Statement.

UNDERSTANDING OF WSDOT: Arjun has design experience in stormwater that includes knowledge of current WSDOT Highway Runoff Manual and Hydraulics Manual. He is familiar with WSDOT standards and has extensive experience with MicroStation and InRoads. Arjun has exceptional knowledge of hydraulic and hydrologic tools used by WSDOT such as MGSFlood and StormShed.

Sandy Brodahl
Geotechnical Engineer
HWA Geosciences

EDUCATION
• MS, Geotechnical Engineering, University of Puerto Rico
• BS, Civil Engineering, University of Puerto Rico

LICENSES
• Professional Engineer: WA, 2013

YEARS OF EXPERIENCE
• 10

RELEVANT PROJECT EXAMPLES

City of Lynnwood | Poplar Way Extension Bridge, Lynnwood, WA | 2012 to Present: Geotechnical engineer for the analysis and field explorations in support of the planned new bridge over I-5 to connect Poplar Way with Alderwood Mall Boulevard. The approximately 600-foot-long overpass consists of six lanes with bike lanes and sidewalks on both sides. Ten out of 12 borings drilled along the bridge alignment were drilled within WSDOT right-of-way and required extensive coordination with WSDOT to ensure safe completion.

City of Kirkland | 100th Avenue Northeast Corridor Improvements, Kirkland, WA | 2016 to Present: Geotechnical engineer for the upgrade of 100th Avenue NE alignment from Northeast 145th Street to Northeast 132nd Street. Providing engineering analyses to develop design recommendations for the proposed 14 retaining structures, signal pole and luminaire foundations, stormwater facilities, pavement design parameters, and Juanita Creek culvert replacement.

City of Everett | Grand Avenue Pedestrian and Utility Bridge, Everett, WA | 2014 to Present: Geotechnical engineer for overseeing the field exploration program and identifying soils prone to consolidation settlement and liquefaction.

UNDERSTANDING OF WSDOT: Sandy has provided geotechnical design services for federal, city, and privately funded projects and has extensive knowledge of the WSDOT and FHWA design procedures for road and bridge foundations. She designs successful and cost-efficient recommendations for slope improvements, pavement restoration, retaining walls, drainage, shallow foundations, and signal pole foundations.
Dustin Ong
Structural Engineer
CivilTech Engineering

Marcia Medina
Utilities Designer
BergerABAM

RELEVANT PROJECT EXAMPLES

WSDOT | Interstate 5/State Route 510 Interchange (Marvin Road), Lacey, WA | 2018: Assistant project manager for the construction phasing element of this $80 million reconstruction project for WSDOT. Responsible for adherence to scope, schedule, budget, and quality for the team developing the work zone traffic control sequence that will minimize closures for the I-5 ramps and Marvin Road.

WSDOT | SR 519 Seattle Ferry Terminal, Multimodal Terminal at Colman Dock, Seattle WA | 2015 to 2017: Lead structural engineer for temporary elevated walkways, stairways, and ticketing booth to accommodate the logistics of demolishing and constructing the ferry terminal while it remains in full operation. Responsibilities include structural design, stakeholder coordination site as-built verification, and development of plans and special provisions.


UNDERSTANDING OF WSDOT: Dustin is familiar with the WSDOT project development process, local agency guidelines, contracting procedures, and design requirements. He has worked on many bridge and retaining wall projects that use relevant design manuals and software programs.

EDUCATION
• BA, Civil Engineering, Seattle University

LICENSES
• Civil and Structural Engineer: WA, 1998

YEARS OF EXPERIENCE
• 24

Marcia Medina
Utilities Designer
BergerABAM

RELEVANT PROJECT EXAMPLES

WSDOT | Olympic Region Maintenance and Administration Facility Conceptual Design, Lacey, WA | 2017 to 2018: Site civil engineer-of-record for the conceptual design of a proposed 38-acre regional headquarters facility for WSDOT’s Olympic Region. The facility includes four new buildings with approximately 100,000 square feet of space. The project also requires new public roads to connect to the facility. The conceptual grading, paving, utilities, and stormwater drainage were designed for the project.

UNDERSTANDING OF WSDOT: Marcia has experience working closely with WSDOT on several projects that required extensive coordination amongst numerous project stakeholders, including WSDOT, Seattle Public Utilities, Seattle Department of Transportation, Seattle City Light, railroads, and King County.

EDUCATION
• BE, Civil Engineering, Stevens Institute of Technology

LICENSES
• Professional Engineer: WA, 2006; CA, 2014

YEARS OF EXPERIENCE
• 17
Tony Woody
Traffic Modeling and Analysis Lead
Concord Engineering

City of Bellevue | Bellevue Eastgate Way Study, Bellevue, WA | 2018 to Present: Lead traffic engineer of this comprehensive study in the heavily congested Factoria/Eastgate area, from developing the baseline understanding of currently existing congestion, mobility and access in the area, to the modeling and analysis of roadway alternatives and ultimately the development of a comprehensive recommendation and strategy that is right-sized and forward compatible for implementation.

WSDOT | State Route 16 Tacoma Narrows Bridge to State Route 3 Congestion Study, Seattle, WA | 2016 to Present: Transportation engineer responsible for leading the traffic forecasting, data collection, intersection and freeway traffic analysis, and traffic evaluation criteria for a planning level congestion study along SR 16 in Pierce and Kitsap County. In coordination with the project team and stakeholders, developed a strategic approach using WSDOT’s Practical Solutions approach that integrates a VISUM travel demand model, HCM freeway and intersection operational models, and 3rd party origin-destination data.


UNDERSTANDING OF WSDOT: Tony brings an in-depth knowledge of WSDOT’s practical solutions approach and WSDOT regulations and procedures. He has extensive experience leading traffic analysis, modeling and design projects for WSDOT, including the ongoing WSDOT SR16/SR3 Congestion Study and WSDOT SR 305/SR 3 Suquamish Way VISSIM Traffic Operations Study.

