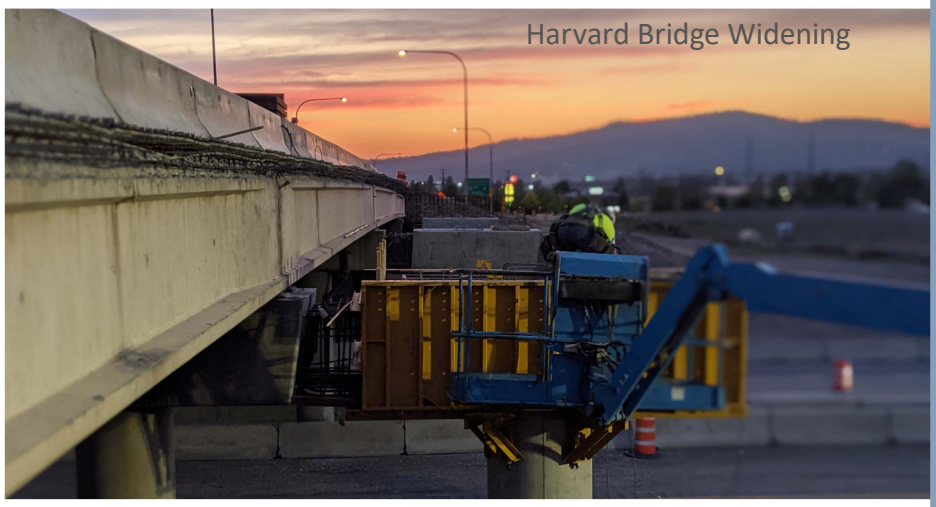

Franklin Falls Painter


Harvard Bridge Widening


Snake River Painter

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

Bridge Design Office Staff Augmentation - Project Management Services // Packet A

STATEMENT OF QUALIFICATIONS

KPFF CONSULTING ENGINEERS // 08.07.2023

1 Demonstration of Understanding

A. Services to be Provided

INTRODUCTION

The Washington State Department of Transportation's (WSDOT) mission is to provide safe and reliable transportation throughout the state of Washington. This includes over 18,000 miles of highway lane-miles in urban, suburban, and rural settings and more than 2,300 bridges. Our team is excited to support that mission by providing project management services for the WSDOT Bridge Design Office (WSDOT BDO).

PROJECT MANAGEMENT GOALS

WSDOT's primary goals for this contract address three principles that are present on every project: schedule, cost, and quality.

- **Maintain project schedule.** Our Project Managers will strive to deliver the projects on time. By being available and responsive to the projects' needs, the team will ensure delays to the project schedule are avoided whenever possible. KPFF will monitor the Design Consultant's progress and facilitate coordination with WSDOT Support Groups to ensure the Design Consultant has the information needed to progress the design.
- **Ensure funds are spent responsibly.** To support the BDO Director's negotiations with Design Consultants, our Project Managers will develop an independent estimate of the expected Design Consultant fee based on the project Scope of Work. During the design and construction phases, KPFF will check the Design Consultant's invoices are consistent with the completed work.
- **Achieve high-quality deliverables.** Our Project Managers will review Design Consultant deliverables to ensure they are clear, complete, and comply with BDO Standards. The team will also perform quality assurance by checking that the Design Consultant has performed and documented quality control of the deliverables.

MANAGEMENT OF THIS CONTRACT

Rachel Liberty at KPFF will be the contract manager and main point of contact for this contract. Greg Hess, KPFF Principal-In-Charge, will work closely with Rachel during project start-up and be involved throughout the duration of the contract.

At the start of this contract, Rachel will create a Project Management plan. The plan will establish contract and project expectations such as the frequency of contract status meetings, the preferred format for contract and project reporting, the paths of communication between Project Managers/ WSDOT BDO/ Project Offices/ WSDOT Support Groups, and a system of file management. This will help ensure smooth execution of the work and consistency between work performed by different project managers.

As the contract progresses, Rachel will work with the WSDOT BDO Director to review upcoming projects and assign them to Project Managers based on level of effort, availability, and DBE participation. Actual DBE participation, based on invoiced revenue, will be part of the monthly contract reporting to ensure the project meets the 19% DBE goal.

WSDOT BDO DIRECTOR
WSDOT Point of Contact

CONTRACT MANAGER
Rachel Liberty, PE, SE
KPFF

PRINCIPAL-IN-CHARGE
Greg Hess, PE, SE
KPFF

PROJECT TEAMS

PROJECT MANAGER
Rachel Liberty, PE, SE

STRUCTURAL ENGINEER
Greg Hess, PE, SE
KPFF

PROJECT MANAGER
Nick Nikpour, PE, SE

STRUCTURAL ENGINEER
Arzhang Alimoradi, PE, SE
TranTech

PROJECT MANAGER
Greg Banks, PE, SE

STRUCTURAL ENGINEER
Kare Hjorteset, PE, SE
WSP

PROJECT MANAGEMENT SERVICES

To meet the stated contract goals, our Project Managers will perform tasks during three project phases: scoping/planning, design, and construction. This section focuses on defining the various project management tasks required to deliver each project. ***See Section 4 for the methods, strategies, and tools used to complete the tasks.***

While some project management tasks are unique to each phase, several will be performed on a regular basis for the duration of a project. For example, our Project Managers will provide project status reports to the BDO Director and Project/Region office on a regular basis. For the Project office, "Bridge" comments in the Project Reporting & Information System (PRI) will be updated monthly. Our Project Managers will also review the Design Consultant's invoices, note if they are consistent with the work completed, and provide an invoice approval recommendation.

During every phase, our Project Managers will proactively identify issues that could have schedule or cost impacts and promptly notify the BDO Director. When design or construction issues arise, the team will initiate and guide discussions with the Design Consultant to identify and implement the best path forward for the project. If deemed necessary, our Project Managers will work with the Design Consultant and BDO Director to define and execute contract supplements.

Coordination between the Design Consultant and WSDOT Support Groups will be an important part of each project phase. Our Project Managers will focus on communicating project needs between these parties quickly and clearly to keep projects on schedule.

Project management tasks that are applicable to a specific project phase are described below.

Scoping and Planning Phase

To prepare for agreement setup and administration, our Project Managers will review available project information and obtain funding information from the Project Office. The team will develop the Request for Additional Information (RFAI) document, review and score submittals, and make a recommendation regarding Design Consultant selection.

After Design Consultant selection, our Project Managers will work with the Design Consultant to develop the Scope of Work, prepare an independent estimate of the Design Consultant effort, and coordinate with the Project Office on the design delivery schedule. Our Project Managers will provide general support to the BDO Director during the negotiation and execution of the consultant agreement.

