Nomination Form

"Partnership for Environmental Excellence in Construction Management"
Award

Project Name: I-405, I-5 to SR 169 Stage 2 Widening and SR515 Interchange Project

Contractor Name: I-405 Corridor Design-Builders (CDB), Project Manager Kory Voldman

Project Engineer: Lisa Hodgson, WSDOT

Date Project Accepted: July 7, 2011 (Substantial Completion)

Category of Award *(please check one category):*

Eastern Washington Project ☐

Western Washington Project ☒

Brief Overview of Nominated Project:

WSDOT and CDB (Joint Venture: CH2MHill & Gary Merlino Construction Company) designed and widened I-405 in both directions between SR 167 and SR 169 and built a new half diamond interchange on I-405 at SR 515 (Talbot Road), just north of the I-405 / SR 167 interchange, MP 2.35 to MP 4.5. (Figure 1) This project has improved access to downtown Renton and relieved traffic demand on the I-405 interchanges at SR 167 and SR 169 (one of the most congested areas in the State). This project is part of a broad long-range plan appoved in 2002 for the I-405 Corridor in coordination with cities, counties, FHWA, Federal Transit Authority, Sound Transit, King Count Metro and WSDOT.

The Renton Stage 2 (RS2) project also replaced the Benson Road S. Bridge over I-405. Working with the City of Renton and through tremendous public outreach removal of the existing structure was successfully completed in one weekend utilizing a full freeway closure. Two new noise walls were designed and constructed within the first year of the project providing early noise abatement. The project provided a stream mitigation site (Figure 2 & 3) and constructed various retaining walls to minimize the footprint of the project. Work within the City of Renton's aquifer protection zone was successfully completed and the project protected the historic Renton Coal Mine hoist foundation. Context Sensative Solutions treatments were implemented throughout the project providing continuity and a unified aesthetic appearance (Figure 4). Through inovation the project implemented a conveyor system which moved 115,000 cubic yards of excess embankment in two months within the project using one dump truck. This eliminated about 10,000 truck trips, avoided off-site disposal and eliminated the potential for track out and dust generation (Figure 5 & 6). The project constructed water quality facilities (dispersion field and 3275 feet of media filter drains) and two detention ponds. The project further added an additional metered lane to the on-ramp from SR 169 to SB I-405; rehabilitated concrete panels on I-405; widened SR 515, providing turn lanes, crosswalks, and continuous sidewalks on both sides; and realigned Benson Road S. The project provided drainage, relocated utilities and installed variable message signs, illumination, electrical and traffic signal systems.

1. Preventative Measures

Identifying and Protecting Sensitive Areas – The Project implemented a TESC plan prior to beginning any work on the project and took an active role in the implementation of environmental policy (Figure 7). CDB instituted a mandatory environmental awareness program for all personnel. Over 800 people completed the environmental training. The training included orientation on environmental commitments, detailed the project environmental sensitive areas; erosion and sediment control procedures; reporting procedures; and management of contamination and unanticipated archaeological discoveries.

The ECM held an Environmental Moment at the weekly tailgate meeting with field crews. The ECM discussed environmental topics relevant to the field work. CDB also honored the field crew when they were seen making good environmental decisions.

CDB and WSDOT environmental personnel reviewed plans prior to release to ensure compliance with permit conditions. The ECM and WSDOT Environmental Compliance Assurance Inspector (ECAI) collaboratively maintained the project commitments list to ensure permit condition compliance.

Incorporating Environmental Commitments into Contract Documents – CDB provided and ECM who was responsible for the overall environmental compliance for the Project, and functioned as principal technical advisor and coordinator for environmental issues. The ECM attended task force meetings and pre-activity meetings. The ECM discussed environmental concerns and permit requirements associated with the Work. The ECM implemented the commitments included in the commitments list. These commitments avoided and minimized Project-related impacts. The ECM provided documentation that the Work complied with all environmental commitments. The ECM prepared an Environmental Commitment Close-Out Report that summarized the overall compliance with permit conditions, performance standards, and environmental commitments.

Working with the Public, Media, and Regulatory Agencies to Avoid Surprises – The Project was constructed in a densely populated urban area that abuts the interstate. The Project Team worked very closely with affected neighborhoods and the City of Renton (COR) regarding noise associated with night Work. The Team met with citizens to understand their concerns, walk them through the project elements and establish an effective mechanism to notify them of upcoming work. The Project Team implemented weekly emails and designated a 24-hour Noise Hotline to facilitate real time field adjustments to mitigate offensive noise. CDB provided 'white noise' machines and ear plugs. Hotel stays were also extended during the demolition of the Benson Road Bridge. The team submitted weekly emails to the COR Development Services Director and met with the City Transportation Director and staff on a weekly basis. The close coordination allowed the Project to keep the schedule intact, provide effective community outreach, and instill trust (Figure 8).

