Project Management Plan

SR 99
Aurora Avenue – George Washington Memorial Bridge
Seismic

XL2989
WIN A09946S

April 2010

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
Northwest Region
Seattle, Washington

Hung Huynh, P.E.
Project Engineer
Initiate & Align Worksheet
SR 99 Aurora Ave. – George Washington Memorial Bridge - Seismic
MP 34.17 to 34.73
Project Manager: Andrea Burgess

Project Description:
This project will design a seismic retrofit for the SR 99 Aurora Avenue- George Washington Bridge’s north approach span (bents N3 to N15) and south approach span (bents S3 to S9).

Team Mission/Assignment:
To deliver a well thought out PS&E that is prepared in accordance with all the applicable guidelines, on time, within budget, constructible and minimized alteration of the appearance of this historical bridge.

- Scoping
- Preliminary Engineering
- Construction

Team Identification
- Access
- Architecture
- Bridge & Structures
- Construction
- Consultant Liaison
- Design & Plans Review
- Environmental
- Geographical Services
- Geotechnical Services
- Highways & Local Programs
- Hydraulics
- Land Survey
- Local Agencies
- Roadside Development
- Maintenance
- Materials
- Program Management
- Public Information Office
- Real Estate Services
- Right-of-Way
- Traffic
- Transportation Data Office
- Utilities
- Other

Major Milestones
The project team tracks major milestones, to provide an overview and status to the WSDOT Management, the Project Team, Legislature, and the public.

- Project Definition Complete: 04/22/09
- Begin Preliminary Engineering: 06/06/07
- Environmental Documentation Complete: Aug. 2010
- Right of Way Certification: Sept. 2010
- Environmental Permits Received: Oct. 2010
- Advertisement (Ad Date): Jan. 2011
- Bid Opening: Feb. 2011
- Contract Award: Mar. 2011
- PE Phase Complete: Apr. 2013
Roles & Responsibilities

Biologist
- Provide biological recommendations to Design Team.
- Provide approved Biological Assessment for the project. Coordinates with the appropriate agencies for their concurrence on the BA.

Bridge and Structures
- Provide structural guidance on bridge retrofit needs.
- Provide alternative schemes or options.
- Prepare the Bridge Design Plans.
- Act as an advocate for the Bridge office by communicating concerns/issues between the design team and the Bridge office.
- Coordinate, prepare and administer the contracts with structural consultants as needed.

Construction Manager and Project Engineer
- Provide guidance and advice during the design phase to the Project Delivery Team on constructability issues.
- Review the engineer’s estimate, project plans, and specifications and provide comments in a timely manner.

Construction Traffic (CTCO)
- Provide input and review traffic control strategies, construction staging plans, and traffic control plans.
- Coordinate with City of Seattle to provide lane, road, and ramp closure hours.
- Provide liquidated damage amounts for lane, ramp, and roadway closures as appropriate and obtain approval from HQ for these amounts.
- Assist in identifying critical closures and region-wide project coordination.
- Provide guidance for traffic control development in projects.

Cultural Resources Specialist
- Provide cultural resources reports and documentation for project advertisement.
- Communicate with the appropriate State, Local, and Federal agencies to obtain the required approvals.
- Act as an advocate for the Cultural Resources office by communicating concerns/issues between the design team and the Cultural Resources office.

Design Project Engineer
- Project Engineer of record.
- Liaison between the Project Delivery Team and the Management Team.
- Set goals and provide guidance and advice as the project progresses.
- Monitor the schedule and budget.
- Approve and stamp Design Office project plan sheets.
Design Project Manager
- Coordinate design team operations and incorporate products from specialty groups to the design file & PS&E.
- Design oversight; including meeting requirements of the Design Manual, other manuals, and the Team Mission.
- Provide technical advice regarding individual design elements.
- Develop and provide project information as needed by specialty groups.
- Bring concerns from the design team to the management team.
- Update the design team on decisions/recommendations of management.
- Manage the project schedule.
- Maintain a project issue log and hand over to the construction office upon project award.

Design Team Member
- Assist with preparation of the Design File and PS&E.
- Ensure design meets requirements of Design Manual, other manuals, & Team Mission.
- Provide information, as needed, to specialty groups.
- Bring concerns to the Project Manager’s attention.

Design & Plan Review
- Preparation and advertisement for PS&E packages, including review, bid opening, award, and contract execution.
- Review and preparation of addenda.
- Review, process, and the recording of the design documentation files.

Environmental Permit Coordinator
- Provide environmental documentation and applicable permits for project advertisement.
- Coordinate any mitigation to address environmental impacts.
- Communicate with the appropriate State, Local, and Federal agencies to obtain the permits required.
- Act as an advocate for the Environmental office by communicating concerns/issues between the design team and the Environmental office.

Environmental Technical Advisor
- Coordinate with permit coordinator and design team on design and constructability issues and typical water quality protection measures for in or near water work.
- Provide initial and interim feedback for the creation and review of the projects TESC plan as the design progresses.
- Provide feedback to the environmental coordinator or the design team on water quality, water treatment, or mixing zone or other environmental sensitive area documentation development or submittals.
- Attend design meetings as needed.