Design Phase

During the design phase, our Project Managers will request the information necessary to complete the design from WSDOT Support Groups. The team will facilitate coordination between the Design Consultant and WSDOT Support Groups as the design progresses to ensure team members have the information they need to accomplish their tasks. Project Managers will also attend the Region "Round Table" meeting.

At the completion of each design milestone, our Project Managers will verify all deliverables, as defined in the scope, are received. The team will facilitate responses to Project Office/Region review comments and work with the Design Consultant to resolve comments. Submittals will also be forwarded to the WSDOT BDO Specifications and Estimate (S&E) Group so that they can prepare and update the specifications and estimate. Our Project Managers will review and comment on the specifications and estimates prepared by the WSDOT BDO S&E Group.

At the 60% project milestone, the plans will be submitted for Project Office/Region constructability review. Prior to submittal, our Project Managers or Structural Engineers will confirm the plan set meets the expectations described in the Structural Submittal Expectations Matrix. The team will work with the Design Consultant to facilitate comment resolution. When the project is out to bid, our Project Managers will coordinate responses from the Design Consultant to bidder questions and oversee addendum preparation if/when needed.

Throughout design, our Project Managers will review the Design Consultant invoices. The Design Consultant's performance will be evaluated by our Project Managers at the end of this phase.

Above: Bagley Creek Culvert Fish Passage

PROJECT MANAGEMENT SERVICES (cont.)

Construction Phase

Our Project Managers will work with the BDO Director to identify what parts of the Design Consultant team are needed for construction support and the amount of support needed. This information will be used to execute a construction support contract with the Design Consultant.

During construction, our Project Managers will work with our Structural Engineers to respond to requests for information (RFIs) and review contractor submittals. The team will also facilitate resolution of issues that arise during construction and be responsible for general coordination between the Contractor, Design Consultant, and Project Office.

KPFF will review the Design Consultant invoices and evaluate the Design Consultant's performance at the end of this phase.

ABOVE: Padden Creek Fish Passage

STUCTURAL ENGINEERING SERVICES

Structural Engineers will support Project Managers by providing technical oversight of the Design Consultant. The majority of their effort will occur during the design and construction phases, though the Project Manager may request support from the Structural Engineers during Scoping/ Planning as well.

Structural Engineers will gather project data, such as Inspection Reports, Asset Forms, and As-Built Drawings, and provide it to the Design Consultant. When requested by the Project Manager, they will provide their perspective on the Design Consultant's progress to help ensure they meet submittal deadlines.

Structural Engineers will also review and provide comments on Design Consultant submittals. When the project is out to bid, the Structural Engineers will help coordinate responses to bidder questions and review the Design Consultant's responses for correctness prior to sending them to the Project Office. They will also help facilitate and oversee addendum preparation if/when needed.

During the construction phase, the Structural Engineer will coordinate RFI and submittal review. The Structural Engineer will establish the level of effort and timeline for responses and reviews, forward RFIs/submittals, and review responses for appropriateness prior to returning them to the Project Office.

WSDOT POLICIES AND STANDARDS

WSDOT BDO's policies and standards provide the framework for efficient, consistent, and high-quality project design. Our team of consultants has supported WSDOT BDO in a variety of roles, as described in the Project Manager and Structural Engineer resumes. This depth of experience has resulted in many successful projects and provides an excellent base of knowledge to draw from for this contract. Below is a list of WSDOT Standards that would be enforced by our team. A description of the policies they contain is included with each standard.

Structures

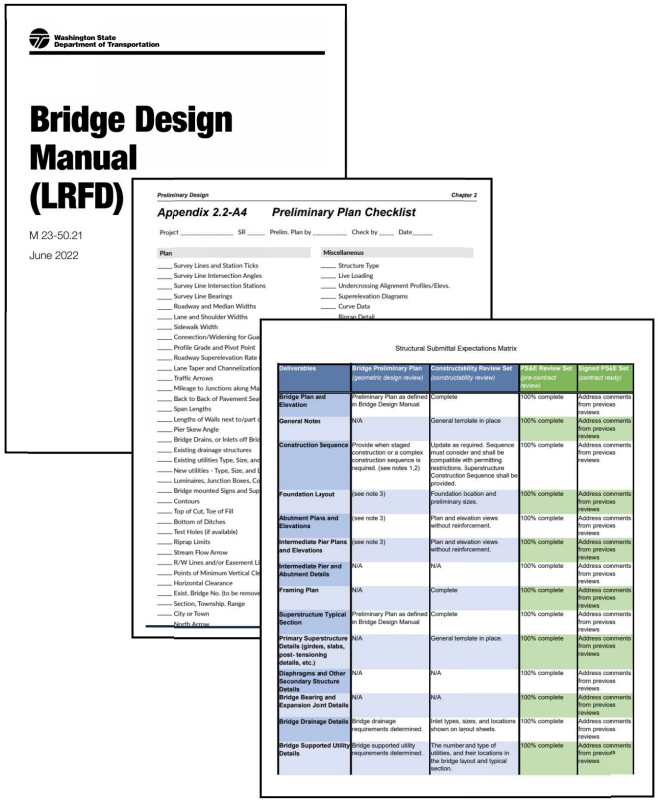
- **WSDOT Bridge Design Manual** supplements AASHTO LRFD Bridge Design Specifications (AASHTO LRFD-BDS) and AASHTO Guide Specifications for LRFD Seismic Bridge Design (AASHTO LRFD – SGS). It provides additional direction and takes precedence over the AASHTO Specifications. The manual includes mandatory requirements, preferences, and guidance based on past experience.
  - **Preliminary Plan Checklist** is a list of items that shall be included on the bridge preliminary plans. Our Project Managers will utilize this in their review of Design Consultant deliverables.
- **WSDOT Design Memorandums** are available on the WSDOT website. They are interim updates to the Bridge Design Manual and supersede the manual.
- **WSDOT Bridge Standard Drawings** are provided by WSDOT for various common bridge elements. They serve as a useful starting point for common bridge elements but are modified to fit a specific project application.
- **Structural Submittal Expectations Matrix** outlines the expected content of the design submittal at each stage of design development. It includes guidance for bridge preliminary plans, the constructability review set, the PS&E review set (pre-contract review), and the Signed PS&E set (contract ready). Our Project Managers will utilize this in their review of Design Consultant deliverables.

WSDOT POLICIES AND STANDARDS (cont.)