2. Responsiveness During Construction

Process for Identifying/Correcting Deficiencies – CDB committed a three-person TESC crew that installed and maintained BMP's on the project. This ensured a consistency in the application of BMP's project wide. The team reviewed the construction work daily to ensure permit compliance. The daily review and findings were discussed weekly at the Environmental Task Force meeting. The three-person crew assessed the project and made modifications in coordination with the Environmental Compliance Manager and WSDOT Environmental Compliance Inspector. The crew stayed on site a half hour after the day shift ended to secure the project and ensure it was in compliance with permit conditions.

Reporting Non-compliance – WSDOT and CDB approached this project with the goal of ensuring Permit Compliance and no permit violations. The goal of no permit violations was achieved; however there were a total of six ECAPS during the course of the project related to high volume stormwater events. Response on the part of CDB was exemplary. All notifications were made, and all necessary resources were utilized to mitigate the impacts of the ECAP. The ECM participated in subsequent investigations and instituted procedural reforms.

2. Responsiveness During Construction (item continued)

Identifying and Incorporating Lessons Learned – CDB and WSDOT participated in weekly Environmental Task Force meetings where lessons learned were discussed. Each meeting started with an Environmental Moment that discussed lessons learned from various sources, such as the project, other CDB and WSDOT projects and permit agencies.

Efforts to Prevent Repetitive Non-Compliance Events – Pre-Construction meetings were held prior to differing phases of construction. WSDOT and CDB environmental personnel participated in all pre-construction meetings. A major topic of the meeting was environmental aspects of the work.

3. Innovative Problem Solving

Partnership with the Contractor – CDB worked with WSDOT during the proposal phase to approve five eco-friendly ATCs. (Figure 9) The ATCs reduced impervious area in several locations, provided additional buffer to Wetland L2.9, reduced impacts to the Thunder Hill Creek buffer, minimized disturbed vegetation and reduced the required volume of treatment and detention facilities.

Address Special or Unique Challenges – The project limits included an area that contained the former Renton Civic Dump. During clearing and grubbing the CDB identified potentially suspect material and through additional site investigation determined the material had elevated levels of lead. The removal of this material constituted a differing site condition. The Project removed 13,000 tons of problem waste material.

Using Methods Beyond BMPs – The project required a large amount of ground disturbance within congested Renton. 115,000 CY of soil needed to be excavated from Rolling Hills, which drains to catch basins along the highway (Figure 10, 11, 12, 13, 14). The available right-of-way was insufficient to clean turbid runoff by standard means before reaching state-regulated waters. The team implemented the "bath tub" to prevent water contamination. The system had capacity to store about 120,000 gallons of turbid water. (Figure 19, 20, 21)

Adapting to Unexpected Conditions – While drilling shafts for the construction of a bridge a mine shaft and chamber from the historic Renton Coal Mine was discovered. CDB and WSDOT devised an adaptive plan for stabilizing a 20' x 30' void under the shoulder and partially under the travelled lanes, a changed condition. Through CDB and WSDOT interdiscipline collaboration, the project team located and filled the void without contaminating groundwater with sediment or high pH. (Figure 15, 16, 17, 18).

Unique Compliance Methods – CDB recruited technical specialists to supplement capabilities on the design-construction interface. For example, the team consulted with Alex Zimmerman CPESC, CISEC, CESSWI regarding adaptive approaches to infiltrate, detain, and treat stormwater during shifting construction phases. Alex brought large-scale environmental management experience and assisted with innovative problem solving.

Appendix A - Photos and Exhibits

Figure 1: View of completed project.

Figure 2: View of stream mitigation site.

Figure 3: Another view of stream mitigation site.

Figure 4: Benson Road Bridge showing the CSS aesthetic treatment.

Figure 5: Conveyor system obviated 10,000 truck trips through the City of Renton.