Scope of Work and Deliverables
- Provide review comments and corrections for TESC plans.
• Provide reviews and comments for 60% and 100% PS&E reviews
• Attend roundtable meetings for 90%, 100% and Ad Copy PS&E reviews
• Advise on special provisions related to TESC and SPCC Plans
• Participate in Constructability Reviews & Environmental Commitment Meetings

Highways and Local Programs
• Facilitate a link with local agencies and partners such as tribal governments, ports and transit.
• Work closely with public works staff, engineering staff, and elected officials.
• Guide, counsel, and collaborate with agencies on project scoping, funding, design, environmental documentation, construction, and project closure.
• Ensure representation of and advocacy for each agency's transportation concerns, interests, and needs to the Washington State Department of Transportation.

Hydraulics and Water Quality Coordinator
• Ensure that environmental protection and compliance is achieved with respect to the region’s water resources.
• Coordinate with resource agencies and designers; participate in environmental initiatives and scope of work reviews.
• Issue approvals and concurrences with stormwater reports and reviewing PS&E submittal to ensure environmental compliance with all applicable regulations and overall safety of the roadway for the general public.
• Act as an advocate for the Hydraulics and Water Quality office by communicating concerns/issues between the design team and the Hydraulics and Water Quality office.

Program Manager
• Monitor the schedule and budget for program delivery.
• Participate in securing the necessary funds.
• Provide guidance and advice as the project progresses.

Public Information Office
• Support the project by providing clear communication with the public through news releases, webpage updates, and various written and graphical communication tools.
• Respond to inquiries from the public and news media through e-mail, as well as by telephone, and refer questions to the many experts within WSDOT.

Real Estate Services
• Performs and coordinates all real estate transactions for the department, and issues guidelines for all state agencies engaged in real estate activities covered by the Uniform Relocation Assistance and Real Property Acquisition Policies Act.
• As needed: perform appraisal to determine the market value of the property to be acquired, acquisition from property owners and, where necessary, relocation assistance for residents and businesses impacted by property acquisition.
• Manages WSDOT owned property and rights of way.
Structures Consultant – TY Lin

- In accordance with the consultant agreement, perform analysis and work needed to produce the following deliverables:
  - Written Report: An explanation of computer models and analytical procedures, followed by a summary of results showing computed force demands and drift computations (residual drift will not be concluded from the linear analysis model). A catalog of main member D/C ratios, a review of the detailing and expected ductility of the existing bridge members, a review of retrofit options, and a recommendation on retrofit strategies will be presented as an assessment of seismic vulnerability for the approaches. A geotechnical report will be attached as appendix to the structural vulnerability report.
  - Programmatic Retrofit Estimate: Construction cost estimate based on current price history for similar retrofit strategies as contemplated within the report.
  - Presentation: The results will be presented in a half day conference with WSDOT after completion of the analysis and report. All of the methods and items contained in the report will be discussed in the presentation.
  - Computations: The results of computerized computations will be presented in binder format. Computations will be included for the main member capacity determinations, and the evaluation of D/C ratios for the main elements. Analysis results will be summarized in spreadsheet-type tables, with detailed input and outputs provided in electronic format. The entire text package will be included in pdf format as well.

Structures Consultant – Washington State University

- In accordance with the consultant agreement, perform analysis and work needed to produce the following deliverables:
  - Task 1: The Principal Investigator (PI) will participate in the development of and provide recommendations to the WSDOT Bridge Office on the testing plan for the column specimens, including specimen configuration and details, testing setup, loading protocol, instrumentation, data collection, and documentation of the test results.
  - Task 2: Coordinate with the contractor constructing the specimens to gain access and install strain gauges and any other instrumentation embedded in the column specimens.
  - Task 3: Design and fabricate the fixtures that will be used to test the column specimens. The column specimens will be tested using fixed supports at the base and the top, producing double bending in the specimens.
  - Task 4: Perform tests on the specimen materials to document properties, including compression tests on concrete cylinders and tension tests on reinforcement samples.
  - Task 5: Handling of specimens as needed to move them into and out of the testing facility.
  - Task 6: Perform tests using the agreed-upon loading protocol on 1/3-scale column specimens.
Task 7: Analyze the data collected from the tests and draw conclusions on the effectiveness of the FRP wrapping and reentrant corner anchorage detail for improving the shear strength of cruciform-shaped sections for both solid and modified split columns.

Task 8: Prepare final report documenting the tests, test data and analyses, and conclusions and recommendations resulting from the study.

Sno-King Survey Crew
- Provide general survey need for Design Office.

Noise, Energy, and Air Quality Coordinator
- Provide guidance and advice to Design Team regarding AQ (fugitive dust control) and temporary nighttime construction issues.
- Obtain noise variance from the City of Seattle
- Identify potential risks and additional mitigation costs that the construction office may encounter if the nighttime work results in a high number of complaints.
- Work with the public affairs office to develop a communication plan to inform residents within the work zone about the nighttime work.

