Public Works Project of the Year Award
Nomination Form

Deadline January 15, 2015
(electronic submittals only)

Project Name
Coal Creek Pkwy Culvert/Bridge

Project Completion Date
Must be substantially completed (90%) and available for public use as of December 31, 2014.
September 28, 2014

Public Agency
City of Bellevue

Project Category
☐ Structures
☐ Transportation
☒ Environment
☐ Historical Restoration/Preservation
☐ Disaster or Emergency Construction/Repair

Project Division
☒ Less than $5 Million
☐ $5 Million, but less than $25 Million
☐ $25 Million–$75 Million
☐ More than $75 Million

Managing Agency
Bruce Jensen
Name
Engineering Project Manager
Title
City of Bellevue - Utilities
Agency/Organization
450 110th Ave NE
Bellevue, WA 98004
Address (if post office box, include street address)

Primary Contractor
Rick Krier
Name
General Superintendent
Title
Scarsella Bros. Inc.
Agency/Organization
84045 196th St.
Kent, WA 98001
Address (if post office box, include street address)

Kent, WA 98001
City State/Province Zip/Postal Code
253-872-7173 253-395-1209
Phone Fax
Rick.k@scarsellabros.com
E-mail

Primary Consultant
Dustin Atchison
Name
Project Manager, Water Resources
Title
CH2M
Agency/Organization
1100 112th Ave NE, Suite 400
Bellevue, WA 98009-2050
Address (if post office box, include street address)

Bellevue, WA 98009-2050
City State/Province Zip/Postal Code
425-233-3074 425-468-3100
Phone Fax
Dustin.Aitchison@CH2M.com
E-mail

Continued...
Please address each of the following areas in your nomination, adhering to the sequence below when possible.

- Completion date contained in contract. Any time extensions granted should be addressed in the submittal.

- Construction schedule, management, and control techniques used. Use of alternative materials, practices of funding that demonstrates a commitment to sustainability.

- Safety performance including number of lost-time injuries per 1,000 man-hours worked and overall safety program employed during the construction phase.

- Environmental considerations including special steps taken to preserve and protect the environment, endangered species, etc., during the construction phase.

- Community relations—a summary of the efforts by the agency, consultant and contractor to protect public lives and property, minimize public inconvenience and improve relations.

- Unusual accomplishments under adverse conditions, including but not limited to, adverse weather, soil or site conditions, or other occurrences over which there was no control.

- Additional considerations you would like to bring to the attention of the project review panel, such as innovations in technology and/or management applications during the project.

NOTE: Supporting documentation is limited to 20 pages, exclusive of photographs and nomination form. Photographs will be used for promotional purposes by the association. Submittal should include nomination form and supporting documentation, and photographs. No letters of recommendation please. Simultaneous nomination of the same project in both Public Works Project of the Year and SC/RC Project of the Year or in two categories is not permitted.

Nominations not chosen in a specific year for the Public Works Project of the Year—Small Cities/Rural Communities Award cannot be resubmitted in a subsequent year in the other category.

Nominated by: (Can only be nominated by managing public agency or APWA chapters.) Projects that involve or reside within two or more chapters locations can be co-nominated. Each chapter will receive credit to submit a PACE nomination. All chapters must be identified on the nomination form and before the nominations are judged.

Regan Sidie
Name
Design Services Manager
Title
City of Bellevue - Utilities
Agency/Organization
450 110th Ave NE
Address (if post office box, include street address)
Bellevue, WA 98004
City State/Province Zip/Postal Code
425-452-6857 425-452-5214
Phone Fax
rsidie@bellevuewa.gov
E-mail

**Please submit photos with your application. Suggested number is between 3-5; we will take up to 10. Photos can be before and after shots and should be 300dpi. The photos may be used by APWA online as well as at the Awards ceremony. By submitting the photos you are agreeing to APWA’s use.**
Overview

The Coal Creek Parkway Culvert/Bridge Replacement Project is an environmental project involving a structure that serves to improve connectivity of both wildlife and fish habitat, creates access to miles of trails for the public to enjoy, and maintains a critical regional transportation link while continuing critical utility services. The project also repairs a high-risk asset and increases the longevity and safety of infrastructure, including a critical petroleum pipeline. This project was a success because of collaboration and partnership across many parties. This critical project began in May 2013, was completed in September 2014, and benefits the community in many important ways:

- The new 39-foot culvert/bridge:
  - Replaces an aging culvert and serves to carry Coal Creek,
  - Keeps Coal Creek Parkway safe for 28,000 motorists who use it daily,
  - Provides a safe relocation for the gas and petroleum pipelines and other utilities in the road embankment.
- A new pedestrian walkway under the road allows walkers and hikers to safely cross under Coal Creek Parkway and connect to the Coal Creek Trail.
- Stream restoration improves fish habitat and allows fish passage.
- A viewing area offers visitors a scenic place to look for salmon.