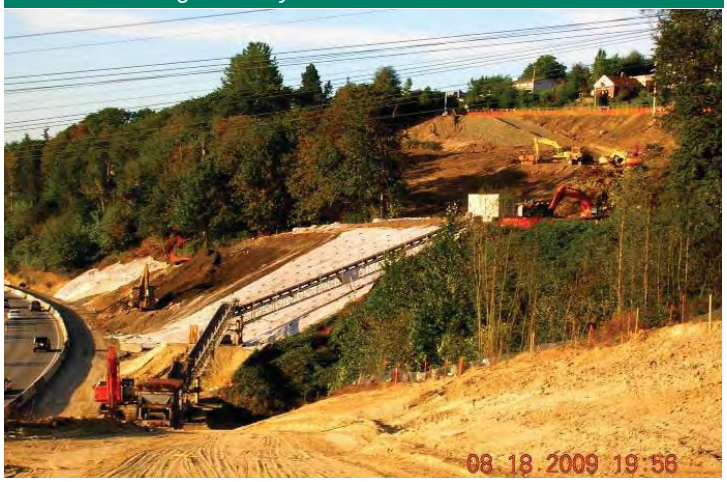

Figure 6. Conveyor kept pace with fill, keeping excess embankment onsite.

Figure 7. Sensitive environmental areas were fenced off and signed as such.

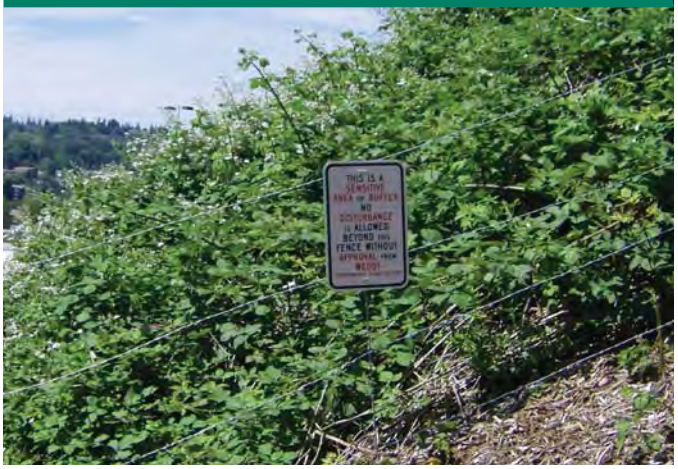

Figure 8. Members of the project team meet with residents on Renton Hill.

Figure 10. Permanent slope covering was installed as excavation proceeded.

Figure 9. Alternative Technical Concepts (ATC) Summary; several ATCs were developed and implemented as part of this project.

ATC / Betterment / Innovation	Reduce Cost	Reduce Duration	Reduce Impact	Less Environmental Impacts	Less Community Impacts	Benefit Provided
ATC-1: The SWAP	✓	✓	✓	✓	✓	Reduces earthwork, shortens bridge, improves ramp weaving, major cost savings
ATC-2: 405 NB Ramp Shift	✓	✓	✓	✓	✓	Shortened ramp reduces earthwork footprint, major cost savings
ATC-4: Bridge Skew			✓		✓	Simplified construction, less temporary traffic control
ATC-5: Steep Slopes	✓	✓	✓	✓	✓	Reduces earthwork / walls, impacts, shorter duration, major cost savings
ATC-6: 405 SB Ramp / Talbot Road Intersection Shift	✓	✓	✓	✓	✓	No utility relocations, shorter duration, enhanced drainage / treatment
ATC-7: Toe Wall (RW-10)	✓	✓		✓	✓	Reduced quantities, duration, and cost; greatly reduced environmental impact
Install Engineered Dispersion	✓			✓	✓	Drainage replenishes wetlands, environmental betterment
Minimized Utility Relocations	✓	✓	✓	✓	✓	Reduced cost, duration, and disruption and impact to users
Install Ecology Embankment	✓	✓		✓	✓	Reduces number of drainage facilities; cost, duration, and user impacts
Talbot Road Shift at Puget Drive	✓	✓	✓	✓	✓	Vastly simplified, reduced duration / impacts, preserves environmental features
New Luminaires / Underdeck Lights			✓		✓	Upgraded lighting eliminates dark areas, improves safety
Align TESC / Permanent Drainage	✓	✓	✓	✓	✓	Constructibility, reduced impacts, cost

Figure 11. Permanent fill slope covering was installed as fill slope was constructed.