Utilities
- Evaluates and authorizes the installation of utilities and other facilities or activities within the state highway right of way, including oversight of utility permits, franchises, franchise consolidation, renewals and amendments.
- Coordinates the project’s needs with the utilities companies. The areas of responsibility include: utility locates; utility relocation; subsurface utility engineering; utility agreements; control zone guidelines compliance; utility service agreements.
Measures of Success
The following is a list of requirements that we all must adhere to for this project to be successful:

- Maintain open, effective and timely communication within the team, with sponsors, other agencies, stakeholders, and the public.
- Develop a design that meets Local agency, Regional, Headquarters, Landmarks Preservation Board, and community needs.
- Meet project ad date of January 10, 2011.
- PS&E is clear and complete with minimal change orders in construction

Project Parameters
- **Project limits** – SR 99, MP 34.14 to 34.76
- **Funding limits** – Authorized PE: $1,951,847
  CN: $7,394,304
- **Regulatory** – Design must receive approval from the Seattle Landmarks Preservation Board and State Dept. of Archaeology and Historic Preservation (DAHP) if alterations are made to historic elements of the bridge.
- **Maintenance** – Design must allow access for maintenance operations, inspections, and painting.

Operating Guidelines
- Team decision-making process:
  - Voice and respect each other’s opinions
  - All team members support final team decisions.
  - Resolve conflicts.
  - Early & continued involvement of key players (internal and external).
- Communication:
  - Refer to the Communication Plan.
- Manage team change:
  - Communicate change in a timely manner and manage in accordance with the Change Management Plan.
# Project Team Directory

**SR 99 Aurora Ave. – George Washington Bridge Seismic Retrofit**  
**MP 34.14 to 34.76**  
Project Manager: *Andrea Burgess*

<table>
<thead>
<tr>
<th>Department</th>
<th>Name</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Colleen Kroe</td>
<td>206 440 4902</td>
</tr>
<tr>
<td>Biology</td>
<td>Brian Bigler</td>
<td>206 440 4519</td>
</tr>
<tr>
<td>Bridge and Structures</td>
<td>Craig Boone</td>
<td>360 705 7172</td>
</tr>
<tr>
<td>Bridge Maintenance</td>
<td>Archie Allen</td>
<td>425 739 3700</td>
</tr>
<tr>
<td>Construction Engineering Manager</td>
<td>Messay Shiferaw</td>
<td>206 440 4689</td>
</tr>
<tr>
<td>Construction PE</td>
<td>Mike Askarian</td>
<td>206 768 5861</td>
</tr>
<tr>
<td>Construction PE</td>
<td>Aleta Borschowa</td>
<td>206 768 5862</td>
</tr>
<tr>
<td>Construction Office Engineer</td>
<td>Sepehr Sobhani</td>
<td>206 768 5854</td>
</tr>
<tr>
<td>Construction Traffic Coordinator</td>
<td>Juan Reyes</td>
<td>206 440 4467</td>
</tr>
<tr>
<td>Cultural Resources Specialist</td>
<td>Leslie Schwab</td>
<td>360 570 2580</td>
</tr>
<tr>
<td>Design Engineering Manager</td>
<td>Martin Palmer</td>
<td>206 440 4773</td>
</tr>
<tr>
<td>Design PE - Project Development</td>
<td>Hung Huynh</td>
<td>206 440 4311</td>
</tr>
<tr>
<td>Design PE - Project Management</td>
<td>Mark Allison</td>
<td>206 440 4330</td>
</tr>
<tr>
<td>Design Engineer</td>
<td>Jason Ericson</td>
<td>206 440 4338</td>
</tr>
<tr>
<td>Design Project Manager/Controller</td>
<td>Andrea Burgess</td>
<td>206 440 4313</td>
</tr>
<tr>
<td>Design Review</td>
<td>Leslie Barben-Price</td>
<td>206 440 4783</td>
</tr>
<tr>
<td>Enviro. Permit Coordinator</td>
<td>Bob Caldwell</td>
<td>206 440 4907</td>
</tr>
<tr>
<td>Enviro. Business Manager / Tribal Coordinator</td>
<td>Steve Shipe</td>
<td>206 440 4531</td>
</tr>
<tr>
<td>Enviro. MBTA Review</td>
<td>Kelly McAllister</td>
<td>360 705 7426</td>
</tr>
<tr>
<td>Hazardous Materials Coordinator</td>
<td>Katherine Chesick</td>
<td>206 440 4542</td>
</tr>
<tr>
<td>Highways and Local Programs</td>
<td>Kathy Eldred</td>
<td>206 440 4671</td>
</tr>
<tr>
<td>Hydraulics Program Manager</td>
<td>Erik Hansen</td>
<td>206 440 5076</td>
</tr>
<tr>
<td>Hydraulics Coordinator</td>
<td>Nick Abedin</td>
<td>206 440 4905</td>
</tr>
<tr>
<td>Landscape Architecture</td>
<td>Katey Bean</td>
<td>206 440 4502</td>
</tr>
<tr>
<td>Landscape Architecture</td>
<td>Dave Peterson</td>
<td>206 440 4500</td>
</tr>
<tr>
<td>Noise, Air, and Energy Specialist</td>
<td>Laura Escude</td>
<td>206 440 4554</td>
</tr>
<tr>
<td>Plan Reviewer</td>
<td>Steve Howard</td>
<td>206 440 4115</td>
</tr>
<tr>
<td>Program Management</td>
<td>Azim Sheikh-Taheri</td>
<td>206 440 4761</td>
</tr>
<tr>
<td>Public Information Officer</td>
<td>Mike Murphy</td>
<td>206 440 4699</td>
</tr>
<tr>
<td>Real Estate Services</td>
<td>John Jensen</td>
<td>206 440 4163</td>
</tr>
<tr>
<td>Real Estate Services</td>
<td>Lisa Shauer</td>
<td>206 440 4184</td>
</tr>
<tr>
<td>Sno-King Survey Manager</td>
<td>Joe Simek</td>
<td>206 440 5020</td>
</tr>
<tr>
<td>Utility Coordinator</td>
<td>Heba Awad</td>
<td>206 440 4131</td>
</tr>
<tr>
<td>Compliance Manager</td>
<td>John Maas</td>
<td>206-440-4545</td>
</tr>
<tr>
<td>Environmental Technical Adviser</td>
<td>Mike Walker</td>
<td>206 440 5074</td>
</tr>
</tbody>
</table>
Communication Plan
SR 99 Aurora Ave. – George Washington Bridge Seismic Retrofit
MP 34.14 to 34.76
Project Manager: Andrea Burgess