Chris Grgich
Travel Demand Forecasting/Traffic Modeler
Fehr & Peers

WSDOT | Interstate 90/Front Street Interchange Justification Report, Issaquah, WA | 2017 to Present: Transportation planning/traffic engineering lead leading the traffic analysis and travel demand modeling for WSDOT’s I-90/Front Street project. Used the Puget Sound Regional Council (PSRC) model and EMME to develop travel demand forecasts, Dynameq to complete Dynamic Traffic Assignment for design year alternatives analysis, and a VISSIM operational model for traffic operations analysis of the preferred alternatives impact on interchange and mainline highway operations. Chris led the modeling and helped to create unique story boards to communicate the complex alternative analysis to stakeholders.

Kitsap Transit | State Route 305 Corridor Needs Analysis, Bainbridge Island, WA | 2017 to 2018: Transportation planning/traffic engineering lead for the modeling and analysis of multimodal access through the corridor, including non-motorized access to transit. Provided support for needs analysis using the WSDOT multimodal framework measures and metrics, as well as safety improvement analysis using the Highway Safety Manual procedures. Chris was able to characterize traffic trends in the study area using Streetlight Data, Ferry Ridership surveys, and traffic counts. This understanding led to targeted practical solutions for the corridor and a long term vision for future improvements.

UNDERSTANDING OF WSDOT: Chris brings many years of experience working with WSDOT and regional and local agencies, and has a deep knowledge of WSDOT, and local and federal regulations, standards, and procedures. This experience comes from working on numerous roadway design and traffic engineering projects that require both close coordination with WSDOT and adherence to WSDOT design standards.
RELEVANT PROJECT EXAMPLES

WSDOT | State Route 167 Puyallup River Bridge Design-Build, Puyallup, WA | 2013 to 2016: Principal surveyor responsible for the professional standard of care for the design mapping, construction layout, and monitoring programs, including automated motorized total stations for this important design-build project.

City of Kirkland | 100th Avenue Northeast Corridor Improvements, Kirkland, WA | 2015 to Present: Principal surveyor responsible for the professional standard of care for this corridor improvement project. Tasks include research and data compilation; geodetic survey control; field surveying and mapping, and 3-D laser scanning; right-of-way, legal descriptions, and exhibits; and data processing and deliverable generation.

City of Marysville | State Route 529/Interstate 5 Interchange Justification Report, Marysville, WA | 2013 to 2014: Principal surveyor responsible for existing utility research, geodetic and cadastral survey control, field surveying and mapping, scanning for I-5 and SR 529, and office processing of deliverables.

UNDERSTANDING OF WSDOT: Jason has 18 years of public works surveying and mapping experience on large civil engineering and construction projects in the Puget Sound region. He has performed in increasingly responsible positions on major projects for WSDOT and other public and federal agencies.

Jason Nakamura
Surveyor
1 Alliance Geomatics

EDUCATION
- Geomatics, British Columbia Institute of Technology, Canada

LICENSES
- Professional Land Surveyor: WA

YEARS OF EXPERIENCE
- 18

RELEVANT PROJECT EXAMPLES

WSDOT | Interstate 90/Front Street Interchange Justification Report, Issaquah, WA | 2017 to Present: Transportation planning lead to deliver existing and future traffic operation conditions on adjacent arterial streets. Additional responsibilities included representing the project team as the technical traffic expert when developing and finalizing build alternatives. This included presenting changes to traffic operations at the Interchange Justification Report Support Team (IJRST) meetings and helping the project team understand the exiting conditions and future project challenges as they pertain to traffic operations.

King County Metro | On-Call, Seattle, WA | 2017 to Present: Transportation project manager for identifying preferred route alignment to improve transit performance in Seattle. Led the effort to collect existing condition data, including land use changes, to project traffic conditions and transit ridership on the routes. Analyzed the impacts of traffic circulation to understand future changes to traffic patterns and provide recommendations on route alignment.

King County | RapidRide Expansion, East King County, WA | 2017 to Present: Transportation planner for evaluating existing and future no-build conditions and determining the level of transit signal and infrastructure improvements to improve transit speed and reliability along the two 14-mile RapidRide corridors.

UNDERSTANDING OF WSDOT: Pam has been involved in numerous traffic planning and operation studies across Washington State, including developing traffic impact analyses and preferred alternatives, as well as completing entire sections of traffic analysis for Environmental Impact Analyses. Through this project experience, Pam has gained a deep understanding of WSDOT regulations and procedures.

Pamela Vasudeva
Signals Operations Modeler
Concord Engineering

EDUCATION
- MS, Civil Engineering-Transportation Planning, University of Washington
- BS, Civil Engineering, University of Washington

YEARS OF EXPERIENCE
- 10
CRITERIA 1

CRITERIA 2

CRITERIA 3: Key Team Members Qualifications

CRITERIA 4

CRITERIA 5

RELEVANT PROJECT EXAMPLES

WSDOT | I-5/SR 161/SR 18 Triangle Interchange Improvements, Federal Way, WA | 2009: Natural resources task manager responsible for enhancement and creation of new wetland and riparian habitat to address the impacts of the road improvements, including the development of two new stream channels.

City of Issaquah | SR 900 Regional Trail, Issaquah, WA | 2007 to 2011: Natural resources and permitting task lead on this project involving a bicycle and pedestrian trail, improvements to an existing bridge over I-90, and a trail bridge over the I-90 westbound ramp. Work included completion of the WSDOT environmental classification summary form to support a NEPA DCE, Clean Water Act Section 404 permit, 401 water-quality certification, and wetland delineation and mitigation plans.

City of Stevenson | Kanaka Creek Road Improvements, Skamania County, WA | 2015 to Present: Environmental task lead responsible for the NEPA review and permits for this road project. Responsible for coordination with WSDOT local programs and NEPA Categorical Exclusion form, Endangered Species Act (ESA) documentation, and local critical areas compliance.

UNDERSTANDING OF WSDOT: Brian has managed environmental permitting for multiple WSDOT projects and has the ability to see a project from both sides and craft permit solutions that work for the regulatory agencies and quality project outcomes.