General

- **WSDOT Standard Plans,** where appropriate, eliminate design effort and standardize fabrication, installation, and construction methods. They include plans for bridge approach slabs, retaining/ noise barrier/ geosynthetic walls, and cast-in-place concrete retaining walls. Our Project Managers will look for opportunities to use these plans.
- **WSDOT Plans Preparation Manual** provides instruction and guidance for the preparation of contract plans, special provisions, and estimate packages for highway construction projects. It also includes the Computer Aided Drafting and Design (CADD) standards. This manual references the following checklists that will be utilized for contract review:
  - **Plans Preparation Checklist** is a list of items to be included in the Contract Plans (includes Structure Notes and Bridge Plans).
  - **Plans, Specifications and Estimates Checklist** is a list of items required for a completed project.
- **WSDOT Standard Specifications for Road, Bridge, and Municipal Construction** serve as the standard for work delivered by WSDOT and, along with Project Special Provisions, become the contract between WSDOT and the Contractor. Well-coordinated plans, specifications, and estimates are essential to a successful project. A clear definition of the Work and use of standard bid items reduces project risks. Our Project Managers will use their knowledge of the content and structure of the specification to facilitate coordination between Design Consultants and the BDO Specifications and Estimate (S&E) Group. The team will also review and comment on the specifications and estimates prepared by the S&E Group.

ABOVE: Mullan Bridge Deck Rehabilitation



Other Disciplines

While these manuals cover topics that are typically outside the scope of the WSDOT BDO and structural engineering, our Project Managers' awareness of the content of these manuals and how it impacts bridge and structures design informs their review of scopes, fees, schedules, and plan/spec/estimate deliverables.

- **Civil**
  - WSDOT Design Manual defines the policy, procedures, and criteria to execute projects on state highways.
  - Project Delivery Memorandums are interim updates to the manual and supersede the manual.
  - Design Bulletins provide clarification of existing policies and guidance for manual users.
  - Both Project Delivery Memorandums and Design Bulletins are available on the WSDOT website.
- **Geotechnical**
  - WSDOT Geotechnical Design Manual
- **H&H**
  - Hydraulics Manual

2 Qualifications/Experience of Project Managers

A. B. C. D. Example Projects, Project Manager Abilities, WSDOT Experience, Professional Locenses/Certifications

Rachel Liberty

PE, SE

Project Manager

FIRM
KPFF Consulting Engineers

EDUCATION
MS, Structural Engineering, Stanford University

BS, Civil and Environmental Engineering, University of Washington

REGISTRATIONS
Professional Engineer in Washington, #54681

Structural Engineer in Washington, #54681

CERTIFICATIONS
WSDOT Certified Bridge Inspector #L2234

WSDOT/NBIS Certified Bridge Inspection Team Leader

Rachel has over 12 years of bridge engineering and project management experience. She has a thoughtful and detail-oriented approach to project management that focuses on clear and concise communication. As a structural engineer, she has contributed to projects by providing static and seismic analysis, design, detailing, and load rating (LRF and LRFR) services. Her experience includes work on walls, and girder, arch, and cable-stayed bridges.

Rachel has 12 years of experience with relevant WSDOT Bridge Design Office policies and procedures.

The following project examples demonstrate Rachel's ability to manage projects, including preparing scopes of work, schedules, and consultant design fees, coordinating work between multiple disciplines, tracking progress, reviewing/accepting deliverables, reviewing/approving invoices, and evaluating performance.

King County, Coal Creek Bridge No. 3035A Replacement, WA, 2019—2021
Project Manager. The replacement of a 41-foot steel bridge on timber substructure consisted of voided slab girders supported on cast-in-place spread footings. Prior to the project, there was no flood mapping in the vicinity of the bridge, only anecdotes of flooding over the roadway. Raising the roadway and bridge to achieve clearance over the 100-year water surface elevation required floodplain mitigation in the vicinity of the bridge to achieve the no-rise criteria. This design solution was a collaborative effort requiring close coordination between the structural, civil, and hydraulic design. A temporary detour roadway and bridge was utilized to maintain public access throughout construction. BRAC/FHWA funded. Rachel developed the scope, fee, and design schedule for this project. She also tracked progress and reviewed invoices for the internal design team and subconsultants. At the end of the design phase, team performance was evaluated by collaborating to establish lessons learned.

WSDOT, I-5, and SR 11 Padden Creek Fish Passage Project, Bellingham, WA, 2019—2022
Structural Design Manager. Rachel led the structural team for the I-5 northbound and southbound crossings of Padden Creek during the successful pursuit of this design-build fish barrier removal project. During final design, Rachel coordinated with the civil and hydraulic engineers to manage the design of precast voided slab girders supported on GRS-IBS abutments and soldier pile walls. She reviewed deliverables and closely monitored progress to ensure a high-quality design was delivered on schedule for this fast-paced project.

WSDOT, US 101/SR 109 Grays Harbor/ Jefferson/Clallam, Remove Fish Barriers, Olympic Peninsula, WA, 2021—Present
Structural Lead for Bundle 4. This first WSDOT Progressive Design-Build Project will replace 29 fish barriers on the Olympic Peninsula with Fish Passable Structures. KPFF is the lead engineer on this project, and is providing Design Management, Civil and Structural Engineering Services. Construction will continue through 2026. The new fish passable structures will consist of three- and four-sided concrete box culverts, arch culverts, and bridges. Rachel worked closely with civil, hydraulics, and permitting to determine the appropriate size and placement of structures for the six sites of Bundle 4. She reviewed civil and hydraulic deliverables for consistency with the structural plans. She also prepared the structural Phase 2 design scope, schedule, and fee.

Greg Banks

PE, SE

Project Manager

FIRM
WSP

EDUCATION
BS, Civil Engineering, University of Washington

MS, Civil Engineering, University of Washington

REGISTRATIONS
Professional Engineer in Washington, #45120

Structural Engineer in Washington, #45120

Greg is a client focused bridge and transportation structures engineer/project manager with a wide range of skill sets built around technical excellence and an understanding of design and construction. Greg has a passion for bridge engineering and understands process and multi-disciplinary needs as it relates to bridge engineering. He is a good communicator that tailors the level of communication to the audience. He is a natural leader that is open and honest with the team to build trust, and aims at delivering clear, timely, and purpose minded messages to avoid surprises.

Greg has 20 years of experience with relevant WSDOT Bridge Design Office policies and procedures.

The following project examples demonstrate Greg's ability to manage projects, including preparing scopes of work, schedules, and consultant design fees, coordinating work between multiple disciplines, tracking progress, reviewing/accepting deliverables, reviewing/approving invoices, and evaluating performance.