The communication plan for the project is broken into two sub-areas, Internal and External Communication. Both sub-areas acknowledge that the project partners cannot realize their vision nor can the project delivery team attain our mission without a sufficient, timely and accurate flow of information. We also recognize that effective communication demands effective listening and viewing project decisions from our customer’s perspective.

In order to assure successful delivery of this project, it will be necessary for the project delivery team to accurately inform each other of their needs, updates and timelines. Minutes from meetings listed below will be electronically routed to affected groups as appropriate.

**External Communication**
Timely and meaningful exchange of information external to the project team is critical to secure a positive commitment from stakeholders and the general public. As indicated in the table, that flow may be written or oral, formal or informal.

<table>
<thead>
<tr>
<th>WHAT</th>
<th>WHO</th>
<th>HOW</th>
<th>WHEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Stakeholders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify stakeholders</td>
<td>Andrea Burgess</td>
<td>A stakeholder list will be created and maintained</td>
<td>Feb. 2009</td>
</tr>
<tr>
<td>With the Public</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Involvement (PI)</td>
<td>Mike Murphy</td>
<td>Write Public Involvement Plan (PIP)</td>
<td>Sept. 2009</td>
</tr>
<tr>
<td>Project website</td>
<td>Mike Murphy</td>
<td>Regular Updates</td>
<td>Sept 2009 - Ongoing</td>
</tr>
<tr>
<td>WSDOT contact with public</td>
<td>Hung Huynh / Mike Murphy / Craig Boone</td>
<td>Community Briefings, Webpage, E-mail.</td>
<td>Ongoing</td>
</tr>
</tbody>
</table>
Internal Communication
The following is a list of recurring internal project-related meetings:

Bi-Weekly Coordination Meetings:
- **Purpose**: To facilitate the exchange of information and ideas between Bridge and Structures, Cultural Resources, Design Team, and Public Information Office.
- **Invitees**: All project team members, including Bridge and Structures, Cultural Resources, Public Information, and Design staff.
- **When**: Semi-monthly following identification of a preferred retrofit strategy

Monthly Project Update Meetings:
- **Purpose**: To share project status and discuss current issues.
- **Invitees**: Hung Huynh, Mark Allison, Andrea Burgess, and other team members as needed.
- **When**: Monthly

Design Team Meetings:
- **Purpose**: To discuss specific work in progress and the work plan.
- **Invitees**: Design team staff.
- **When**: Weekly

Regional Confidence Report
- **Purpose**: To discuss project status and Earned Value
- **Invitees**: Andrea Burgess, Hung Huynh, regional management.
- **When**: Second Thursday of each month.
Objective
To identify processes needed to manage completion of preliminary engineering and meet the advertised date in January 10, 2011.

Define and Sequence Activities
The project Work Breakdown Structure (WBS) has been based on the WSDOT Master Deliverables List (MDL) and input from specialty groups. Each WBS component was analyzed to ensure the work was decomposed to a sufficient level of detail, and to determine logical predecessors and successors.

Estimate Activity Resources and Durations
Resources and durations for activities were determined using specialty group input, data from past projects, or data of typical time for completion. Where the exact scope of work is unknown, a conservative approach was taken to estimating the time and resources needed to complete a component of project work.