Brian Carrico
Environmental and Permitting Task Lead
BergerABAM

EDUCATION
• BA, Geography, Central Washington University

LICENSES
• American Institute of Certified Planners, WA

YEARS OF EXPERIENCE
• 24

RELEVANT PROJECT EXAMPLES

WSDOT | Southbound HOV, I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA | 2012 to 2015: Environmental scientist responsible for gathering all the environmental information into the RFP documents, including all internal drafts, response to WSDOT comments, and comment resolution for Section 2.08; compiling project environmental commitments matrix for Appendix C; and compiling all permit/ approval documentation and monitoring plans for Appendix E. Assisted with the preparation of JARPA for inclusion with permit applications and re-delineated a wetland within the project footprint to further refine wetland impact assumptions. Coordinated closely with the environmental staff at WSDOT.

Clallam County | Ward Bridge Repair, Port Angeles, WA | 2015 to Present: Environmental task lead responsible for completing environmental documentation under the NEPA for this bridge scour repair project. The project would increase scour protection on an existing bridge in Clallam County that is rated as structurally deficient. Responsible for preparing NEPA documents and an Environmental Classification summary, and supporting biological resources reports, including Endangered Species Act compliance, for WSDOT review and approval.

UNDERSTANDING OF WSDOT: Dan worked closely with the WSDOT environmental staff on the Southbound HOV, I-5/Portland Avenue to Port of Tacoma Road project. Dan has worked on several bridge and transportation projects and is well versed in a diverse background of local, state, and federal environmental requirements as well as supporting project documentation.

Dan Roscoe
Permitting/ESA Compliance Coordinator
BergerABAM

EDUCATION
• BS, Engineering, Walla Walla University

LICENSES
• Pierce County Qualified Wetland Specialist

YEARS OF EXPERIENCE
• 16
CRITERIA 3: Key Team Members Qualifications

**Dustin Day**
Wetlands Scientist
BergerABAM

**Dan Gunderson**
Environmental Scientist
BergerABAM

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**RELEVANT PROJECT EXAMPLES**

**City of Vancouver | Northeast 137th Avenue Corridor, Vancouver, WA | 2014 to 2018:** Environmental scientist and task lead responsible for conducting a wetland delineation in accordance with the 2010 Regional Supplement to the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual for the road-widening project, funded through WSDOT local programs. Prepared permit documents for local, state, and federal permits; ESA consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS); and NEPA compliance.

**State Route 432/411 Interchange Improvements, Longview, WA | 2018 to Present:** Senior scientist responsible for conducting a wetland delineation and assessment in accordance with the 2010 Regional Supplement to the USACE Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region for this interchange improvement project for the City of Longview.

**Salishan-Mohegan, LLC | Northwest La Center Road and I-5 Interchange Improvements, La Center, WA | 2013 to 2016:** Environmental scientist responsible for conducting a wetland delineation and assessment; analyzing the effects of the project on ESA-listed species, including stormwater effect analysis using the WSDOT HI-RUN model; completion of the NEPA discipline documents; securing permits; and assisted with SEPA documentation.

**UNDERSTANDING OF WSDOT:** Dustin has a proven track record coordinating with WSDOT environmental staff for the preparation of environmental documentation and permit applications for federal, state, and local agencies. Dustin is also a WSDOT-qualified Senior Biological Assessment Author, and he has conducted and facilitated numerous ESA consultations for local agencies through WSDOT Local Programs.

**EDUCATION**
- MS, Environmental Management, Portland State University
- BS, Biology, Western Michigan University

**LICENSES**
- Professional Wetland Scientist, No. 2066
- WSDOT Certified Biological Assessment Author, 2015

**YEARS OF EXPERIENCE**
- 20

**RELEVANT PROJECT EXAMPLES**

**WSDOT | State Route 432 at Talley Way Interchange, Longview, WA | 2005 to 2007:** Staff scientist supported environmental documentation and permitting effort for this WSDOT interchange improvement project. Primary responsibility was as the lead senior author of the biological assessment prepared for ESA consultation with NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS). Also assisted with wetland delineation, JARPA, mitigation site selection, and wildlife and wetland chapters of the NEPA Environmental Assessment.

**WSDOT | State Route 502 Corridor Improvements, Clark County WA | 2008:** Senior scientist for this WSDOT road widening project. Primary responsibility was as the senior author of the biological assessment for formal consultation with National Marine Fisheries Services and the USFWS for this complex project that spanned three watersheds.

**Kitsap County | Miami Beach Road Bridge No. 11 Replacement, Kitsap County, WA | 2011:** Environmental task lead responsible for providing environmental permitting and documentation support to the County for a replacement of a bridge over Seabeck Creek. Conducted wetland and ordinary high water mark delineations, riparian habitat evaluation, and wetland mitigation plan. Also prepared documentation for state and federal permitting, including preparation of a JARPA, mitigation plan, and a Specific Project Information Form for ESA consultation.

**UNDERSTANDING OF WSDOT:** Dan is a WSDOT-qualified Senior BA Author, and he has conducted and facilitated numerous ESA consultations for WSDOT projects, and for local agencies through WSDOT Local Programs. Dan has a strong background with the preparation of environmental documentation from NEPA resource documentation to permit applications and regulatory agency consultation.

**EDUCATION**
- BS, Biology, Portland State University

**LICENSES**
- Professional Wetland Scientist

**YEARS OF EXPERIENCE**
- 17
### RELEVANT PROJECT EXAMPLES

**City of Woodland | I-5/Scott Avenue Reconnection, Woodland, WA | 2013 to 2016:** Environmental scientist responsible for corridor-level environmental site assessment site review and WSDOT-format Limited Phase I ESAs for properties to be acquired for the Scott Avenue Extension.

**Port of Tacoma | Lincoln Avenue Grade Separation, Tacoma, WA | 2004 to 2005:** Environmental scientist responsible for providing environmental investigation and research support for the Lincoln Avenue grade separation project for WSDOT and the Port of Tacoma. Completed the hazardous material discipline report.