Background

The City of Bellevue’s Utilities Department policies provide for identification and implementation of capital projects through their Capital Improvement Program (CIP) to rehabilitate or replace...
deteriorated elements of the stormwater system to ensure that utility customers are provided with consistent and reliable service. An engineering analysis determined that the City’s 9-foot diameter, 45-year-old culvert under Coal Creek Parkway, a major arterial in Bellevue, was in poor condition and had to be replaced.

The Utilities CIP went through a prioritization process to assess this project against other City needs, and it was given a high priority because of potentially critical safety considerations. The culvert was considered a high priority due to these existing deficiencies and potential risks of failure:

- Deformation of the culvert and gabion walls presented a significant risk of roadway failure that would impact the nearly 28,000 travelers who use Coal Creek Parkway each day
- Roadway failure could interrupt and damage critical utility infrastructure, including:
  - Fiber optic cables,
  - A 12-inch high-pressure natural gas main,
  - Two Olympic Pipelines (OPL), 16-inch and 20-inch petroleum pipelines operated by BP Pipelines (BP). Rupturing these gas and fuel lines would have significant public safety and environmental consequences.
- The inlet to the culvert was hydraulically limited and susceptible to blockage due to debris and deformation creating a significant flooding and safety risk.
- Existing weirs downstream of the project area did not meet current juvenile salmonid passage criteria.
- Velocities within the culvert and a vertical drop at the outlet of the culvert classified the culvert as a partial fish passage barrier.

Because of the complex utility relocations and the need to keep the road open to traffic, the project needed to be constructed one half at a time, in two phases, with the utilities being relocated in between phases. The total construction duration was a year and a half.

The existing culvert was susceptible to damage and flooding due to blockage by woody debris. An emergency repair was completed in 2012 to repair the inlet of the culvert and patch the corrosion along the bottom of the CMP structure. However, permitting agencies required a permanent fix within 5 years of the repair work.
Construction Schedule, Management, and Control Techniques

The key to making the design and construction of this project successful was teamwork. The effective delivery of this project was the result of a collaborative effort among the City’s design consultant CH2M HILL, Bellevue’s Utilities, Parks, Transportation, and Development Services Departments, BP, Puget Sound Energy, fiber companies such as Verizon and Zayo, and environmental regulators such as the Washington Department of Fish and Wildlife, the Muckleshoot Tribe and the U.S. Army Corps of Engineers.

As mentioned previously, the culvert/bridge had to be constructed in two phases during 2013 and 2014 in order to maintain traffic and safely relocate multiple utilities. In addition to fiber optic cables and a 12-inch Puget Sound Energy Gas Line, two OPL petroleum pipelines had to be moved. Both pipelines “sandwiched” the existing 9-foot corrugated metal culvert—the 20-inch OPL pipeline was located just over the top of the culvert, while the 16-inch pipeline was just underneath it. Moving the pipelines was a major construction project unto itself and major source of risk.

The pipelines are vital to the operation of Sea-Tac International Airport and can only be shut down for a brief few days at several specific times during the year. An elaborate agreement was worked out with BP so that the City’s contractor could complete work by a certain date in September and then vacate the site, so that BP’s contractor could complete their first phase of work during one of the shutdown windows, to be completed by the end of November. The agreement then called for BP to reopen the roadway during the remainder of the winter until their contractor was ready to return and complete their work.

During this time the other utilities were also relocated to the west side of the roadway, so that when the City’s contractor began work in 2014, they would be able to move quickly without concern about the pipeline or other utilities being in the way.

A further complication was that, since Coal Creek is a fish-bearing stream, subject to requirements of the Endangered Species Act, state and federal permits only allow in-stream work to take place between June 16 and September 30.