Develop Schedule
The schedule was developed using the critical path method. Resource leveling was applied to ensure consistent demands on workforce. A baseline for earned value management has been determined. The current schedule is included at the end of this document.

Schedule Control
The schedule will be controlled using the following tools:

- Project Management Software
  - The current schedule is in Primavera Scheduler as Project ID A09946S.
- Updates and Reviews
  - The schedule will be updated by the project manager on a semi-monthly basis to reflect actual start/finish dates and approved changes. Communication with specialty groups is integral to successful schedule assessment and updating.
- Variance Analysis
  - The project manager will calculate the project’s Earned Value (EV), Planned Value (PV) and Actual Cost (AC) and report to region management on a monthly basis. Variances will be documented and an assessment will be made whether corrective action or preventative action is required.
- Resource Leveling
  - Resource leveling will be applied by the project manager to optimize the distribution of work scheduled among resources. Conflicts will be identified and resolved promptly to ensure timely completion of scheduled work.
Objective
To identify processes needed to manage preliminary engineering and construction costs.

Estimate Costs
Estimated costs for the design phase were determined using specialty group input, data from past projects, or data of typical costs. Where the exact scope of work is unknown, a conservative approach was taken to estimating the cost to complete a component of project work. An assessment of project risk was performed to identify activities of work and costs required to mitigate known risk.

The construction phase cost estimate will be calculated in coordination of specialty groups, with review and input from the construction office included as an integral part of determining construction costs. A "Design Estimate Documentation Review Package" excel spreadsheet package will be prepared for use by Executive staff for review and project staff for reference at the 30, 60 and 90% design milestones. The construction estimate will be a topic of discussion at all constructability reviews.

Determine Budget
- Authorized PE: $1,951,847
- Authorized CN: $7,394,304

Control Costs
The project costs will be controlled using the following tools:
- Variance Analysis
  - The project manager will calculate the project’s Earned Value (EV), Planned Value (PV) and Actual Cost (AC) and report to region management on a monthly basis. Variances will be documented and an assessment will be made whether corrective action or preventative action is required.
- Forecasting
  - Forecasting will be employed by the project manager to determine the project’s Estimate at Completion on a weekly basis. The estimate at completion is the sum of the actual and accrued costs, plus the estimated cost of remaining work.
- Change Requests
  - When an assessment of project costs indicates the estimate at completion exceeds the project budget, the change management plan process will be followed to determine a course of action. Potential outcomes include changes to the project scope or schedule, or request for project termination or additional funds.
Change Management Plan
SR 99 Aurora Ave. – George Washington Bridge Seismic Retrofit
MP 34.14 to 34.76
Project Manager: Andrea Burgess

During the life of the project changes to the project scope, schedule, and resources may occur. The sources of these changes may be internal or external initiated by the customers. External changes can also result from other stakeholders, availability of resources, changes in technologies, etc. Whether the effects of changes are positive or negative, managing change is an important factor for success. Managing change will require planning, discipline, and communication among the project team, customers and stakeholders. As the Change Management Plan is executed, the following should occur:

- Improved relationship with customers
- Improved financial performance
- Reduced project delays
- Better project teamwork
- Improved management of project quality.

The following defines the plan this team will use to manage change.

Types of Change that can be anticipated on this project:
- Scope creep
- Staff changes
- Schedule change
- Change in deliverables
- Technical change
- Process/Policy change
- Resources/Technologies/Materials changes
- Public Opinion change

Step-by-Step Process to Manage Change
Use these steps, and sub-steps, as determined for the specific change proposed/encountered.

1. Identify source and nature of the change
   - Determine the type of change (work plan, schedule, technical, etc.)
   - Determine the potential impact and process (formal/informal)
   - Document origin of change (who initiated it, what precipitated it)
   - Identify potentially effected customers and suppliers
   - Identify who should lead the analysis/rest of process
   - Communicate potential to rest of team as needed

2. Analyze the effects of the change
   - How does it relate to purpose/mission?
   - Compare change against the current process
   - Quantify the change (how much, how long, how much risk)
• Cause-effect analysis
• Brainstorm, analyze, and prioritize strategies
• Identify impacts against agreed upon requirements
• Access profound knowledge

3. Develop a response/action plan strategy
   • Document analysis into proposal form
   • Identify customers/stakeholders/level of authority for endorsement
   • Plan steps for presentation by answering these questions:
     • What needs to be done, who will do it, and by when?
     • How will quality and customer service be ensured?
     • What will be the effects on other project tasks?
     • How will the team communicate with the other stakeholders?