SDOT, West Seattle Corridor Bridge Rehabilitation and Strengthening Project, Seattle, WA, 2020—2023

Project Manager. Greg served as the project manager for emergency repair of the West Seattle High-rise Bridge and subsequent corridor rehabilitation and strengthening project. In addition to rehabilitation of the cast-in-place concrete post-tensioned segmental high-rise bridge, the project included rehabilitation of four (4) other bridge structures. Structure types included WSDOT precast concrete girders, conventionally reinforced box girders, and a cast-in-place concrete post-tensioned segmental box girder lateral swing bridge. Rehabilitation measures included carbon reinforced polymer wraps to precast girders and the cast-in-place box girders, adding supplemental external post-tensioning, a modified concrete bridge deck overlay, large runs of barrier replacements, sign structure replacements, and expansion joint replacements ranging from modular expansion joints to compression seals. Greg used his in-depth understanding of WSDOT's bridge rehabilitation and preservation standards and practices gained from leading the WSCBRS project from start-to-finish to help seamlessly augment WSDOT's BSO staff on this opportunity.

WSDOT, State Route 520 Floating Bridge and Landings Replacement, Medina, WA, 2010—2018

Lead Structural. Greg served as the lead structural designer of the east approach bridges, part of an $800 million design-build project for Kiewit-General-Manson, a Joint Venture. The east approach bridges consisted of two parallel bridges, 620-foot-long, three-span, segmental cast-in-place post-tensioned balanced cantilever bridges. During construction, Greg served as a deputy project manager and was the primary point of contact for the contractor for design support, and facilitated completing load ratings and project as-builts. Greg used his in-depth understanding of WSDOT's standards and practices gained from working on many different facets of the job from start-to-finish to help seamlessly augment WSDOT's BSO staff on this opportunity.

WSDOT, State Route 410 White River Bridge Painting, Buckley, WA, 2017—2018

Project Manager. Project manager for the load rating and construction document development to paint an existing WSDOT owned steel truss bridge and approach spans.
The load rating assessed the structure's ability to support temporary construction loading while maintaining legal vehicular traffic loadings. The load rating was performed in accordance with the WSDOT Bridge Design Manual Chapter 13, using the Load Factor Rating (LFR) method.

Nick Nikpour

PE

Project Manager

FIRM
TranTech Engineering, LLC

EDUCATION
MS, Structural Engineering, Iowa State University

BS, Civil Engineering, Iowa State University

REGISTRATIONS
Professional Engineer in Washington, #21020015

Nick has over 30 years of experience in both the public and private sector that includes staff supervision, complex bridge and seismic retrofit design, project management, program management, design-build, construction, and construction inspection. His bridge design background includes virtually all bridge types, such as trapezoidal steel box girders, precast prestressed concrete girders, precast prestressed concrete segmental box girders, cast-in-place post-tensioned concrete box girders, and cable-stayed structures. His unique combination of experience has been applied in the successful delivery of many notable multidiscipline transportation projects ranging in scale and including Accelerated Bridge Construction (ABC) and demanding design-build projects.

Nick has four years of experience with relevant WSDOT Bridge Design Office policies and procedures.

The following project examples demonstrate Nick's ability to manage projects, including preparing scopes of work, schedules, and consultant design fees, coordinating work between multiple disciplines, tracking progress, reviewing/accepting deliverables, reviewing/approving invoices, and evaluating performance.

Walla Walla County, Dell Sharpe Bridge Replacement, WA, 2021—2022
Bridge Design Manager. This project involves full PS&E for a 2-span, 324 foot long, 32-foot wide precast concrete bridge to replace the existing structure. The existing bridge is located on Pettyjohn Road approximately 2,000 feet south of SR 124 in central Walla Walla County. Scour and river hydraulics problems have plagued the bridge with unstable foundation issues as the stream migrates back and forth across the floodplain upstream of the bridge. Additionally, the roadway grade and bridge alignment present both safety and maintenance concerns. Nick prepared the project schedule. The primary constraint involved environmental permitting parameters. He also coordinated work between multiple disciplines including structural engineering, civil engineering, environmental permitting, geotechnical, and survey. The project included regular coordination meetings and team updates. Nick monitored progress by reviewing the project dashboard in Ajera, producing progress reports from team/subconsultant updates, and preparing Earned Value reports.

Whatcom County, James Street, Whatcom Creek Bridge Replacement, WA, 2021—2023
Bridge Design Manager. This project involves design for replacement of the James Street Bridge, a 52-foot long, 3-span precast channel beam and timber bridge crossing Whatcom Creek in Bellingham, WA. The bridge causes constriction in the creek, and, along with its deteriorated condition, requires replacement. The replacement bridge will be a prestressed concrete girder superstructure on a drilled shaft foundation. Nick is managing the production of PS&E and monitoring schedule and budget. The project uses current AASHTO and WSDOT Standards.

California High Speed Rail Authority, California High Speed Rail Project (Design-Build), Construction Package 2-3, WA, 2018—2021
Lead Design Services During Construction (DSDC). This $1.5B project spans 65 miles through the central valley of California and includes 23 rail structure packages, 26 roadway structure packages, 43 roadway packages, and 6 track packages. Several third parties are involved including the counties of Fresno, Kings, and Tulare, Caltrans, multiple utility companies and irrigation districts. Nick's responsibilities included staff supervision and all DSDC tasks involving control of the DSDC budget and management, schedule management, Construction Submittals and Shop Drawings, Field Change Requests (FCR) and Field Design Changes (FDC), Non-Conformance Reports (NCR), Requests for Information (RFI), and other troubleshooting and resolutions of construction related issues.

3 Qualifications/Experience of Structural Engineers

A. B. C. Projects/Familiarity & Professional Licenses/Certifications

Greg Hess

PE, SE

Structural Engineer

FIRM
KPFF Consulting Engineers

EDUCATION
MS, Structural Engineering, Georgia Institute of Technology

BS, Civil Engineering, Bucknell University

REGISTRATIONS
Professional Engineer in Washington, #40827

Structural Engineer in Washington, #40827

CERTIFICATIONS
WSDOT Certified Bridge Inspection Team Leader/ WA/2016/ #G1615

ATC-20 Disaster Response Training

SEAW Bridge I & II Refresher Course Instructor (2013-2023)

Greg has over 22 years of successful bridge engineering experience and has served as project manager and lead structural engineer on various bridge projects, throughout the State of Washington. Greg has served as EOR on hundreds of bridges and provides extensive knowledge on all types of new design and preservation projects including steel and concrete rehab, fish passage, walls, deck overlay, bridge painting, bridge widening, barrier replacement , and seismic design. Greg has in-depth understanding of WSDOT policies honed from working on various State-wide projects including multiple WSDOT design-builds, WSDOT Bridge On-calls, and Regional GEC's and Staff Augmentation.