To make the most of the brief in-stream construction season, the strategy was to construct the new culvert around the existing one. The road embankment was excavated down to near the crown of the existing culvert. Then steel soldier piles were installed and the lid of the new culvert was poured on-grade over the existing culvert. After curing took place, the material under the lid was mined out so that the new stream bed could be constructed.

Removal of the decommissioned section of 20-inch OPL petroleum pipeline after it had been re-routed.
First Phase May-November 2013

During the first year of construction (2013), traffic was restricted to one lane in each direction on the east half of Coal Creek Parkway. In August 2013, the first milestone was reached when the lid was poured. Crews worked for six hours to place and finish the concrete. They then covered the finished concrete with wet curing blankets and followed this with a plastic visqueen cover to retain moisture as the concrete cured.

Once the west half of the culvert/bridge was constructed, the project site was turned over to BP to relocate their pipelines to the west side of road. After the pipelines were relocated, the west side of the road was repaved, and Coal Creek Parkway was reopened during the winter.
Second Phase April-September 2014

During the second year of construction (2014), traffic was moved to the west side of Coal Creek Parkway while the east half of the culvert/bridge was constructed. The new culvert/bridge was built around the old one and the material under the new lid was mined out so the stream channel, stairs, and trail could be built.

*Mining out the old culvert.*

*Blank concrete walls were transformed into “rocks and stone” by artisans who sculpted and later painted them to look like natural granite.*

*New culvert being mined out. Old culvert is still in place with stream being bypassed through it.*
Safety Performance

There were zero lost-time injuries during construction of the Coal Creek Parkway Culvert/Bridge—a potentially dangerous site with heavy traffic, construction equipment, and relocation of Puget Sound Energy’s gas line, two OPL petroleum pipelines, and fiber optic cables. Safety was a number one focus on the job site at all times, while reducing four lanes of traffic to two and redirecting traffic on a major regional roadway. The City of Bellevue had inspectors on site at all times to ensure that safety regulations were followed.

Environmental Considerations

As noted previously, Coal Creek is a fish-bearing stream subject to requirements of the Endangered Species Act and state and federal permits only allow in-stream work to take place between the very short window of June 16 and September 30. Temporary sediment and erosion controls were installed and maintained throughout construction, including a stream bypass (including fish exclusion prior to establishing the bypass) during the in-stream work window.

In addition, New Zealand Mud Snails have emerged as an invasive species of concern and have been detected in other creeks in the City of Bellevue but not Coal Creek. The contract specifications for this project included the development of new requirements for equipment decontamination to reduce the potential spread of this invasive species.

Prior to the completion of construction it became evident that the new bridge would also provide a vital link connecting habitat along the Coal Creek Park natural area as deer and wildlife began to use the crossing. To better enable wildlife passage through the project area, wildlife experts were consulted, and fencing and grading were modified so wildlife could more easily cross and access habitat on either side of Coal Creek Parkway without crossing the roadway, which could create a safety hazard.

Stream Restoration—Build It and They Will Come

Restoration of Coal Creek included 5,200 tons of streambed gravels and well over 100 logs to provide fish habitat and pools for fish to hide out and rest in before moving further upstream. Construction of the bridge opened up about a mile of salmon habitat that had been restricted for use for many years. We are already seeing the benefits of this work by observing Coho salmon a mile upstream at a natural waterfall.

The City worked with the Muckleshoot Tribe who released over 1,500 hatchery Coho salmon in Coal Creek about a mile downstream. Since then, we have seen 151 Coho along with 35 redds (salmon nests) upstream. Last year, even with 742 salmon released, we did not find any upstream of the culvert. This is evidence that the new habitat and fish-passable stream channel are working well.
Coho eggs should hatch in March, and the fry will live in the stream for about a year before migrating out to the Pacific Ocean. After two years, they should return to Coal Creek.

Large wood debris, log structures and root wads were incorporated into the stream design to provide bank protection, energy dissipation and hydraulic complexity to improve habitat in the stream reach. In addition, stream boulders were included to increase channel roughness, including reuse of boulders and erratics encountered in excavation of the structures.