Figure 12. Permanent fill slope covering was installed as fill slope was constructed

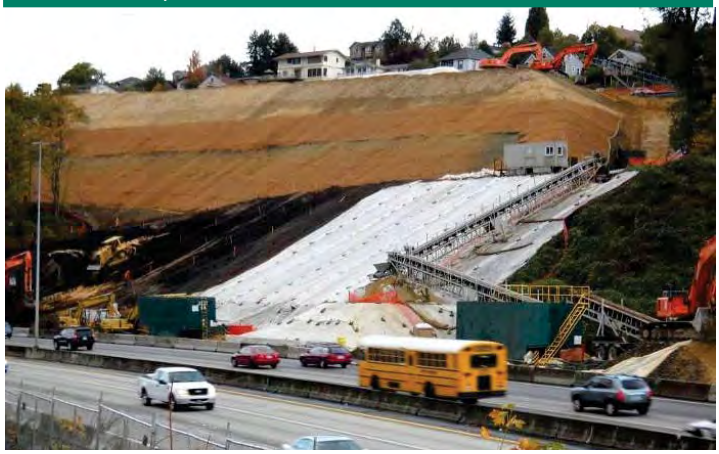

Figure 13. Permanent fill slope covering was installed as fill slope was constructed.

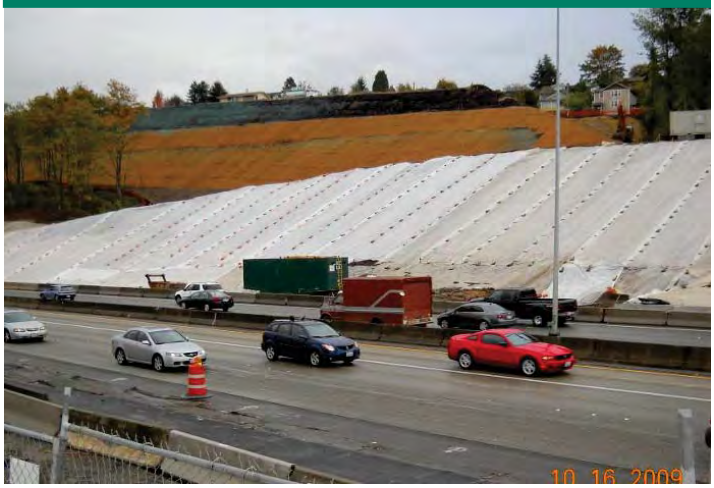

Figure 15. Plan of mine drain extension and void fill concept

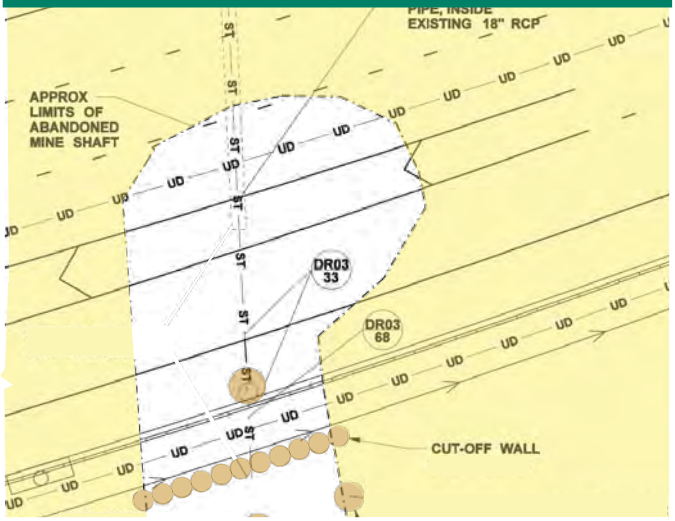

Figure 14. Cut and fill slopes were green and stable in time for the rainy season.

Figure 16. Diversion well casing, cut-off wall, and observation casing at abandoned mine shaft.

Figure 18. Diversion well casing, cut-off wall, and observation casing at abandoned mine shaft.

Figure 19. Lower cell placed over sparation fabric. Quarry spalls filtration system.

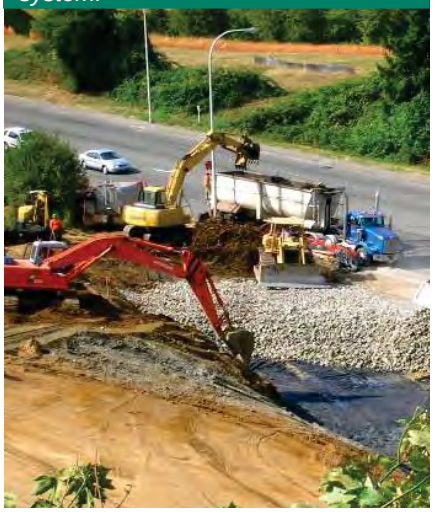

Figure 17. Profile of mine drain extension and void fill. Managed year-round groundwater flow through shaft while filling mine void with CDF.