**WSDOT | Mukilteo Multimodal Terminal, Mukilteo, WA | 2013 to Present:** Environmental scientist responsible for managing upland and in-water sampling programs (Dredge Material Management Program). Developed the overall hazardous materials project approach to present to the regulatory agencies based on historic data. Responsible for planning and implementing soil and groundwater site investigations as well as the dredged material characterization. Provided permitting support for the project, including preparing the JARPA and Shoreline Exemption Application.

**UNDERSTANDING OF WSDOT:** Victoria’s experience with WSDOT projects includes providing peer review and revisions to the hazardous materials discipline report and EIS, upland (soil and groundwater) hazardous materials investigations, in-water sediment characterization, and negotiations with the regulatory agencies.

### RELEVANT PROJECT EXAMPLES

**WSDOT | Interstate 5, State Route 161/ State Route 18 Interchange Improvements, Federal Way, WA | 2007 to 2010:** Senior civil engineer responsible for the preparation of construction staging, traffic control, and detour plans for the first phase of this project. The first phase modified the I-5/SR 18 cloverleaf interchange by replacing two of the loop ramps with two directional ramps, and added a new exit ramp to SR 161 that allowed traffic to bypass the congested signalized intersection of SR 18 and SR 161.

**WSDOT | Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, Tacoma, WA | 2012 to 2015:** Senior civil engineer for the construction phasing and maintenance of traffic concepts that were used to create a Transportation Management Plan. The focus of this effort was to verify constructability and develop a consensus among the stakeholders for the construction phasing.

**Nevada Department of Transportation | Interstate 80 from Robb Drive to Vista Boulevard, Reno NV | 2010 to 2013:** Senior civil engineer responsible for the preparation of construction staging concepts and performance specifications for maintenance of traffic for the replacement of the concrete pavement for 2.9 miles of freeway. The construction staging concepts were used to develop project performance specifications and as a reference while evaluating design-build proposals.

**UNDERSTANDING OF WSDOT:** Carl has used the WSDOT standard specifications, standard plans, design manual, traffic manual, the work zone traffic control guidelines for maintenance operations manual, and the plans preparation manual. He has provided construction phasing, traffic control, and detour concepts and plans to suit WSDOT preferences for safe and efficient movement of traffic through various work zones.
4A. Firm’s Project Management System

Successful project delivery is a team effort. The tools and processes used by the team do not, by themselves, ensure successful project delivery. Project management tools provide the information required to identify a project problem. Processes provide an opportunity to use this information and correct project problems. However, correcting a project problem requires leadership from the project manager, extra effort by the project team, and good communication between the BergerABAM project manager and WSDOT’s project manager.

The two most common problems encountered by project teams in the delivery of projects are (1) the lack of decisions leading to schedule delays and (2) changes in scope. Our project management process addresses these concerns through the use of appropriate progress measurement tools, scheduling and performing quality assurance reviews at the appropriate stages of product development, and by facilitating good communications within the team and with our clients. Proposed project manager, Jilma Jiménez, will tailor BergerABAM’s project management process to meet the project’s needs. Jilma is committed to spending the time necessary to communicate with the WSDOT’s project manager to keep the project on track. She will alert the WSDOT’s project manager of potential changes in scope so that they can be avoided or mitigated, ensuring that unwanted surprises are avoided later in the project. She will provide the leadership required to correct project issues when they occur. She has demonstrated this ability in the past on the Southbound HOV I-5/Portland Avenue to Port of Tacoma Road, the I-5/SR 161/SR 18 Triangle interchange improvements, the I-5/Port of Tacoma Road interchange and Freight Corridor projects.

Quality Assurance/Quality Control Processes

BergerABAM has an established and proven quality assurance/quality control (QA/QC) program documented in the firm’s Project Management Manual. The program focuses on performing the right level of review of project deliverables for each step in their development. For example, it is important when reviewing traffic analyses and interchange configuration alternatives that critical assumptions, WSDOT and FHWA requirements, and traffic design issues are not missed and are accurately interpreted. For those reasons, the BergerABAM QA/QC plan for this project will likely require an independent, internal peer review of the alternatives mid way through the project schedule. The peer review will be led by a senior-level engineer from BergerABAM, together with senior staff from the team member firms. As an independent team, they will review the effort to date and will critique the interchange alternatives and associated transportation improvements. The outcome from the peer review team will then be considered and incorporated into the project documents.

Jilma, as project manager, will tailor the QA/QC program specifically to the needs of WSDOT and the project deliverables specific to this project. She will integrate the SR 3 Freight Corridor–New Alignment project plan to establish the number of reviews required for each deliverable, the level of review required, and the schedule for reviews. Any questions or concerns raised by the QA/QC advisor will be resolved before documents are submitted to WSDOT. Once the technical review is complete, all products are also editorially reviewed by an in-house word processing department.

For this project, Bob Fernandes is the assigned QA/QC manager who will assist Jilma with monitoring the review of all deliverables. He will supervise the reviews of each deliverable and report the status and results back to her.

One of the most important aspects of ensuring the quality of work products is to schedule the time for performing reviews and correcting deficient work. During the planning stages for the project, a QA/QC plan will be integrated into the project work plan in order to establish the appropriate level of reviews required for each discipline and team member involved in the task. This includes clearly identifying the time needed to perform the review and accounting for these efforts in the design schedule to ensure these reviews are completed and any corrections/improvements completed before the established submittal due date.
Budget and Scope Tracking System

As mentioned, at project start-up, Jilma will develop a project work plan in collaboration with WSDOT. This will include a schedule and deliverables that closely follow WSDOT’s work breakdown structure (WBS) as defined by the current WSDOT Master Deliverables List (MDL). Using the MDL provides “common language” for coordinating with, and reporting progress to, WSDOT staff. Once established, the WBS and associated budgets are transferred to BergerABAM’s intranet-based Deltek Vision accounting and budget tracking system.

Deltek Vision allows for the planning and tracking of multiple projects under one project number. The system provides the ability to input staffing for each project (a resource-loaded schedule) and subsequently track the actual costs for each project against this plan and the project budget. It also generates an invoice for all of the projects being completed under one contract/budget. The system incorporates electronic timesheet tracking of labor costs. Therefore, costs can be obtained by project managers on a weekly basis if necessary.