The roughened channel design approach employed in the restored reach of Coal Creek was done in collaboration with Washington Department of Fish and Wildlife (WDFW) and served as a pilot of the draft updates to the WDFW fish passage manual to improve juvenile salmonid passage.
Deteriorating log weirs (left) were blocking salmon passage and were replaced with a new 400-foot "roughened" stream channel (below). The log jams also provide improved habitat by offering resting pools.
Since the project was finished and habitat improved, 35 salmon redds (nests) were seen upstream of the site. No salmon redds were observed upstream of the project site last year.
Community Relations

The Coal Creek Parkway Culvert/Bridge is surrounded by a natural area, and there are no residences or businesses in close proximity. However, an extensive outreach effort was made to reach residents in the nearest neighborhoods and the 28,000 daily motorists using this major arterial who would be impacted by construction of the project. The four lanes of Coal Creek Parkway were reduced to two lanes during the first phase in May-November 2013 and the second phase in April-September 2014.

One of the biggest challenges was explaining to the public why it was going to take a year and a half, and two construction phases to complete this project. We committed to always have one lane open in each direction on Coal Creek Parkway, and we kept that commitment. We did have to lower the speed limit for safety reasons, however, and traffic was impacted, especially during commute times.

Public outreach efforts began with an Open House at City Hall on November 15, 2012 to provide information about the project, allow opportunities for the public to ask questions about the project, and provide feedback on ways to minimize impacts during construction. City and consultant staff were on hand at the Open House to answer questions. Effective display boards were used to explain construction sequencing and impacts. A project handout described the project, its importance, benefits, potential impacts, and construction schedule. Other outreach efforts started several months before the lanes closed and the project began, and included the following:

Hikers can take a moment to rest and also look for salmon in the newly restored Coal Creek stream channel. A total of 35 Coho redds (nests) have been spotted upstream of the new culvert, and eggs are expected to hatch in March. Salmon fry will live in Coal Creek for about a year before migrating to the Pacific Ocean. Construction of the culvert/bridge opened up about a mile of salmon habitat that had been restricted for use for many years.
Communication Vehicles

- News releases
- Website with alerts when updated
- Ads in Bellevue Reporter newspaper
- Short segments on Bellevue’s TV show Lake to Lake
- Meetings/site tours with reporters
- 11,500 postcards mailed to residences and businesses
- Articles in community newsletters
- Articles in City newsletters
- Emails to neighborhood associations
- Websites and newsletters of nearby cities
- Traffic advisories
- Electronic signs along Coal Creek Parkway (in the last weeks before construction and prior to public meetings)
- Utility bill inserts
- Door-to-door construction notices
- Social media – Facebook, Twitter
- Q&As for staff answering phones
- Phone numbers for public to call
- Presentations were made to the Newcastle City Council and Newport Hills Community Club

We reminded the public through multiple communication vehicles that four lanes would open back up for several months in the winter, but that the road would go back to two lanes for the second phase of the project in 2014. An important message was that the lane closures were switching to the west half—but still one lane in each direction. Emphasizing this message minimized public confusion.

The Traffic Advisory that went out weekly and the dedicated website had alerts so that each person who signed up was notified by email when new information was posted. Communication efforts continued throughout the project and culminated with a ribbon cutting event on November 21, 2014. View a segment about the project on Bellevue’s Lake to Lake TV show at https://www.youtube.com/watch?v=G41W2YskydA&feature=youtu.be
Examples of outreach, including postcard below that was mailed out to over 11,000 households.

Open house to discuss new bridge on Coal Creek Parkway

Bellevue will host an open house from 5-7 p.m. Thursday, Nov. 15 to discuss construction of a new bridge that will replace an aging culvert on Coal Creek Parkway, between Forest Drive Southeast and Southeast 60th Street.

The open house will be held at Bellevue City Hall, 450 110th Ave. NE, room 1E-108.

The Coal Creek Culvert Replacement project, set to start in April 2013, will protect the roadway, improve public safety, provide a new pedestrian walkway, and improve fish passage. It also will require long-term lane closures on the parkway in 2013 and 2014.

An existing nine-foot diameter Coal Creek culvert is deteriorating and needs to be replaced to keep the parkway safe for the nearly 28,000 commuters that use this route each day. The project also includes construction of a separate pedestrian pathway that will run underneath the bridge and connect the Coal Creek trail, giving pedestrians and hikers a safe way to cross the parkway, as well as creek restoration to improve salmon migration.