Greg has 22 years of experience with relevant WSDOT Bridge Design Office policies and procedures.

WSDOT, Mullen Road Bridge Deck Repair, Spokane Valley, WA, 2022—2023

Project Manager/Engineer of Record for repair plans for this 168-foot concrete tee girder bridge that crosses I-90, which exhibited extensive cracking and spalling in its concrete deck. The analysis established demolition limits, construction load restrictions, sequencing, and repair details to ensure that the existing structure would remain sound throughout the rehabilitation. The team worked diligently with WSDOT, checking in multiple times each week, to develop a detailed deck removal and overlay phasing plan that would meet WSDOT's goals of maintaining two lanes of traffic on the bridge. Due to the heavy deterioration of the deck and to maximize construction efficiencies, KPFF performed detailed structural analysis to determine allowable construction loads and contingencies for working around areas that require full-depth deck removal and reconstruction. KPFF completed the design in approximately three months. The project was constructed summer 2023.

WSDOT, Bridge and Structures Staff Augmentation, Various Locations, WA, 2022—Ongoing

Contract Manager/Engineer of Record. Greg is the main point of contact with WSDOT and oversees a team of three engineering firms that collaborate to deliver urgent or unexpected structural engineering tasks to support the BDO. Projects completed to date include several deck overlays, expansion joint replacement, independent engineering analysis, and load rating. Greg also provides quality control and technical oversight serving as EOR on select tasks.

WSDOT, Bridge On-Call, Various Locations, WA, 2015—2020

Project Manager/Engineer of Record for on-call contract with WSDOT Bridge division. Greg oversaw a team of structural engineers that at peak effort exceeded 10 engineers working concurrently to deliver multiple concurrent projects. Work orders included four load rating packages consisting of 30 major bridges along I-90 and I-5 corridors, seismic retrofits for three bridges along the JBLM critical lifeline route, steel truss bridge paint condition assessment, the design of a new four-sided box culvert with MSE walls, and construction support services. Greg served as Engineer of Record and provided technical oversight and quality control on a majority of the tasks.

Kåre Hjorteset

PE, SE

Structural Engineer

FIRM
WSP

EDUCATION
MS, Civil Engineering, Norwegian Institute of Technology

BS, Civil Engineering, Norwegian Institute of Technology

REGISTRATIONS
Professional Engineer in Washington, #28540

Structural Engineer in Washington, #28540

Kåre has extensive experience in the design of highway and transit structures for projects in Washington, across the United States, and internationally. He has served as a lead structural reviewer for bridge and other transportation structures with expertise in the design of both steel and concrete bridges, bridge rehabilitation, seismic analysis, foundation analysis, and design of prestressed concrete bridges. He is involved in the industry as a member of American Concrete Institute, and was part of the team that developed the Federal Highway Administration's Seismic Bridge Design Course, which involved the development of design examples and training materials utilized by state departments of transportation nationwide.

Kåre has 31 years of experience with relevant WSDOT Bridge Design Office policies and procedures.

WSDOT, I-405/NE 132nd Street Interchange Design Build, Kirkland, WA, 2021—2023

Structural quality control and assurance manager reviewing the design of 16 different walls, three (3) buried fish passage culverts, the seismic retrofit of two (2) mainline SR 405 bridges, sign structures, moment slabs, noise walls, and grade separation barriers. Wall types included block walls, soldier pile walls, soil nail walls, anchored walls, and concrete cantilever walls. Bridge retrofits included concrete restrainers and bolsters, and carbon fiber reinforced polymer wrapping of crossbeams and columns. Designs followed the project RFP and WSDOT standards. Kare will use his knowledge of WSDOT standards and experience reviewing structural design submittals to efficiently provide similar services representing WSDOT in the review of other Consultant's work products on this contract.

Sound Transit, R200 Downtown Redmond Link Extension, Redmond, WA, 2019—2023

Structural Lead responsible for Design-Build Project Management and construction support of the guideway for approximately 3.4 miles of double-track elevated and at-grade Light Rail Transit guideway as well as six vehicle bridges for Sound Transit. Represented an extension of Sound Transit staff participating in meetings with the design builder through the design development, reviewed and commented on the design builder's design submittals, and reviewed construction submittals, RFI's, and design changes on behalf of the Owner. Kare will used the skills gained representing the Owner on the DRLE project to reviews of Consultant designs representing WSDOT on this project.

WSDOT, Triangle (I-5/SR-161/SR-18), Federal Way, WA, 2022—Present

Structural project engineer developing conceptual designs and RFP procurement documents for nine different fish passage culverts passing underneath Interstate-5, SR 18, and SR 161, for WSDOT. Also responsible for the conceptual design and procurement document of 12 different walls, and two bridge structures. All the designs are being developed following WSDOT standards. Kare will use his in-depth understanding of WSDOT's standards and practices gained from working on many different facets of the job to help seamlessly augment WSDOT's BSO staff on this opportunity.

Arzhang Alimoradi

PHD, SE

Structural Engineer

FIRM
TranTech Engineering, LLC

EDUCATION
PhD, Civil Engineering, University of Memphis, TN Herff College of Engineering Fellow

REGISTRATIONS
Professional Engineer in Washington, #19110914

Structural Engineer in Washington, #19110914

Arzhang has 22 years of experience in transportation design, bridge design and rehabilitation, seismic and dynamic analysis, steel and reinforced concrete structures, earthquake engineering, performance-based design, design optimization and vibration isolation and damping. He has worked on projects with construction costs up to $2.5 billion in super-tall and long span structures in high seismicity regions. His work includes several successful bridge design, engineering support, and retrofit projects in Washington state that adhere to WSDOT, FHWA, and AASHTO standards. Arzhang is an excellent communicator and is easy to work with. His recent experience on WSDOT Staff Augmentation for bridge design provides familiarity with WSDOT Bridge Design Office policies and procedures.

Arzhang has three years of experience with relevant WSDOT Bridge Design Office policies and procedures.

WSDOT, Staff Augmentation, Bridges and Structures, SR 9/Marsh Road/ Snohomish River Bridge Design Check, WA, 2022—2023
Senior Structural Engineer / QA/QC. This project involved Quality Control for the Snohomish River Bridge SR 9 Design – a five-span, steel plate girder structure that will carry two traffic lanes with shoulder over the Snohomish River and existing railroad tracks. Arzhang performed independent calculations, a detailed review of plans, and load rating check. The project uses current AASHTO and WSDOT Standards. This was part of TranTech's current WSDOT Staff Augmentation contract with KPFF.

