

ASCE Seattle Section Local Outstanding Civil Engineering Achievement (LOCEA) Projects 2022

Outstanding Transportation and Development Engineering Project:

Northgate Link Extension

Owner: Sound Transit

Project Team: McMillen Jacobs Associates; KPFF Consulting Engineers; WSP; LMN Architects

One of Washington state's most significant transit projects, the Sound Transit Northgate Link Extension project, connects Seattle's Northgate business/retail center with the University District. As an extension of Line 1 (formerly Central Link), the project consists of 4.3 miles of double-track light rail, 3.5 miles in twin bored soft-ground tunnels, 0.8 miles in retained cut portal structure, and an elevated trackway. The project, which opened on October 2, 2021, connects travelers from Northgate to downtown Seattle's Westlake Station in just 14 minutes and is expected to see 41,000 to 49,000 daily riders by 2022 and significantly reduce traffic congestion through the Interstate-5 corridor.

The \$1.9 billion project includes two underground transit stations (Roosevelt Station and University District Station), ancillary structures, an elevated multimodal station (Northgate Station), and an underground transit parking garage. The project area is characterized by dense, urban neighborhoods and complex subsurface and groundwater conditions, which required optimizing the location and alignment of the underground elements. McMillen Jacobs designed the tunnels, provided structural design on the bottom-up underground station excavations, and was responsible for geotechnical services as the prime engineering consultant. McMillen Jacobs was also responsible for project management, estimating and scheduling, and project controls for the design team, which consisted of over 30 firms.



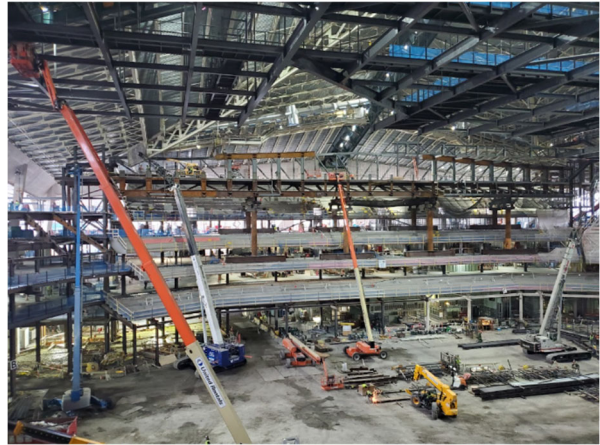
Outstanding Structures Project:

Climate Pledge Arena

Owner: Oak View Group

Project Team: Thornton Tomasetti, Inc.; Populous; Mortenson; CAA Icon

The historic KeyArena, which was built for the 1962 Seattle World's Fair, has undergone a major transformation, becoming home to the NHL's newest franchise, the Seattle Kraken. The \$930-million renovation and expansion is now Climate Pledge Arena, an 800,000-square-foot, mostly below-grade venue that will hold more than 17,000 fans for hockey, basketball, concerts, and other events.



What makes this project stand out from other large renovations is the preservation of the historically landmarked, 44-million-pound roof structure and exterior curtain wall. The near-total demolition of the structure below the roof presented several complex challenges. Most notable among these was how to demolish the structure and excavate 680,000 cubic yards of soil to make way for construction of a new world-class below-grade arena, all while temporarily supporting the roof structure above it. Complicating matters further were the arena's location in a high seismic zone, the project's aggressive schedule, and the owner's commitment to making it the first net-zero certified arena in the world.

The project team worked together seamlessly to address these challenges and transform a historic venue into a first-class sports and event facility, which opened in time for the NHL's 2021-2022 season.