4. Communicate strategy & gain endorsement
   • Schedule meeting(s)
   • Send letter/documentation package
   • Gain endorsement and/or feedback
   • Adjust strategy as needed and update database

5. Implement change plan and monitor the effects
   • Identify responsibilities and timelines for carrying out
   • Revise the work plan
   • Monitor and evaluate implementation

**Develop and Apply a Change Management Record**
The Change Management Record is a tool to be used to document, track, and measure the
impact of change management on critical project factors. Use of this Change Management
Record will be considered mandatory, and will include the following information:

<table>
<thead>
<tr>
<th>Description of Change</th>
<th>Decision Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Change</td>
<td>Decision Impact Discussion (quantity/quality)</td>
</tr>
<tr>
<td>Origin of Change</td>
<td>Who “helped” develop response?</td>
</tr>
<tr>
<td>Lead Manager</td>
<td>Related Project Names</td>
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<tr>
<td>Analyst</td>
<td>Location</td>
</tr>
<tr>
<td>Customer(s) Contacted</td>
<td>Cost Change estimate</td>
</tr>
<tr>
<td>Time Change Estimate</td>
<td>Decision Made Date</td>
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<tr>
<td>Decision Made By</td>
<td>Justification Description</td>
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Quality Plan
SR 99 Aurora Ave. – George Washington Bridge Seismic Retrofit
MP 34.14 to 34.76
Project Manager: Andrea Burgess

This plan describes how the project team will implement quality assurance and quality control into the project.

<table>
<thead>
<tr>
<th>Quality Assurance</th>
<th>Quality Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning and review is performed by supervisors and Project Managers to insure systematic quality control activities are in place and followed by design team members.</td>
<td>Activities are performed by designers and reviewers at defined stages of development to insure the desired quality results are being achieved and to identify ways to make corrections.</td>
</tr>
</tbody>
</table>

- Quality Metrics:
  - Design Manual
  - Bridge Design Manual
  - Environmental Procedures Manual
  - Standard Specifications
  - Exec. Order E 1028.01 “Context Sensitive Solutions”
  - Exec. Order E 1032.00 “Project Management”
  - Cost Estimating Guidance for WSDOT Projects
  - Plans Preparation Manual
  - Electronic Engineering Data Standards
  - Project Management Body of Knowledge (PMBOK Guide)

<table>
<thead>
<tr>
<th>QA/QC item</th>
<th>Lead</th>
<th>Checked</th>
<th>Standard(s) or References</th>
<th>Date scheduled</th>
<th>Date executed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Identification &amp; Assignment Meeting</td>
<td>Andrea Burgess</td>
<td>Yes</td>
<td>N/A</td>
<td>Feb 2009</td>
<td>2/9/2009</td>
</tr>
<tr>
<td>50% Design Quality Review</td>
<td>Jason Ericson</td>
<td></td>
<td>Project Quality Plan</td>
<td>Jun. 2010</td>
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* Refer to Major Milestones on page 3 to see how the QA/QC items interface.
• Process Improvement Assessment
  o To identify non-value added activities, the project schedule will be reviewed prior to endorsement and at the design quality reviews to ensure the following:
    ▪ Each task has a clear purpose for being on the schedule
    ▪ Each task has a logical predecessor and a successor
    ▪ Duration of the task makes sense given the context of the work

• Quality Baseline
  o Design will adhere to WSDOT standards as noted in the quality metrics section.
  o Plan sheets should have zero CAD errors when distributed for review.
  o All calculations and assumptions should be documented.

• Project Management Plan updates
  o To ensure project quality, the Project Management Plan will be reviewed monthly by the project manager prior to the regional confidence report and updated as needed. A sheet is included at the end of the Plan for monthly sign-off.

Quality Assurance and Quality Control
Change requests, such as modification of work methods, product requirements, quality requirements, scope and schedule, must be analyzed for their effect on the quality management plan and quality metrics. All approved changes will be formally documented.

Quality Reviews
The project will undergo a quality review at approximately 50% design and prior to turn-in. The quality review will consist of:
• Measurements against the quality metrics and quality baseline
• Each checked item will include the reviewer’s initials and date of review.
• Identification of project defects and recommendations for repair
• Recommended corrective and preventative actions
• Process improvement assessment (schedule) review and risk assessment review.
• To be done by experienced design office individuals who have not been actively involved in the design work assigned for review.
• The reviewed materials are to be kept for documentation of project development.

Constructability Reviews
• The design office and reviewers are to make a field trip with construction, maintenance and other appropriate representatives before the 60% and 90% reviews begin.
• To ensure project quality, materials for the 30, 60, and 90% constructability reviews will be delivered to reviewers at least one week prior to the scheduled meeting.
• When the design team has ensured that all review comments are received, a meeting will be held to discuss the comments prior making any changes.
• The constructability review process will include interdisciplinary review to identify design conflicts (Ex.: Bridge reviews Design sheets, Design reviews Bridge sheets).
• The design office will request that, if available, a member of the construction office participate in the PS&E Review process by co-locating with the design office at least one day per week during the 10-week review process.
Optimal success for this project – realization of the project purpose - requires delivery of a quality product resulting in satisfied customers and conducting a deliberate closure – including an effective “hand-off” to a subsequent phase and team (i.e. transition or handoff from Design to Construction). Elements of a transition or closure plan are identified below.