Jilma will develop a project-specific tool for the team to use in measuring progress, or earned value on the project. Each deliverable will require its own definition of progress. This measurement tool will be developed in consultation with WSDOT’s project manager. This earned value estimate will then be used to compare to the planned and actual costs provided by the Deltek Vision accounting system for each deliverable on a monthly basis. The task leads will assist her in estimating progress on each deliverable using the agreed-upon method. If required, earned value and cost can be summarized in a project graph to more easily identify trends in project expenditures against the project plan.

Determining earned value is one of the more difficult project management activities because it is subjective. At times, the earned value and expenditures will begin to diverge during the project. If earned value is higher, this may be good, but could lead to a false sense of security if the project team underestimates the effort to complete a task. If earned value is low, relative to expenditure, then a problem is most likely developing that requires some action to be taken to correct it. Interpreting progress measurement data requires experience and good team and client communications. Jilma has extensive experience in developing and using earned value measurement systems. She has used these systems to successfully deliver the projects listed in her resume in Criterion 2.

Scheduling Program/Process

One of the most important tools used for planning and implementing projects is the project schedule. The project schedule captures the project manager’s anticipated flow of work and task dependencies required to successfully deliver the project within a desired time frame. For this project, Jilma will use Primavera (P6) scheduling software to develop the project schedule, identify the critical path for completing the project, and monitor progress. The schedule will show the anticipated sequence of completing all deliverables following WSDOT’s WBS and MDL. When combined with the earned value measurement reporting, the scheduling tool allows the project manager to easily identify areas of concern in order to prevent low staffing levels, scheduling delays, and budget overruns. If necessary, the project plan can be resource loaded using the planned labor/staffing input into our accounting system software, Deltek Vision, as described above. Jilma will be assisted by an in-house P6 expert.

To ensure that the team meets schedule commitments, a shared understanding of what is expected of each individual is required. Deliverable schedules and other commitments will be discussed frequently at internal team meetings to ensure deadlines are met.

Examples of BergerABAM’s experience with Primavera P6 on projects employing WSDOT’s WBS and MDL system

1. I-5/Portland Avenue to Port of Tacoma Road Southbound HOV
2. I-5/SR 167/SR 18 Triangle IJR and NEPA
3. Mukilteo Multimodal Ferry Terminal
When combined with the earned value measurement reporting described earlier, the scheduling tool will allow Jilma and her project team to identify areas of concern in order to adjust staffing levels, mitigate potential scheduling delays, and prevent budget overruns. She will closely monitor the schedule, proactively manage risk, and develop contingency plans when required. As with the budget and scope items, the team will continually update WSDOT at team meetings as part of the project status report.

**Internal Project Team Interaction**

Through our experience, BergerABAM has determined that taking care of the project is the best way for every team member to ensure their own success. Jilma will cultivate a “project comes first” attitude that facilitates integrated team behavior where all team members succeed by delivering a successful project. To ensure this outcome, she will develop a project communication plan with guidelines for team meetings (structure and timing), as well as communication protocols. Project team members' roles and responsibilities are detailed in the project schedule by WBS as described above. Updating and sharing this project information among team members is part of BergerABAM’s effective team communication and interaction.

Work progress, staffing, project issues, problem solving, and any changes that may affect the team will be discussed at weekly meetings. Jilma is skilled at creating an atmosphere of trust required for effective problem solving under these circumstances. The earned value and schedule tools described above will be used to facilitate these discussions. Depending on the work in progress, subconsultants will attend the meetings and WSDOT participation is welcomed and encouraged. To facilitate this process, an agenda is prepared for each meeting and meeting notes are distributed quickly after each meeting. Items discussed that require action by team members are listed in the notes and included in the next meeting agenda for follow-up. All action items will be tracked by Jilma until the task is accomplished.

Meetings will be held at BergerABAM's Seattle office and/or WSDOT headquarters. If desired, BergerABAM has the capability to use conference calling, videoconferencing, and a ‘smart board’ to allow meetings with attendees at remote locations. BergerABAM uses Newforma software to post, share, and transfer project information and files. If preferred, a file transfer protocol site can be set up to create a central electronic file center accessible to all team members.

**Client and Stakeholder Interaction**

Jilma will work with the project team and WSDOT to establish methods of documenting all communications, including guidelines for conducting and documenting project progress meetings, report formats, and guidelines for organizing and sharing electronic files. These methods and guidelines will become part of the project work plan and will be followed throughout the project unless changes are agreed to with WSDOT.

Early identification and coordination with stakeholders is a key to success on this project. Jilma and her team will encourage early involvement of stakeholders to collaborate on roles and responsibilities, key decisions, and effective solutions. Clear project goals and objectives will be established and used as a reference tool to ensure client, permitting agency, governmental, and public information is disseminated appropriately throughout the duration of the project.

Jilma is focused on providing excellent communication between the design team, WSDOT, and project stakeholders. As described in Criterion 2, her track record of providing excellent communications and interaction between all parties involved in projects is excellent. She has extensive experience facilitating these communications when it is most difficult to do so: early in the planning of the project when it is important to guide the stakeholders to informed consent by providing the right kind of information and incorporating stakeholder input where possible.
5A. Project Delivery Approach

Project Understanding

WSDOT and its local partners have studied mobility and congestion needs within northeastern Mason County for more than 50 years. Multiple studies have identified mobility improvements associated with the construction of a freight corridor on SR 3. Previous efforts paved the way to secure a multi-biennium funding plan to design and construct an SR 3 bypass around Belfair. WSDOT desires to update previous transportation models to extend the design year from 2035 to 2040, to conduct necessary studies to complete environmental documentation and design necessary for conventional or alternative delivery procurement methods. The BergerABAM project delivery approach to this project centers on building consensus early, and developing products that will support a construction project, not just another study. Our approach is described in the following sections.