Outstanding Water Resources & Environmental Engineering Project:

Ebright Creek Fish Passage – Culvert Replacement

Owner: City of Sammamish

Project Team: Osborn Consulting, Inc.; The Watershed Company; Davido Consulting Group; Aspect Consulting; Duane Hartman & Associates; Altaterra Consulting; Equinox Research & Consulting International; KBA; Johansen Construction Company

This project restored fish passage and increased flow capacity in Ebright Creek at East Lake Sammamish Parkway (ELSP) by replacing two 30-inch concrete culvert pipes with a fully fish passable box culvert. Since construction was completed in 2021, Ebright Creek has seen increased returns of kokanee salmon to this reach. The City of Sammamish, along with the Kokanee Work Group and local tribes, identified voluntary removal of the fish passage barrier to support the goals established by the “Blueprint for the Restoration and Enhancement of Lake Sammamish Kokanee Tributaries,” a strategic plan of priority habitat restoration actions for kokanee population recovery. The replacement of the culverts under ELSP allow for unimpeded access to over one mile of kokanee spawning habitat. In addition, by constructing a fish passable culvert, the project restores natural sediment and flood transport processes to the watershed. Design and construction of this project were funded by Brian Abbot Fish Barrier Removal Board and King County Cooperative Watershed Management funds. The Osborn Consulting team led the project from preliminary engineering through alternatives analysis, final design, and construction.



Outstanding Geotechnical Project:

River's Edge Levee Setback

Owner: Jamestown S'Klallam Tribe

Project Team: Aspect Consulting, LLC; Engineering Services Association, Inc.; Johnston Land Surveying; WEST Consultants; DelHur Industries

In 2020, Jamestown S'Klallam Tribe (JST) purchased 104 acres of farmland along the Dungeness River. Their goal was to restore the historical floodplain and salmon and increase flood protection. Key to achieving this was to remove a constricting U.S. Army Corps of Engineers (USACE) levee built in the 1960s and build a new setback levee to meet modern standards. JST turned to Pat McCullough at Engineering Services Association, Inc. (ESA) to lead the River's Edge Levee Setback Project. Pat enlisted Aspect Consulting's geotechnical engineers to design the levee and WEST Consultants for hydrology and hydraulics.



The project is inherently connected with an adjacent levee for Clallam County being designed concurrently. ESA's team facilitated coordination between the County, USACE, and JST to mesh design elements and navigate the intricate permitting sequence.

The design team reduced the impact and cost of importing construction materials by making maximum beneficial use of gravel from a nearby quarry pit and designing the levee specifically to capitalize on its availability. The levee was substantially designed in winter and constructed in summer of 2021. It features a gravel walking trail atop vegetated slide slopes, giving visitors a perch to watch as the floodplain reclaims the area.



Outstanding Small Projects & Non Construction Studies Project:

Kenmore Boathouse

Owner: City of Kenmore

Project Team: Osborn Consulting, Inc.; J3 Architects; Kartchner Engineering; CivilTech Engineering; Dibble Engineers, Inc.; Northwest Environmental Consulting, LLC

The 2,800-sq-ft Kenmore Boathouse was completed in the spring of 2021 and is the latest improvement to the City's Rhododendron Park, located in the heart of Kenmore along the southern bank of the Sammamish Slough, less than half a mile from where it feeds into northern Lake Washington. The Kenmore Boathouse is the only public access boathouse of its kind in the north Lake Washington region. The goal of the Kenmore Boathouse was to enable access to canoers and kayakers, regardless of



socioeconomic status. The space was designed to be modular and multifunctional to accommodate different programmatic needs at different times. With an active Kenmore Rowing Club and local high school rowing programs, the new boathouse meets the needs of Kenmore's greater community and will be a treasured asset for years to come. The 40'x70' structure houses up to 36 rowing shells and includes a small second story mezzanine area for exercise machines as well as meeting and coaching space. Since July of 2021, over 400 boat enthusiasts have made use of the Kenmore Boathouse, including school teams, adult practices, youth summer camps, and learn-to-row programs.



Honor Award Transportation and Development Engineering Project: 2021 Airfield Pavement Replacement & Infrastructure Upgrade Project

