Downtown Waterfront Improvements Phase 1

Completed December 2020

Juneau, Alaska

2020 Outstanding ASCE Civil Engineering
ASCE Alaska Section - Juneau Branch
Project of the Year Award

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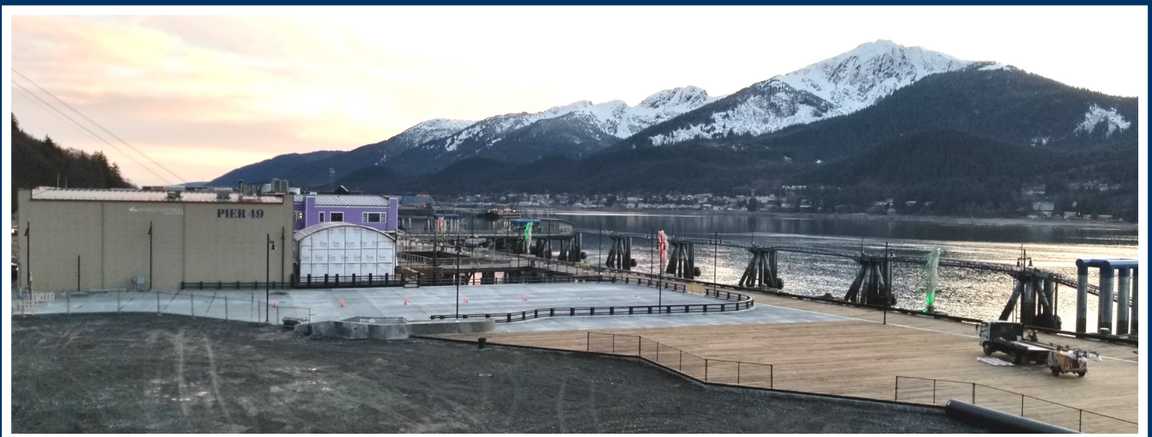
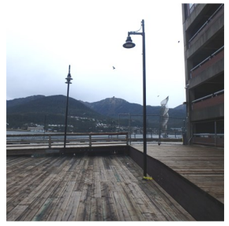




Benefit to Community

The downtown Juneau waterfront is of great value to the local community, not only as an asset to the tourism industry, but for providing unique public access to the waterfront not found in other communities. Juneau is growing rapidly as a cruise industry destination with over 90% (1.228 million) of tourists in 2019 arriving via cruise ships. Under normal circumstances, the number of visitors is expected to increase as the cruise industry returns to regular operations over the next few years. This increase in tourism has provided many benefits to the community as well as some drawbacks, the largest of which is the increased congestion in downtown Juneau during the summer months.

The Downtown Waterfront Improvement project was developed to improve pedestrian circulation in the downtown area for visitors and locals alike by creating additional space for pedestrian traffic, bus staging and Seawalk connections to South Franklin Street. The first phase of the project developed the last large tract of undeveloped prime privately and publicly held waterfront real estate along South Franklin Street. The project was vetted as part of the CBJ Marine Park to Taku Dock Urban Design Plan (UDP) through an extensive public involvement process. This project has created the foundation for enhancing and strengthening the downtown neighborhood to develop the Juneau community to accommodate the high influx of tourists in the summer and provide an open space in the off season that is valued by the local Juneau residents. The project provides safe waterfront access and open space for circulation along the waterfront not only to make the Port of Juneau attractive to visitors, but it also creates a more welcoming waterfront for the community by decreasing congestion in the downtown area.

The project also improves the safety of users interacting with bus staging and loading while reducing the overall congestion of parking in the downtown area. The staging area addresses the critical need of moving a large number of people disembarking ships to attend shore excursions in a short period of time. The new staging area features adequate staging for 12 B-Zone tour vehicles and phase II will provide a covered waiting area and canopy over the bus loading area to allow users to stage out of the weather.

Innovative Engineering

The geotechnical soil investigation required significant design work to mitigate the known landslide concerns and the liquefiable soils on the site. A number of different design concepts were developed to accommodate site conditions and a concrete retaining wall with a pile foundation was determined to be the most economical and resilient to the liquefaction and lateral spreading of the soils on site. This structure required accounting for future uplands buildings that were still being designed. The pile foundation had to take lateral soil spreading and liquefaction into consideration to develop lateral loads, unbraced lengths of the piles and pile spacing in order to reduce the loading on the retaining wall and the pile foundation.