Developing the Project Work Plan

In the 1865 classic Alice's Adventures in Wonderland, the Cheshire cat offers Alice the following great words of wisdom: “If you don’t know where you’re going, any road will get you there.” Therefore, developing a good workplan before starting the work is the most important activity to ensure the successful outcome of a project. BergerABAM’s approach to the workplan development is a four-step collaborative process illustrated below.

The first step is understanding the project’s goals and known constraints thoroughly. For the SR 3 Freight Corridor – New Alignment Design project, we would begin gathering this information from the Project Manager, other key WSDOT participants and project stakeholders. Armed with this knowledge, we would then begin to develop the vision, needs, and expectations for the project. The second step is to identify the key project elements that serve as the first building blocks to the workplan. The third step is to identify the interconnections of the key project elements and the necessary approvals and timing. Lastly, we seek to obtain endorsements of the plan from major project participants. This team approach to workplan development yields buy-in, which in turn engenders top-notch performance and eliminates surprises.

Proof | At the beginning of the SB HOV project, Project Manager Jilma Jiménez followed a similar process to prepare a detailed workplan for the design and deliverables production. This workplan guided the development of the work, which was produced under multiple supplements of an on-call services agreement. The resulting project was completed on schedule and on budget and exceeded the expected deliverables of the client.

Decision Makers Involved with the Development of the Work Plan

As noted in section 5.a.1, BergerABAM’s approach to our workplan development is collaborative, and will benefit from the input received from the client, key stakeholders, and the project team. For the SR 3 Freight Corridor project, the workplan development team led by Project Manager Jilma Jiménez will include the WSDOT project manager, key stakeholders, and other project team members. Our experience has shown that each team member commits to a higher level of project success when workplans are created through a team effort.
Elements of the Proposed Work Plan

The graphic below shows BergerABAM’s proposed approach to this project. The scheme calls for three distinct phases – Data Gathering and Modeling; Effectiveness, Environment, and Right-of-Way; and Project Delivery. These three phases and work plan elements are described in this section.

**Figure 2 | Work Plan Elements/Phases**

**Phase 1 – Data Gathering and Modeling**

Phase 1 of the BergerABAM approach begins with gathering pertinent data developed by previous studies and collecting new traffic counts, but most importantly obtaining input from key project stakeholders. Based on recently completed work within the project area, during Phase 1 our team will also prepare updated traffic models in an efficient manner and will develop a conceptual project definition that will serve as the new starting point to deliver desired mobility improvements within the Belfair area. As seen in timeline on Figure 5, BergerABAM proposes to complete this first phase of the project within six months of obtaining the NTP.

**Community Engagement**

We distinguish engagement from information sharing because direct engagement provides stakeholders and the general public more opportunities to express their ideas and desired outcomes on a project. Over the many years of development for this project, WSDOT has made contact with various stakeholders such as Mason and Kitsap counties’ public works departments; various transit authorities; the Ports of Bremerton, Shelton, and Allyn; and many other cities and business and economic development agencies. Each agency has some vested interest in the traffic analysis, as well as the environmental documentation process. Obtaining consensus or informed consent from these stakeholders will be critical to obtaining necessary approvals needed to move the project forward. To achieve consensus, BergerABAM recommends the formation of a Technical Advisory Committee (TAC) that comprises key stakeholders. Convening a TAC will be an opportunity to reset the project with key agencies and enlist their assistance to help guide the development of the project. BergerABAM will use stakeholder time effectively by hosting a series of intense work sessions. Each session will deal with a specific goal and will be geared to obtaining a decision and endorsement from TAC and stakeholders.

For the general public our team proposes to assist WSDOT in the organization of public meetings at key points in the project to support dissemination of information about the project. Also, in collaboration with EnviroIssues, we will create a project website that includes graphics of design alternatives, schedules, and costs that is essentially an online option to public meetings. A “virtual” open house will also cast a wider net for participation by people whose busy lives prevent their attending evening events, and provide more opportunities to share the benefits of the project.

**2040 Traffic Modeling**

Our team has recent experience working in the Mason/Pierce/Kitsap Region. Specifically, Tony Woody, our team’s proposed Strategic Transportation Adviser, led the development of the SR 3/SR 16...
CRITERIA 5: Project Delivery Approach

Congestion Study VISUM forecasting model and collection of the supporting street light origin-destination data. The SR 3/SR 16 study terminates directly north of the SR 3 Freight Corridor – New Alignment Design study area near the Bremerton National Airport. This regional model is a combination of five separate forecasting models, including PSRC, City of Gig Harbor, City of Port Orchard, Pierce County, and Kitsap County that were joined into one regional model to forecast travel patterns between Belfair and neighboring communities to the north (Gorst and Bremerton) and east (Gig Harbor and Purdy).

Our knowledge of this area and recent development of the SR 16/SR 3 model provides an opportunity to extend the model south to include the Belfair portion between mile posts 29.49 and 22.81 that is needed for this study. This will require incorporating Mason County’s land use and transportation network into the SR 16/SR 3 regional model. The combined model will provide a comprehensive, regional perspective of traffic pattern changes resulting from the proposed freight bypass route and allow for the exploration of new possible route alignments that cannot be evaluated with a model that only includes the study area.

Our team proposes to validate travel projections and land use pattern changes by comparing existing traffic volumes and patterns to historical growth rates that were reported in the SR 3 Belfair Bypass Transportation Discipline Report conducted over 10 years ago. This comparison will enable us to clearly understand how the Belfair community has grown over the past 10 years and determine if previously reported traffic projections and patterns align with actual historical growth. The information obtained from this process can be used as a benchmark for projecting future growth in the area.

Conceptual Project Definition

This project element consists of using the information produced by traffic models to identify a set of improvements that are needed for the desired mobility enhancements. As an example, early versions of the SR 3 Bypass project discussed the construction of a four-lane facility. Later versions call for a two-lane facility. Our team will use the traffic data to determine the appropriate roadway section and project limits that should serve as the starting point to the project.

Phase 2 – Effectiveness and Environment and Right-of-Way

During Phase 2, BergerABAM proposes to complete a practical design workshop, and all preliminary engineering necessary to establish the project’s footprint. This 12 to 18 month phase will also include completing environmental documentation and beginning ROW acquisition.