a. Transition Points
   • Identification of “Preferred Alternative” (selected retrofit strategy)
   • Contract Ad and Award
   • Turnover to Construction Office (design office to provide construction support for design changes).

b. Acceptance of Work
   • The project will be advertised after completion of quality/constructability reviews, and full documentation that the project elements meet WSDOT design criteria as well as regulatory criteria established by involved agencies.
   • All project files will be archived according to WSDOT guidelines with copies of all data made available to the Construction Office. Preliminary files including, including all work to date, will be made available no later than the project ad date.
   • The project issue log, maintained by the project manager, will be turned over to the construction office upon award of the contract.

c. Demobilize Staff and Resources.
   • The next project for the design team will be identified at least two months prior to the ad date for this project.
   • An assessment will be made of preliminary workforce and individual training needs in preparation for the new project.
   • Team members will be enrolled in training for the new project as applicable and will transition to the new project as their individual tasks on this project are completed.
d. Review and Document Lessons Learned.
   • Lessons Learned will be a standing agenda items at project quality/constructability review meetings.
   • Lessons Learned will be compiled and documented at each of the transition points identified above.

e. Evaluate, Reward and Recognize team members.
   • Supervisors will meet with employees to discuss individual project performance and document items for the employee’s Performance Management Plan.
   • Following contract award, each design team member will receive a letter of recognition from the Engineering Manager. The letter will specifically recognize if any of the following target performance metrics are accomplished:
     ▪ Completion of Preliminary Engineering within authorized budget.
     ▪ Low bid amount lower than CPMS budget.
     ▪ Contract PS&E completed early, allowing advancement of ad date.
   • The Project Engineer and Engineering Manager will seek recognition for the design team by nominating the project and team members for departmental awards as appropriate.

f. Archive
   • Electronic copies of all design team e-mail relating to the project will be archived with the project files.
   • CADD documentation for the project will be kept up-to-date according to the WSDOT electronic Engineering Data Standards.

g. Schedule and Financial Closure
   • Upon completion of scheduled Preliminary Engineering tasks, the electronic schedule will be archived and a request will be made to close the Work Order number.
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<th>Milestone Description</th>
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**Critical Remaining Work**

- Preliminary Engineering
- Project Development
- Project Management and Overhead
- Environmental Review and Permitting
- Bridge and Structures
- Bridge Structures Design & Plans
- TY Lin Final Design
- Project Technical Support
- Technical Support

**Critical Milestones**

- Preliminary Engineering
- Project Development
- Project Management and Overhead
- Environmental Review and Permitting
- Bridge and Structures
- Bridge Structures Design & Plans
- TY Lin Final Design
- Project Technical Support
- Technical Support

**Milestone**

- Actual Work
- Critical Remaining Work
- Float Bar
- Remaining Work
- Remaining Level of Effort
## Qualitative Analysis

### TRIGGERS

Detailed description of the risk includes information on the risk that if it occurs, has a positive (opportunity) or negative (threat) on a project. For example: Wetland Mitigation requires additional analysis. Detailed description of the consequence includes information on the effect on the project. For example: Wetland impact is greater than 1/2 acre.

### ASSESSMENT OF THE likelihood of occurrence

Valid entries are Low or High. Assessment of the risk's impact on the project's objectives, including cost, schedule, or quality. Valid entries are Low or High.

### STRATEGIC RESPONSE

Which WBS element will be affected? For example: PC-19 Environments Permit. What is the primary impact to the scope, schedule, or budget?

### STRATEGY

For example: PC-19 Environments Permit. The severity of the risk's impact on the project's objectives, including cost, schedule, or quality.

### Name of the person or office responsible for managing the risk event.

For example: TY Lin to submit concept for final design by June 2010.

### Assumptions

For example: Last status update 4/30/00. Wetland delineation completed 3/15/05. Over 1 acre of wetland was delineated. Action is being taken to expedite meetings with regulatory agencies and expedite the effort to provide acceptable wetland mitigation & analysis.

## Projects

### Active

#### 1

**1/6/2009**

**Design/PS&E**

**Risk Event**

Engineer's estimate is too low: Cost has been underestimated. KM-200 is estimating the risk difficult. Permits, H2O, and cost estimates are high but may become active in the future.

**Probability Impact**

High/Low received. Budget WBS 100 Project Management Low Low

**Area**

Bridge and Structures

**Strategic Response**

Seek out data from past projects in similar situations to assist in determining appropriate responses and action to project bid item estimating. Taking actual labor rates into account.

**Monitor traffic control strategies of adjacent projects.**

#### 2

**1/6/2009**

**Design/PS&E**

**Risk Event**

Wetland impact is greater than 1/2 acre. Wetland Mitigation requires additional analysis. Detailed description of the consequence includes information on the effect on the project. For example: Wetland impact is greater than 1/2 acre.