Owner: Port of Seattle

Project Team: HNTB Corporation

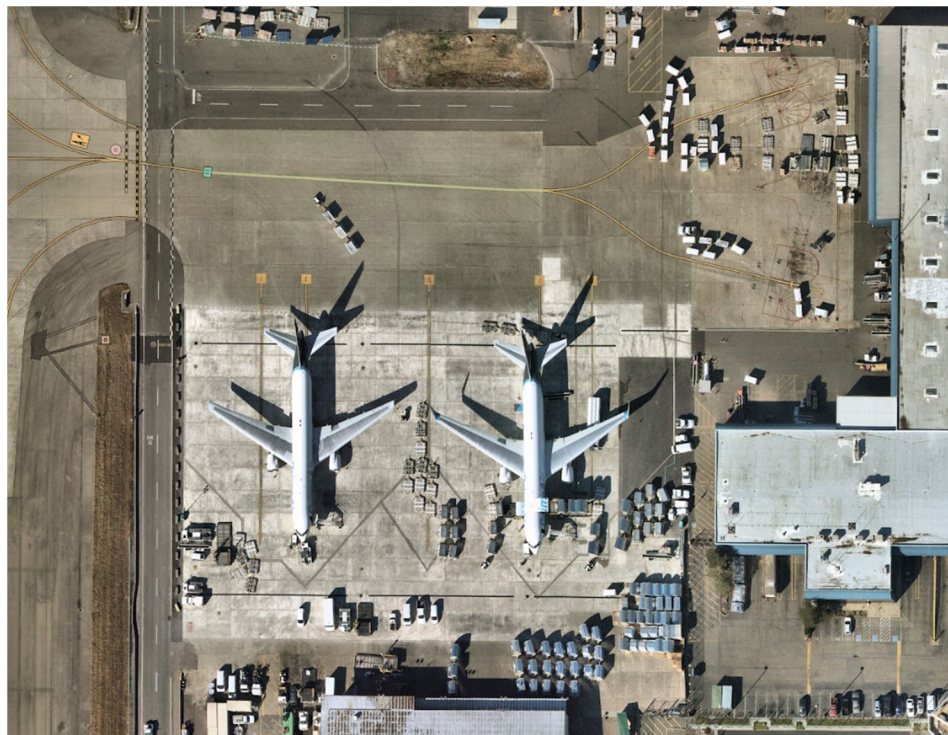
The 2021 Airfield Pavement and Supporting Infrastructure Replacement Project sought to replace aging and distressed pavements, PCC joint seal, and provide utility infrastructure improvements at several heavily congested areas at Seattle Tacoma International Airport (SEA), all while minimizing operational impacts to the airport.



Major work included:

- Over 450,000 feet of weathered joint seal replaced along the full length of Taxiway T and Runway 16R-34L, the primary runway for aircraft landings.
- Repaving and drainage improvements of the Cargo 4 apron, a major hub for Amazon Air and Alaska Airlines Cargo operations.
- Utility improvements and repaving of nearly 6 acres of heavily trafficked taxilane along the south side of the South Satellite, a main thoroughfare for Delta Air Lines, United Airlines, Alaska Airlines, and many international flights.

This project demanded complex and thoughtful phasing plan development intended to strike a balance between efficient construction, aircraft gate and apron closures during peak operational seasons, and needed aircraft access to airline maintenance facilities. A collaborative effort between the Port/HNTB design team, Port construction team, SEA Operations, airline representatives and pilots helped lay the foundation for innovation and creativity while working within seasonal construction constraints.



Honor Award Transportation and Development Engineering Project: Seattle-Tacoma International Airport (SEA) North Satellite Modernization

Owner: Port of Seattle

Project Team: AECOM

AECOM led the civil and architecture design team for the 468,000-square-foot expansion and modernization of the 40-year-old satellite concourse. The Seattle-Tacoma International Airport (SEA) North Satellite Modernization (NSAT) is a 50% expansion of the existing terminal and complete architectural redesign with structural seismic upgrade and all new building mechanical systems. The project added eight new aircraft gates (for a total of 20), new PCC commercial apron areas, Alaska's flagship lounge, hold rooms, a renovated transit station, concessions, art, expanded baggage handling, and airline/airport offices and support spaces.



Civil aspects of the project included 324,270 square-feet of new PCC apron constructed with the project, reconstruction and expansion, airfield apron drainage improvements including NFPA improvements for fuel spill capture, underground utility upgrades and relocations, apron storm system improvements for building roof drainage, hydrant aircraft fueling expansion, new triple taxiway layout, new aircraft parking markings and ground service equipment staging, electric charging stations for ground service equipment, and a new passenger boarding bridges. Construction was done in two phases to maintain Alaska's operation. Phase 1, the expansion, opened in 2019, and Phase 2 renovated the existing facility and opened in 2021. The project is set to achieve a LEED silver rating.