Borehole drilling for this project was difficult due to some of the work being conducted prior to the demolition of the cold storage building foundations. This required drilling through existing building structures that were buried. The remaining bore holes required drilling on existing docks that required structural analysis to verify the drill equipment would not overload the 60+ year old timber structures.

The foundation piles for the wall and dock structures were spaced to limit pile driving operations and to reduce permitting efforts required for in-water work. Piles were located above the low tide line as much as possible to prevent in-water work restrictions. To reduce the number of batter piles, the concrete retaining wall was utilized to resist lateral loads from the dock diaphragms. The concrete staging area is a rigid diaphragm, and the sloping mudline caused the lateral stiffness to vary over the length of the dock. This lead to shorter, stiffer piles resisting more of the lateral load. Tying the concrete diaphragm and the pile caps into the concrete retaining wall allowed for increased lateral stiffness and reduced stresses on the vertical piles.

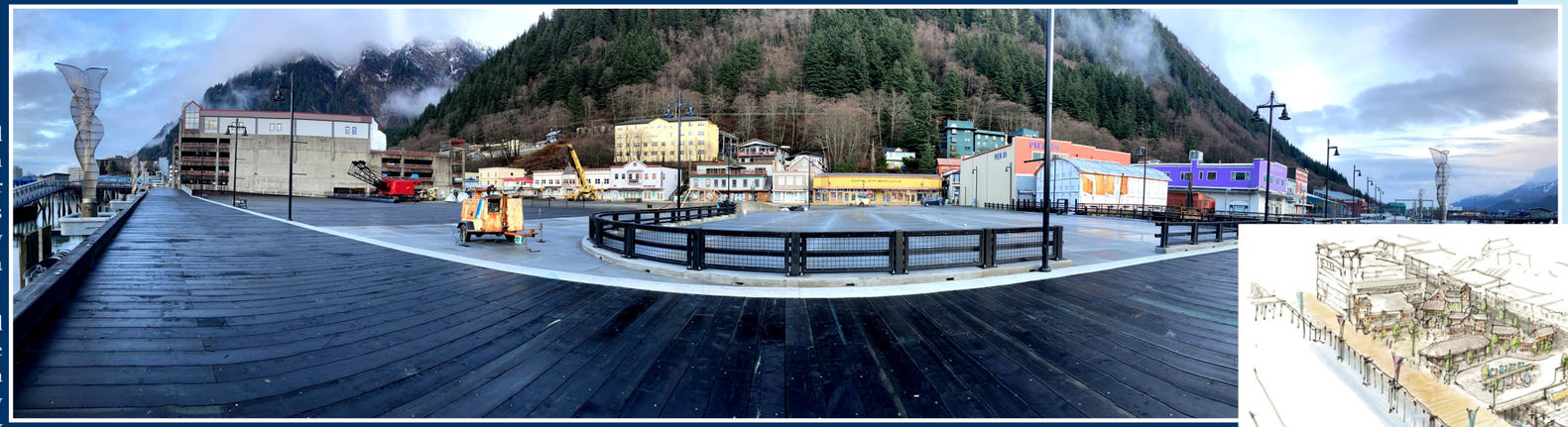
Value Engineering Solutions

In order to make the development cost effective for both public and private stakeholders, close coordination was required between the CBJ and the adjacent uplands land owner, Archipelago Properties, LLC. The design was a cooperative process and in order to develop the site the two parties were required to negotiate property boundaries, shared site improvements and phase their construction schedules, such that subsequent phases could use portion of the other site for construction staging. This also provided easier access to construct the new concrete and timber decks and reduced the project cost compared to having to stage equipment on an offshore barge.

THANK YOU FOR REVIEWING OUR APPLICATION. FOR MORE INFORMATION, PLEASE CONTACT DICK SOMERVILLE, P.E., VICE PRESIDENT, PND ENGINEERS, INC. 907.586.2093 OR DSOMERVILLE@PNDENGINEERS.COM

Project Description

The City and Borough of Juneau (CBJ) Docks and Harbors (D&H) completed Phase 1 construction for the Downtown Waterfront Improvements project in December 2020 to accommodate the needs of the growing cruise ship visitor industry and its passengers while creating a waterfront that meets the expectations of a world-class facility. The project creates ample open space to expand industry services, decreases congestion and improves pedestrian circulation, creating a more inviting waterfront for visitors and locals alike.