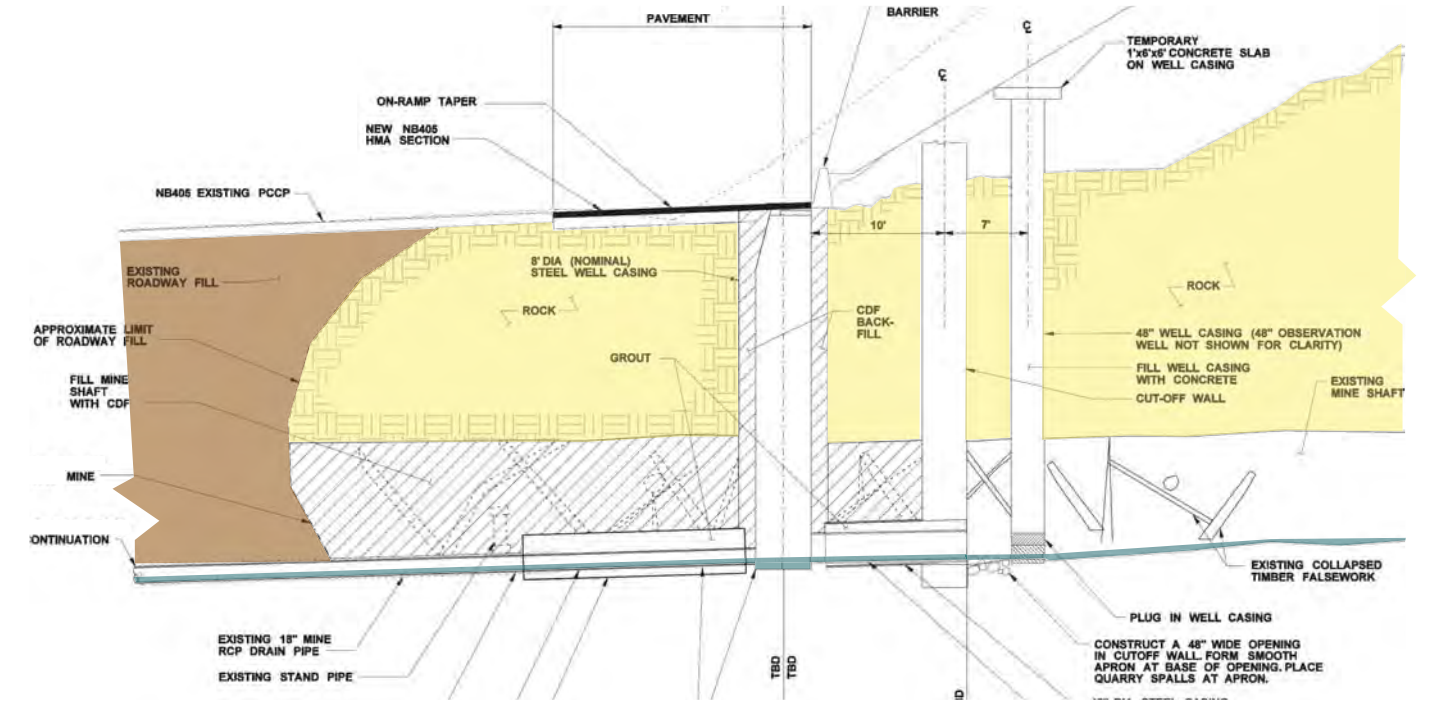

Figure 20. Quarry spalls filtration system below construction entrance.

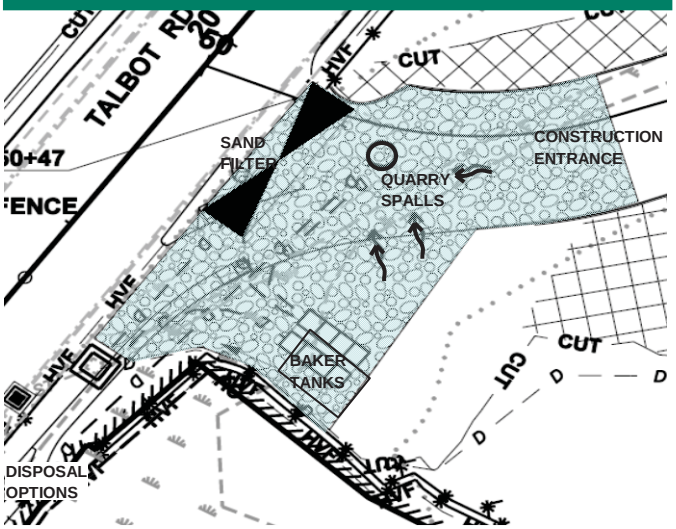

Figure 21. Quarry spalls filtration system.