Practical Design

Since its introduction, Washington State Practical Design has become a controversial and highly misunderstood approach to project development and design. Instead of being viewed as a function-focusing tool, it is viewed by some as a cost cutting tool – a hatchet with a blunt edge. But this is not what it means.

When properly understood and applied, Practical Design is a tool to focus on needs and on project goals to deliver objective while maintaining fiscal responsibility. It is not a cost cutting tool, but a tool that cuts costs by addressing the “need” and removing the “wants.”

As we have done on other projects, the BergerABAM team will apply our knowledge and experience with practical design in a four step process for the SR 3 Freight Corridor Project.

1. Start with a clear definition of the project’s Purpose and Needs.
2. Perform an evaluation of improvements proposed in the Conceptual Project Definition developed in Phase 1 of the project and question the use of prescriptive components such as shoulder widths, auxiliary lanes, etc. only keeping necessary items. Based on WSDOT’s preference, this second step can be performed by our team and/or in cooperation with a wider audience during a one to two day Practical Design workshop.
3. Confirm the adequacy of the new “lean” project by doing safety analysis.

4. Work with our public communications team partners to craft a stakeholders and public engagement plan—demonstrating delivery of function and previous agreements and commitments.

This process will yield a program that delivers the intended function, ensures safety, reduces costs, and is poised to receive consensus from project partners and key stakeholders.

Proof | On the I-5 Southbound HOV project for the Olympic Region, we applied a very similar process and were able to identify a new project that maximized the use of the existing infrastructure, provides the original project need – HOV lanes – and reduced the overall project costs by $100 million.

Project/Footprint Determination
This project element consists of performing additional engineering design to confirm the viability of the identified efficiencies identified during the Practical Design Effort. Other refinements to the footprint based on early environmental studies will also be incorporated into the project as part of this work element, so as to minimize effects to the known natural and/or economic features within the project’s footprint. Lastly, our team will develop cost estimates of the new project and begin to prepare a project phasing plan that matches the legislature’s funding plan for this project.

Environmental Documentation
The scope of services identifies the need for State Environmental Policy Act (SEPA) discipline studies and the preparation of Level 1, 2 and 3 environmental submittals. A National Environmental Policy Act (NEPA) Environmental Assessment (EA) was completed for the SR 3 Freight Corridor Project in May 2013. The EA and the associated discipline reports can be used to prepare the SEPA checklist. However, since up to seven years has passed since the completion of the discipline reports, they may require updates based on changes to existing conditions or plans. BergerABAM will work with WSDOT to determine the specific reports that may require updating to support the SEPA threshold determination and update them as appropriate. In addition, BergerABAM will support WSDOT with the Level 1, 2, and 3 environmental submittals including reevaluation of the required permits and environmental reviews at the Level 1 and 2 stages and preparation of technical documents and permit applications at the Level 3 stage. The nature of extent of that support will depend on the project delivery method. As part of the evaluation of the project delivery method consideration of which entity (contractor or owner) would be responsible for permit acquisition will be considered.

Phase 3 – Project Delivery

Phase 3 of the BergerABAM Approach to the SR 3 Freight Corridor project will consist of completing the preliminary engineering design, selecting the appropriate project delivery method and completing additional design services for either conventional or alternative delivery project procurement.

Preliminary Engineering
This work element consists of advancing the design beyond the Project/Footprint Determination level to approximately 30 percent. Major focus will be to produce all known information and design to support completion of the environmental documentation, and to refine the project phasing plan to match the legislature’s funding program.

Project Delivery Method
Following the guidance of WSDOT’s Project Delivery Method Selection Guide, this work element will consist of answering key questions and using available tools to identify the best way to construct this project (e.g., Design-Bid-Build, Design-Build, etc.).
Design Services
This last work element consists of developing project and construction documents to support the delivery method selected in the step described above. Should the design selection result in a conventional design, BergerABAM will apply the knowledge we’ve gained while completing full plans, specifications and estimates for more than $1Billion dollars of constructed projects in WA state over the last 10 years; most of which were project completed for WSDOT and/or inside WSDOT ROW requiring strict adherence to WSDOT’s processes, styles and conventions.

If alternative delivery methods such as design-build or General Contractor/Construction Manager (GCCM) are selected, the BergerABAM team will also be prepared to bring our extensive experience working with these procurement mechanism for owners and contractors. For example, having worked on large design-build projects for contractors on WSDOT projects we know that design-builders focus their work on being “minimally compliant” to the RFP. Therefore, the importance of a well thought-out and detailed RFP cannot be overstated.

BergerABAM’s approach to developing RFPs for design-build projects is to do just enough engineering to accomplish two major goals. First is to identify desired RFP requirements (e.g., number of closures during construction, number of construction days, liquidated damages, etc.). Second is to develop a good cost estimate for the project. This level of design means our clients can craft a final design and construction program that incorporates project constraints and stakeholder agreements, while still allowing contractor innovation. Our team has experience preparing design-build RFPs for WSDOT, such as the I-5 Southbound HOV and SR 532 General Mark Clark Bridge project. BergerABAM is also experienced at supporting WSDOT as lead reviewer of design-builder design submittals on projects such as the I-5/SR 16 HOV Connectors project, and the I-5 Southbound HOV project.

Benefits of the BergerABAM Team’s Approach
• Builds ownership and/or informed consent from major stakeholders by involving them from the beginning
• Provides efficient and effective traffic modeling by using previously developed tools by our team and improves probability of least amount of rework
• Improves probability of complying with the lowest appropriate level of NEPA documentation save time and money by making best use of previous studies
• Embraces Practical Design as a tool to develop a context and cost sensitive solution
• Produces a shovel ready project by the beginning of the 2021-2023 biennium; when construction funding is expected (see timeline in figure 5)

How the Work Plan will Address Contingencies
The BergerABAM approach to contingencies begins with the selection of our team. As shown in Criterion 1, we have assembled a well-rounded team of firms and professionals that can meet all technical, managerial, permitting, and construction planning needs throughout the life of the project to construct these improvements to the I-5 corridor. Our workplans and project schedules are developed with reasonable durations; an added safeguard at BergerABAM, we also develop internal timelines to best our schedule commitments. This approach creates additional float time in our schedules and preserves budget that frequently allows the recovery of the overall project plan when unforeseen issues arise. Additionally, starting at the time of the work plan development, we take note of items that have a potential risk of delaying or changing the overall program. For each of these, we consider contingencies and recovery plans and manage this process through change and risk management plans. We then work with our clients to identify additional risk items for both design and construction that have the potential to either delay completion or add cost to the design and construction work.