Relocation of complex utilities, such as fiber optic cables, a natural gas main and high-pressure fuel pipe lines, requires the project to be done in two phases. During each phase, Coal Creek Parkway will be reduced to one lane in each direction through the project area, between Forest Drive Southeast and SE 60th St. from April through November in 2013 and again in 2014.

All lanes are planned to be open for about four months during the winter of 2013-2014, before construction resumes in spring 2014. Completion of the project is expected in November 2014.

Coal Creek Parkway Culvert Replacement Project

The bridge will be built in two phases to allow travel through the construction zone at all times.

What can you expect during construction?

- Coal Creek Parkway will be reduced to one lane in each direction 24 hours a day between Forest Drive and SE 60th Street during both construction phases.
  - **Phase 1** (May 2013 – November 2013): Intermittent single lanes closures during off-peak hours begin in early May. By late May, both southbound lanes closed and one northbound lane converted to a southbound lane
  - **Phase 2** (mid-April 2014 – September 2014): Both northbound lanes closed and one southbound lane converted to a northbound lane
- Traffic delays and congestion, especially during morning and evening commutes. Using alternate routes is suggested.
Construction begins next week on Coal Creek Parkway in Bellevue

As early as May 15, the City of Bellevue will reduce Coal Creek Parkway to one lane in each direction between Forest Drive and SE 60th Street. This closure will be in place 24 hours a day through November as crews work to replace a 45-year-old deteriorating culvert with a new bridge. Expect traffic delays and congestion, especially during the morning and evening commutes. If you can, use an alternate route or consider shifting your trip outside of commute times. For more information visit the city’s project website.

Construction Begins on Coal Creek Parkway This Month

In late April, The City will begin a culvert replacement project over Coal Creek. The new 39-foot wide bridge will keep Coal Creek Parkway safe by replacing a 45-year-old, deteriorating culvert. The project will also reduce flooding, provide a pedestrian pathway under the bridge that connects to the Coal Creek Trail, and improve salmon habitat.

Phase 1 construction will start with single lane closures during off-peak travel hours. By early May, Coal Creek Parkway will be reduced to one lane in each direction 24 hours a day between Forest Drive and SE 60th Street through November 2013. Traffic delays and congestion are expected, especially during morning and evening commutes, and drivers are encouraged to use alternate routes. Phase 2 construction, from mid-April through September 2014, will also reduce this section of Coal Creek Parkway to one lane in each direction.

For more information, go to the project website at http://www.bellevuewa.gov/coalcreekbridge.htm or call 425-452-6977 or email utilities@bellevuewa.gov.
Unusual Accomplishments Under Adverse Conditions

Management of water (streamflow and groundwater) presented a challenge for the design and construction of the new bridge structure. The contractor installed temporary wells with submersible pumps for de-watering to manage groundwater as needed and treated collected water through portable sedimentation tanks prior to discharge back to the creek downstream of the project area.

In addition, a gravity HDPE piped bypass was threaded through the existing culvert to provide bypass of creek flow during the in-stream work window. The bypass plan and dewatering plan maintained a dry work area during several significant storm events with the exception of one event in summer 2014 where some excess flow overwhelmed the bypass and flooded the excavation area. However, containment of the majority of the flow and berms limited the duration of construction delay and impacts to the work area.

Additional Considerations – Connecting the Trail System

During the initial design process, the Utilities and Parks departments determined that it would be beneficial to the City to widen the box culvert from 32 feet to 39 feet in order to add a walkway along the south wall of the culvert for hikers to safely cross under Coal Creek Parkway. This solution would have major safety benefits, as hikers would no longer be tempted to dash across four lanes of busy Coal Creek Parkway. The walkway also eliminated an existing gap in the Coal Creek Park trail system. The trail feature was designed and funded in cooperation with the Parks Department, who contributed 10 percent of the final construction costs.

Even before the project was finished, when staff visited the site, walkers would come by and voice their appreciation to the City of Bellevue for connecting the Coal Creek Trail so they could safely cross under the parkway.
Left: With a safe passageway underneath Coal Creek Parkway, hikers will no longer be tempted to dash across four lanes of traffic on Coal Creek Parkway!

Below: On the other side of Coal Creek Parkway, hikers can now connect to Coal Creek Trail. The walkway eliminated an existing gap in the Coal Creek Park Trail system.