WSDOT, I-5, SR 161 SR 18 Triangle Interchange, WA, 2022—2023
Senior Structural Engineer. Arzhang provided engineering support for the design of the SR 161 SR 18 Triangle Interchange in Federal Way along I-5. This project includes a new exit, exit ramps, a roundabout, widening, fish passage improvements, and will improve mobility and ease congestion in this area. The project uses AASHTO LRFD Bridge Design Specifications, LRFD Guide Specifications for Seismic Bridge Design, and WSDOT Standards.

WSDOT, SR202/Evans Creek and Patterson Creek Fish Passage, WA, 2020—2020
Senior Structural Engineer. This project calls for the replacement of four culverts that pass under State Route 202 between Redmond and Fall City. The culverts for Evans Creek, Patterson Creek and two unnamed tributaries to Patterson Creek pose a barrier for fish migration because the water flows too fast, is too shallow, and /or drops too rapidly. Arzhang's responsibilities included the structural design criteria for headwalls and wingwalls, box culverts, and review of structural shop drawings and calculations.

4 Methods, Strategies, and Tools

A. Effective Project Management

Through years of experience working on and managing bridge design and construction projects, our Project Managers and Structural Engineers have developed and refined methods, strategies, and tools to effectively manage projects. Where applicable, they will be applied on this project to maintain schedule, manage costs, and ensure quality.

WSDOT's Olympic 29 - Project-wide Checklist

While our Project Managers have many existing tools, we will look for opportunities to customize tools for this contract. Standardized reports, checklists, or documentation of decisions can help expedite reviews, ensure a consistent approach across projects, and provide transparent documentation.

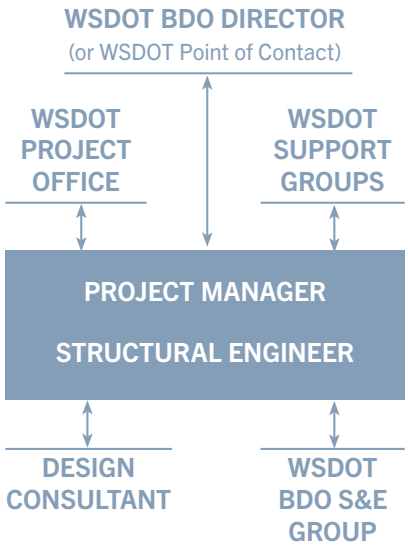
On WSDOT's Olympic 29 progressive design-build contract, KPFF's Project Manager and Task Leads worked with WSDOT to develop a Fish Passage Vertical Clearance Checklist. The checklist summarized key hydraulic, maintenance, environmental, right-of-way, and structural information considered when determining the appropriate vertical clearance at each of the 29 project sites. It also documented concurrence by the project engineer, region project development, region maintenance, and State Hydraulics Engineer. The checklist proved a helpful tool to facilitate discussions and then document the final decision.

Information Sharing Across Multiple Offices and Disciplines

Sharing information between disciplines is essential for a successful project. Survey, geotechnical, civil, and hydraulic parameters provide the framework for bridge and structure design.

Based on the description of work provided in the Request for Proposal, KPFF envisions the workflow shown in the *Project Workflow Figure at top right.*

The WSDOT BDO Director, Project Office, and Support groups will provide the project scope and design parameters. Our Project Managers will use that information to scope and plan the project. Next, they will work with the Design Consultant and WSDOT BDO S&E group to create a PSE set. Finally, during construction, they will facilitate coordination between the WSDOT Project Office and the Design Consultant to respond to RFI's, review submittals, and resolve issues.



Information sharing is best initiated during the scoping phase. Clearly defining the information that is needed and who will supply it starts the conversation between disciplines. Including this level of detail in the Scope of Work helps to eliminate additional rounds of information requests. A detailed scope also facilitates a check that all information that is required by one discipline is included in the scope of the other disciplines.

At the project kickoff meeting, the key parameters from each discipline can be identified. For example, bridge design can progress if hydraulics provides the hydraulic opening, thalweg elevation, design flood scour, and check flood scour. A complete report or memo is not required. It is also helpful at this stage to identify who is the primary point-of-contact for each discipline.

Sandpiper East Culvert - Multi-discipline Coordination

When design schedules are aggressive or project milestones are approaching, shorter, more frequent meetings can be helpful.

For the 60% PSE submittal of King County Housing Authority's Sandpiper East Culvert Replacement project, KPFF's Project Manager established a weekly 30-minute virtual meeting. It provided an opportunity for civil, structural, and hydraulic disciplines to communicate information needs and resolve issues efficiently as the design rapidly progressed. While coordination emails can get buried in inboxes, the virtual meeting ensured key items were brought to everyone's attention. Despite an expedited design schedule, the 60% deliverables were of high-quality and well-coordinated.

As the design progresses, biweekly project meetings are a useful tool to coordinate the efforts of multiple disciplines and keep the Project Manager informed of design progress. The discussion can be structured discipline by discipline. These meetings are an opportunity to routinely ask team members if they have the information they need to accomplish their tasks. Also, if they don't have the information they need, when do they need it to not impact the project schedule. Concise meeting minutes that summarize the discussion and action items for the next meeting help to ensure all disciplines are on the same page and are accountable to planned progress.

Virtual meetings (Teams, Zoom, etc.) and web-based file storage (ProjectWise, SharePoint, etc.) are routinely used to facilitate coordination between multiple offices, organizations, and disciplines. The team finds that virtual meetings remove many of the logistical challenges of meeting between offices, which encourages more frequent interaction between team members.

Our Project Managers will establish routine check-in meetings on each project. These meetings can eliminate many emails because most issues can be held for a few days to be addressed in a meeting. In addition, the live question and answer interactions in a meeting can establish a better understanding of the impact one discipline's work has on another, inspire collaboration, and result in a better solution for the project.

Constructive Submittal Reviews

Submittal reviews are most effective when the review comments are clearly communicated and able to be tracked. This can be accomplished in a few different ways depending on the types of submittals being reviewed. A comment log table in Excel is a basic tool that can be used to document review comments on a variety of submittal document types. One advantage of a comment log is that review comments on all project deliverables can be contained in one document.