We manage change and risk management items through the use of NewForma tool registers that can be queried and coupled to emails, project files, and other project information to document decisions and keep track of action items necessary to mitigate changes or risks.
CRITERIA 5

For the I-5, SB HOV project, BergerABAM created change and risk management plans and managed all project issues through NewForma logs. Active management of these issues lessened the effects they had on the overall project. At the end of our work, as we transitioned the project back to WSDOT for completion, we were able to deliver detailed logs that clearly identified the status, history, and development of all risk and change.

5B. Approaches to Resolving Issues Within the Project Team, Client(s), and Stakeholders

Experience has taught us that open and continuous communication coupled with transparency, accountability, and key stakeholder involvement are the best tools to avoid project issues. Therefore, our approach to resolving issues starts with a strong communications plan. The figure below shows several sample tools that we employ to keep lines of communication open and resolve issues within our team, as well as with our clients and stakeholders.

Figure 3 | Communication Tools

BergerABAM team will use their time effectively by hosting a series of intense work sessions. Each session will deal with a specific goal and will be geared to obtaining a decision and endorsement from stakeholders.

5C. Assumptions for Work Breakdown Structure

Based on our understanding of the current program, the table below lists elements to be completed by the consultant team and by WSDOT.

<table>
<thead>
<tr>
<th>CONSULTANT DELIVERABLES</th>
<th>WSDOT DELIVERABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topographical Survey and Basemaps</td>
<td>Project Definition/Project Summary Documents</td>
</tr>
<tr>
<td>Travel Demand Forecasting and Operations Models</td>
<td>Right-of-Way Plans/Acquisition</td>
</tr>
<tr>
<td>Preliminary Design</td>
<td>Walls/Structures Design</td>
</tr>
<tr>
<td>Project Phasing Plan that matches legislature’s funding stream</td>
<td>Utility Agreements</td>
</tr>
<tr>
<td>Project Delivery Method Selection Guide</td>
<td></td>
</tr>
<tr>
<td>Design Approval (e.g., Basis of Design, Design Analysis, Design Parameters)</td>
<td></td>
</tr>
<tr>
<td>Crash Analysis Report or Safety Analysis</td>
<td></td>
</tr>
<tr>
<td>Environmental Documentation – NEPA/SEPA</td>
<td></td>
</tr>
<tr>
<td>Level 1, Level 2, and Level 3 Environmental Submittals</td>
<td></td>
</tr>
<tr>
<td>Stakeholder and Public Involvement Plan, Public Meetings, and Support</td>
<td></td>
</tr>
<tr>
<td>Plans for Approval/Intersection Plans</td>
<td></td>
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<tr>
<td>Type A Hydraulics Report</td>
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<tr>
<td>Project Development Approval and Remainder of DDP</td>
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<tr>
<td>Structure Site Data</td>
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<tr>
<td>Geotechnical Engineering</td>
<td></td>
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<tr>
<td>Utility Conflict Identification and Redesign</td>
<td></td>
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<tr>
<td>Construction Staging, Transportation Management Plan, and Construction Schedule (if needed)</td>
<td></td>
</tr>
<tr>
<td>Signals, Illumination, and ITS Design</td>
<td></td>
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<tr>
<td>Final PS&amp;E if needed or Conceptual Design and RFP Package</td>
<td></td>
</tr>
<tr>
<td>InRoads and MicroStation Design Files</td>
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</tbody>
</table>

As in all large-scale transportation projects, a significant key to success will be the ability to resolve issues with stakeholders as well as to obtain consensus or informed consent. Each of the project’s stakeholders has objectives and goals. Obtaining stakeholders’ consensus or informed consent will be critical to obtaining necessary approvals and funding needed to move the project forward. Our approach to resolving issues and to consensus building is getting the right people at the table early. To meet this goal, we propose the formation of a Technical Advisory Committee (TAC) comprised of representatives from technical disciplines and project stakeholders. After getting the right key players together, the
5D. Identify Key Issues and Critical Milestones

The figure below shows a synopsis of the proposed BergerABAM project plan with key issues and critical milestones. As seen in the figure, the plan accomplishes what must be an important success factor for this project: to deliver the project within the funding program. As noted in the RFQ and the WSDOT prepared Scope of Services a key issue of this project is to update traffic models from 2035 to 2040. Based on our team’s experience (see 2040 Traffic Modeling, starting on page 25), our team can easily prepare the necessary models within the first six months. And, should notice to proceed be obtained no later than Jan 2019, the traffic modeling effort could be completed prior to the next infusion of project funding expected in July 2019.

As noted in the figure, another key project issue and milestone is the completion of the environmental documentation. This element will be necessary to begin the ROW acquisition project, which our team sees as the element with the greatest potential to delay the construction of the project. Our proposed project program has therefore, intentionally prioritized the completion of the environmental documentation work elements. Based on available current funding, we would propose an extensive review of all the previous work completed, and work on obtaining consensus from key agencies as to the appropriate path forward as early as January 2019. Accelerating the beginning of the environmental documentation process would increase the certainty of the project’s process and timeline.

The BergerABAM team also considers the beginning of construction as another key issue. After more than 50 years of planning, getting the project to construction at the earliest date possible within the 2021 to 2023 biennium could go a long way in WSDOT demonstrating its commitment to meet the legislative mandate and commitments made to stakeholders to improve the. Other key issues and critical milestones are highlighted in the figure below.

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**Figure 5 | Project Timeline with Key Issues and Critical Milestones**