**Probability Impact**

High/Low received. Budget WBS 100 Project Management Low Low

**Area**

Bridge and Structures

**Strategic Response**

Seek out data from past projects in similar situations to assist in determining appropriate responses and action to project bid item estimating. Taking actual labor rates into account.

#### 3

**1/6/2009**

**Design/PS&E**

**Risk Event**

Traffic control conflicts with other projects. Project schedule will be affected at the same time may have an effect on other projects requiring a longer timeframe for completion. If the estimate is not well defined for non-daytime work, the estimate will be higher than anticipated, impacting the project schedule.

**Probability Impact**

High/Low received. Budget WBS 100 Project Management Low Low

**Area**

Bridge and Structures

**Strategic Response**

Seek out data from past projects in similar situations to assist in determining appropriate responses and action to project bid item estimating. Taking actual labor rates into account.

#### 4

**1/6/2009**

**Design/PS&E**

**Risk Event**

Workforce is unavailable to design project. Workforce issues (Over allocation, Promotion/Transfer, Browsing) means staff is unavailable to work on projects when needed. Workforce analysis shows serious workforce issues.

**Probability Impact**

High/Low received. Budget WBS 100 Project Management Low Low

**Area**

Design Office

**Strategic Response**

Document design decisions so that project stakeholders are fully informed. Assess workforce needs monthly. Monthly assessment.

#### 5

**1/6/2009**

**Design/PS&E**

**Risk Event**

Delay in approval from the Seattle Landmarks Preservation Board. Lack of a Certificate of Approval from the Seattle Landmarks Preservation Board will result in delays to schedule or cost of work. Consultations with Architectural Review Committee to determine if there is need to issue a CCA.

**Probability Impact**

High/Low received. Budget WBS 100 Project Management Low Low

**Area**

Design Office

**Strategic Response**


#### 6

**1/6/2009**

**Design/PS&E**

**Risk Event**

Need to add structural reinforcement to bridge. Final design indicates structural reinforcements are needed. Final design indicates structural reinforcements or modifications are needed. Schedule WBS 210 Preliminary Structure Design Data Low Low

**Area**

Bridge and Structures

**Strategic Response**

Communicate with the design office regarding the final design and the need for structural reinforcements.

#### 7

**1/6/2009**

**Design/PS&E**

**Risk Event**

Scope of retrofit changes, adding work not included in June 2008 TY Lin analysis and estimate. TY Lin gave specific out of work recommendations in June 2008 report. Final design analysis reveals need for additional retrofit elements to which would increase the construction cost. Final design analysis shows the need for additional retrofit work, or a higher cost for the work. Budget WBS 210 Preliminary Structure Design Data Low Low

**Area**

Design Office

**Strategic Response**

Options include phasing the work, issuing additional funding, changing the retrofit strategy. Activity monitoring.

## PROJECT RISK MANAGEMENT PLAN

### Risk Identification

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### Monitoring and Control

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Northwest REGION

Scope of Work Agreement for Environmental

With Hung Huynh’s Project Office

For the SR99 Aurora Bridge Seismic Retrofit project

I. For this project, as generally described earlier in this plan, the activities and deliverables needed from this specialty office, are as follows: See Primavera schedule dated March 1, 2010 for Details and Timelines.

II. The responsible contact for this project (in this specialty office) will be Steve Shipe, Environmental Business Manager. (Ext. 4531)

III. To accomplish the above scope of work, this specialty office will need the following items from the project office – See Primavera schedule dated March 1, 2010 for Details and Timelines.

- All necessary task requests and supporting documentation.
- Submittal of that supporting documentation in a complete and useful format and in the timeframes identified.
- Consistent and continual communications with Business Manager (Scope, Schedule, or Budget issues) and/or Environmental Coordinator (Permitting and Documentation issues).
- Immediate notification to the Business Manager of changes in scope or AD date.
- Plans from the Design Office defining project footprint to allow us to meet the schedule of the BA.

IV. To accomplish the above scope of work, this specialty office will need the following items from other specialty offices – See Primavera schedule dated March 1, 2010 for Details and Timelines.

- Any necessary Rights of Entry from Real Estate for fieldwork.

V. The following additional items apply –

- Overhead charges to this project will consist of 15% of the total labor costs for Environmental per the direction and agreement of Environmental Program Manager and ARA for Program Management and Transaid. (For example: If total labor for Environmental is $100,000, overhead will add another $15,000).

VI. The full schedule for this project, including the above scope of work, is in the PMRS Primavera Scheduler (See Primavera schedule dated March 1, 2010 for Details and Timelines.) From this point on all changes to the role hours, durations, link logic, and expenses will require using the change management process once the PMP is signed and the project is baselined. The PMRS schedule
baseline used for this agreement is **BL-001**. This schedule is included in this Project Management Plan.

VII. The estimated costs and hours to complete the activities and deliverables needed from this specialty group are as follows: *See Primavera schedule dated March 1, 2010 for Details and Timelines.*

**Endorsement** –

[Signature]

Project Manager

[Signature]

Specialty Office Business Manager/Date