Artist rendition of all phases

Phase 1 of the project consisted of constructing a new pile-supported deck and passenger bus staging area along the waterfront located in downtown Juneau. The property, which was previously comprised of four lots, was re-organized through negotiations between CBJ and the private uplands property owner. The site now consists of two lots, one lot is privately owned in the uplands with plans for new retail buildings to be constructed in the future by the private owner. The other lot consists of a small section of South Franklin Street uplands and tidelands sandwiched between the uplands and existing Seawalk. The project created 35,000 square feet of useable space between the existing uplands along South Franklin Street and existing pile supported Seawalk.

Project improvements included:

- A 400' long concrete retaining wall that is aligned along the new property line and is retaining the uplands soil. The 10-20' tall wall is supported on steel piles which have been driven to bedrock to prevent settling issues.
- Between the retaining wall and the Seawalk, a steel pile supported timber and concrete deck has been constructed allowing future construction vehicle loads access to the adjacent new dock and adjacent uplands. The new concrete deck and uplands concrete paving is designed to contain drainage and treat runoff through an oil water separator before discharging into Gastineau Channel. The concrete deck area will be used for bus staging/loading.
- Steel tube foundations and utilities have been provided just below the timber deck at the site of a future covered passenger shelter/restroom facility. This building will be constructed at a later date after future construction activity has been completed in the adjacent privately owned uplands.
- A new driveway entrance onto South Franklin Street including:
  - Water, sewer, storm drain and fire suppression utilities with connections in South Franklin Street.
  - A special reverse entrance was designed and permitted with AKDOT to accommodate the reduced sight distances down South Franklin Street, the turning radii of the design vehicles, and the limited on-site space for traffic flow and parking.
- New electrical power service including upgraded Seawalk accent lighting and area lighting within the new concrete paving and decking areas. Infrastructure has been provided under the timber deck area for future building lighting needs and charging stations for electric busses.
- A sewer lift station has been installed in the uplands to support the future buildings that may be installed on the dock at a later date.
- A concrete planter has been included in this phase of the project which is partially over the suspended slab and on-grade.
- Seawalk decking has been replaced between the Parking Garage and the Pier 49 building.

Project Management

The Downtown Waterfront Improvements project required extensive long-term project management, over multiple years of planning, design, and construction, to provide a high-quality product for all stakeholders. Multiple public and private stakeholders were engaged early in planning and concept development to benefit both the public project and the private uplands property owners. To accommodate the tight schedule for both public and private developments, PND worked with the CBJ to provide owner supplied steel reinforcement and pipe piles for a 400' long retaining wall, allowing the contractor to begin wall construction almost immediately after notice to proceed was issued. This accelerated the construction schedule to accommodate access for the private upland development after the off-shore project was complete.

During design for the project, there were extensive permitting requirements that required coordination with multiple state and federal agencies. PND was able to work through marine permitting with a modified approach for obtaining and Incidental Harassment Authorization from NMFS to protect marine mammals during construction. This reduced the time and effort required to obtain the permits since harbor seals are not a listed species under the Endangered Species Act. This approach allowed the project to proceed on schedule with limited interruptions for marine mammal shut downs. PND also worked with the CBJ and Alaska DOT to develop an acceptable driveway permit that allowed for the reverse traffic pattern required to optimize the entrance and parking on the confined site.

During construction, the Owner and Contractor had multiple issues to work around, including the possibility for a new building over the suspended deck and the Covid 19 pandemic that became an issue midway through the project. The potential future building required extensive project modifications to accommodate the possibility of the structure on the partially constructed suspended dock. PND was able to coordinate with stakeholders and the contractor to manage these extensive changes to limit rework. Managing all of the sub-consultants and providing quick and responsive recommendations to project stakeholders allowed for substantial cost savings to the owner when items were removed from the construction project to accommodate the future development. With the Covid 19 pandemic, obtaining labor and fabricated materials from Anchorage and Seattle became a challenge due to lockdowns and stay at home orders. Through careful management and coordination with all parties, the project continued to progress productively throughout the early stages of the pandemic and was complete on time.