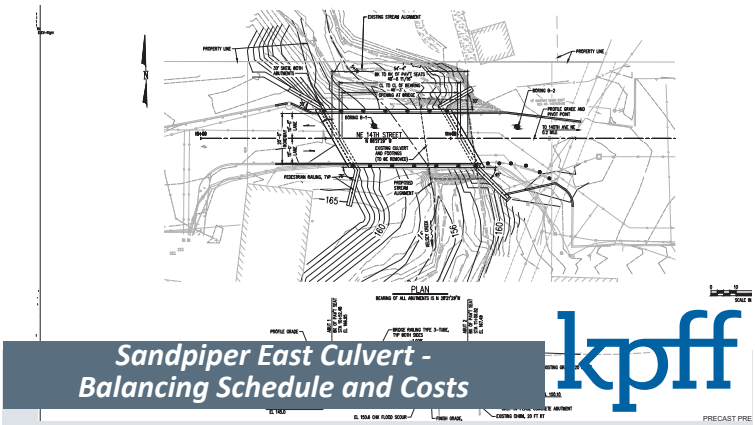
Other methods of comment tracking are specific to the type of deliverable document. Bluebeam Studio can be utilized for review of PDF plan set deliverables. It allows comments to be associated with specific linework, allows markup of that linework in the comment file, and provides a system of tracking responses. Similarly, for report and memo submittals, comment tracking in Word can be helpful to keep comments and markups in one document, associated with specific text. Our Project Managers are familiar with all of these tools and can work with WSDOT to select the best one for each project phase or deliverable.

Regarding the comments themselves, it is helpful to check that the feedback provided is clear and specific. After comments are compiled, but before they are sent out, our Project Managers review the comments and ask the following questions:

- Is it clear what part of the design/document this comment refers to?
- Is this comment a suggestion or direction to make a change?
- Is the comment specific about what is suggested or needs to be changed?
- Is the comment in conflict with a comment from another reviewer?

Once comments are returned and the originator has an opportunity to review them, a comment resolution meeting is helpful to gain concurrence on the path forward before changes are implemented. Prompt response and resolution is a helpful strategy for productive submittal reviews. When appropriate, comments are carried over into future design phases until they have been resolved.

To confirm deliverables are complete, WSDOT standards provide several checklists (Preliminary Plan Checklist, Plans Preparation Checklist, Structural Submittal Expectations Matrix) as tools to ensure deliverables contain all necessary information.



Sandpiper East Culvert - Balancing Schedule and Costs

For the Sandpiper East Culvert Replacement project, the coefficient of friction for the bridge spread footing design was not included in the first draft of the geotechnical memo. To maintain the expedited schedule, structural design of the cast-in-place abutment proceeded with an assumed value. When obtained, the coefficient of friction was small. The design that was complete and drafted did not meet code requirements.

KPFF's Project Manager could have solved the issue structurally by increasing the footing thickness or adding a shear key on the bottom of the footing. However, these options increased the depth of excavation and complicated construction. Before implementing a structural solution, our Project Manager determined what coefficient of friction was required and reached out to the geotechnical engineer. It took a week of time, but the geotechnical engineer reevaluated their recommendation and was able to achieve the required coefficient of friction.

Resolution of Design and Construction Issues

When an issue arises during design or construction, our Project Managers' strategy is to first gain an understanding of the problem. This requires an investment of time, but it frequently pays dividends. It can confirm that an issue does in fact exist and is not the result of poor communication or a calculation error. Gathering information about the issue may reveal a commonsense solution and, if not, provides specific data and figures to facilitate problem solving. While it may be fastest to solve an issue within one discipline, the best solution may require involvement from multiple disciplines. When appropriate, our Project Managers, will coordinate the Design Consultant and WSDOT Support Groups to resolve issues.

In general, the best solution is one that helps achieve the goals of this contract: maintain schedule, responsibly spend funds, and create a high-quality product, as well as any project specific goals. The best solution will be project and phase specific. It depends on the project status and current priorities. Through tracking the budget and design progress, our Project Managers will have the perspective to help identify the best solution for each issue that arises during design or construction.

Tracking Progress and Expenditures: Design

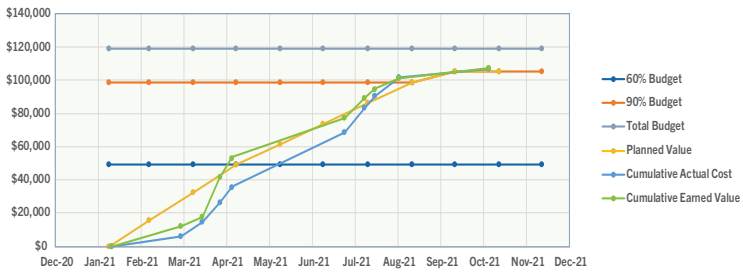
Tracking progress and expenditures is essential to ensure funds are spent responsibly and projects are delivered on time. Our Project Managers' typical approach is to use an earned value method. The earned value method compares three quantities on a regular, often monthly, basis.

The first quantity is the "planned value." Based on the project budget and schedule for each submittal, a plan for how much budget will be spent each month is determined. The goal is to create a reference line to compare the next two quantities against. While a more sophisticated S-curve approach could be utilized, a simple linear progression of budget spending in each phase is often sufficient.

The second quantity is the "actual cost." This is the amount of budget spent each month and can be pulled from the project accounting system.

The third quantity is the "earned value." This value is an estimate of how much work is complete relative to the total amount of work, a percent complete. For this contract, the Design Consultant would be asked to provide an estimate of the percentage complete on a monthly basis. This percentage is multiplied by the project budget to obtain a dollar value for comparison to planned value and actual cost.

Our Project Managers compare planned value, actual cost, and earned value while also considering the contents of monthly progress reports from Design Consultants. The project financial status should be consistent with design progress or the number of construction RFI's/submittals. Monthly progress reports that include earned value ensure Design Consultants do not lose focus of project expenditures while they progress the design.



Richardson Creek - Earned Value Tracking

KPFF's Project Manager created this graph to track earned value for Snohomish County's Richardson Creek project. The bridge was taken to 90% design as part of this contract. It shows the 90% budget was exceeded in July to modify the design to comply with new permitting requirements. In August 2021, the project budget was increased with a contract supplement to cover that additional effort.

For complex projects on tight time frames a project management plan can be utilized to map out different ways a project could progress. It identifies key decision points and risks associated with different paths. Risks are assessed based on the probability they will occur and the impact if they do occur. The framework provided by the project management plan facilitates efficient and informed decision making at project milestones.

West Seattle Corridor Bridge

The West Seattle Corridor Bridge Rehabilitation and Strengthening (WSCBRS) Project developed a project management plan that identified the different directions the project could go based on the findings from the bridge inspections, non-destructive testing, and our ability to correlate predicted behavior to actual measured behavior. This included a MS project schedule that identified key decision points/dates, and a risk registry. Design by definition is the process of change. It is not a question of if there will be a change. It is a question of what will change. The risk registry was a mechanism to help us identify potential changes and mitigation strategies should they occur. In the case of the WSCBRS, the risks were monetized, which aided in the decision on whether or not to further rehabilitate the bridge or pivot towards replacing the bridge.

Tracking Progress and Expenditures: Construction

During construction, diligent tracking of RFI's and submittals helps to ensure review timelines are consistent with the contract requirements. A log is also a helpful summary of construction support work that Project Managers can use if a contractor makes a claim that the design team has impacted the construction schedule or cost.

In addition to noting simple logistics such as date received and date responded, for RFI's, our Project Managers track the reason for the RFI: missing information, conflicting information, clarification, not needed, change request, other. This internal note for each RFI helps the design team understand what a true RFI is and when RFI documentation has been used for other purposes. Similarly, for submittals that require multiple revisions, a note is added to the log regarding the reason for revisions. Keeping these additional notes in the log allow it to be a complete summary of construction support work.

Report on Project Status

A standardized approach to project reporting allows for efficient review and easy comparison month to month. Our Project Managers find the following items provide valuable documentation of project status:

- Invoice
- Progress Report
  - Work Complete, Work in Progress Summary
  - Requests for Supplements
  - Issues Impacting Budget and Schedule
- Earned Value Tabulated and Graphed

During the design phase, using the same formatting for the budget definitions, progress report work summary, and earned value allow for easy comparison between the Invoice, Progress Report, and Earned Value report. This approach allows our Project Managers to provide effective reviews and accurate approval recommendations.

During construction, listing specific RFI's and submittals in the work summary help to ensure costs are consistent with completed work. While the actual number of RFI's and submittals is unknown at the start of the contract, assuming a specific number during scoping of construction services allows a comparison of reviews complete / cost expended to the expected number of reviews/ phase budget.

Conclusion

Our Project Managers have used the above methods, strategies, and tools to deliver many projects on schedule and on budget. The team will leverage that experience and work with WSDOT BDO to refine these systems for this contract. The best tools will enable our Project Managers to deliver projects on time, ensure funds are spent responsibly, and generate high-quality deliverables while minimizing the time spent by Project Managers and Design Consultants to support the tool.

Maple Heights Bridge

The Maple Heights Bridge Seismic Retrofit for the City of Everett was a seismic retrofit of a 1979 constructed, 303-foot long, 3 span reinforced concrete bridge. One interesting aspect of the project was the roadway profile's low point is located on the bridge. TranTech's Project Manager worked collaboratively with the internal team, subconsultants, and the City to design a new storm conveyance system with enlarged bridge drains that will handle a 100-year flood scenario. The drainage design avoided stream impacts and permit delays, supporting a limited timeline. The project was completed, from design through construction, in 18 months. The level of collaboration was supported by biweekly meetings, regular, clear communication of schedule and scope, collaborative submittal reviews that yielded prompt resolution of outstanding design issues and understanding of the design requirements of regulatory agencies.

5 Availability to Provide Services

A. Proposed Project Managers and Structural Engineers

The KPFF team has the capacity and commitment to respond to and complete assignments in a timely and efficient manner. Our key personnel were selected based on their WSDOT and bridge expertise, availability to complete the anticipated work of this project, and commitment to seeing this work through to completion. Our team members' **availability in hours per week** is shown below for the remainder of 2023 and 2024-2028.

Key Team Members	2023	2024						
	Q4	Q1	Q2	Q3	2025	2026	2027	2028
KPFF								
Rachel Liberty, PE, SE *Project Manager*	20	20	20	20	20	20	20	20
Greg Hess, PE, SE *Structural Engineer*	10	10	10	10	10	10	10	10
WSP								
Greg Banks, PE, SE *Project Manager*	10	14	20	20	20	20	20	20
Kåre Hjorteset, PE, SE *Structural Engineer*	10	10	10	14	20	20	20	20
TranTech								
Nick Nikpour, PE *Project Manager*	10	20	20	32	32	32	32	32
Arzhang Alimoradi, PHD, SE *Structural Engineer*	10	10	10	10	10	20	20	20

Individuals Long Term Commitments

Long term contract commitments of both the Project Manager and the Structural Engineer.

Key Team Members	Project Name	Client	Project Start Date	Project End Date	Time Commitment (hrs) Per Week
KPFF					
Rachel Liberty *Project Manager*	US 101/ SR 109 (Olympic 29)	WSDOT	Ongoing	03/2024	8
Greg Hess *Structural Engineer*	BSO Staff Augmentation	WSDOT	Ongoing	6/2027	4
	NW Region Preservation GEC	WSDOT	Ongoing	1/2028	4
	Bridge On-call	King County	Ongoing	8/2024	4
	Bridge On-call	Bellevue	Ongoing	6/2025	1

Key Team Members	Project Name	Client	Project Start Date	Project End Date	Time Commitment (hrs) Per Week
WSP					
Greg Banks *Project Manager*	Granite Falls Bridge No. 102 Replacement	Snohomish County	2/2022	3/2025	10
	SDOT Structural On-Call	City of Seattle	6/2023	6/2025	10
	BSO Staff Augmentation	WSDOT	5/2022	6/2027	4
Kåre Hjorteset *Structural Engineer*	Downtown Redmond Link Extension	Sound Transit	6/2019	9/2024	10
	Stewart Road Bridge Replacement	City of Sumner	2/2018	12/2023	4
	Triangle Project (I-5, SR-161, SR-18)	WSDOT	6/2023	6/2025	6

Key Team Members	Project Name	Client	Project Start Date	Project End Date	Time Commitment (hrs) Per Week
TranTech					
Nick Nikpour *Project Manager*	C Kummer Bridge Replacement	Douglas County	8/2023	3/2024	8
	Jones Road Bridge Replacement	Lewis County	1/2023	12/2023	6
	Green to Cedar River Trail Crossing	King County	4/2022	12/2023	6
Arzhang Alimoradi *Structural Engineer*	Edgewater Bridge replacement	City of Everett	1/2022	8/2025	12
	Snohomish Bridge No 1 Scour Repair	Snohomish County	3/2024	12/2024	6
	Green River Bridge Repair	City of Kent	12/2023	12/2023	6

SEATTLE

TACOMA

LACEY

SPOKANE

PORTLAND

EUGENE

SACRAMENTO

SAN FRANCISCO

LOS ANGELES

LONG BEACH

ORANGE COUNTY

SAN DIEGO

BOISE

SALT LAKE CITY

DES MOINES

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