

USFS ANAN BAY FACILITY IMPROVEMENTS

Project & Team Information:

PND: Structural
Corvus Design: Landscape
Architecture/ Project Management
RSA: Electrical Engineering
Rain Forest Contracting: Contractor

Project Description

PND Engineers provided comprehensive engineering services for the Anan Bear Observatory and Anan Bay Cabin improvement projects, aimed at enhancing the visitor experience and ensuring safety and accessibility in the remote wilderness near Wrangell, Alaska. The facility improvements were contracted by the USFS through, design-bid-build, design-build and performance specifications over a multi-year improvements plan. PND provided design services from planning, layout and structural design. Improvements at the facility include the replacement of the Anan Wildlife Observatory structures, such as viewing platforms, shelters, decking, public use cabin, and trail improvements at the facility. Design of the facility components were conducted to meet modern USFS standards including ABA requirements for accessibility, while preserving the area's natural beauty. The addition of new cedar post and beam shelters, observation decks, and an aluminum spiral staircase for a low impact structure to provide access to additional high value viewing areas offer visitors safer opportunities for intimate wildlife viewing. Facility improvements at the Anan Bay cabin were developed to address structural damage to the existing cabin after a wind blown tree landed on the roof during a storm. Through proactive contracting methods at the USFS, the cabin design and construction was able to be completed within a short construction window during the facility off-season.



Need for Project

The existing facilities at the Anan Wildlife Observatory were too small, outdated, and in poor condition to service the increased visitor traffic at the site. The current facility requires a limited entry permit to reduce the impact and quality of the experience of guests. The poor condition and lack of formal design of the existing facility provided structures that did not meet current safety or accessibility standards. The trail system at the facility was also developed for lower volume traffic and required improvement to handle the increased volume without continued deterioration and increased maintenance. The growing demand for public recreation in the area required expanding the site to accommodate additional day permit use without effecting the impacts, safety or experience at the site.



Benefit to Community

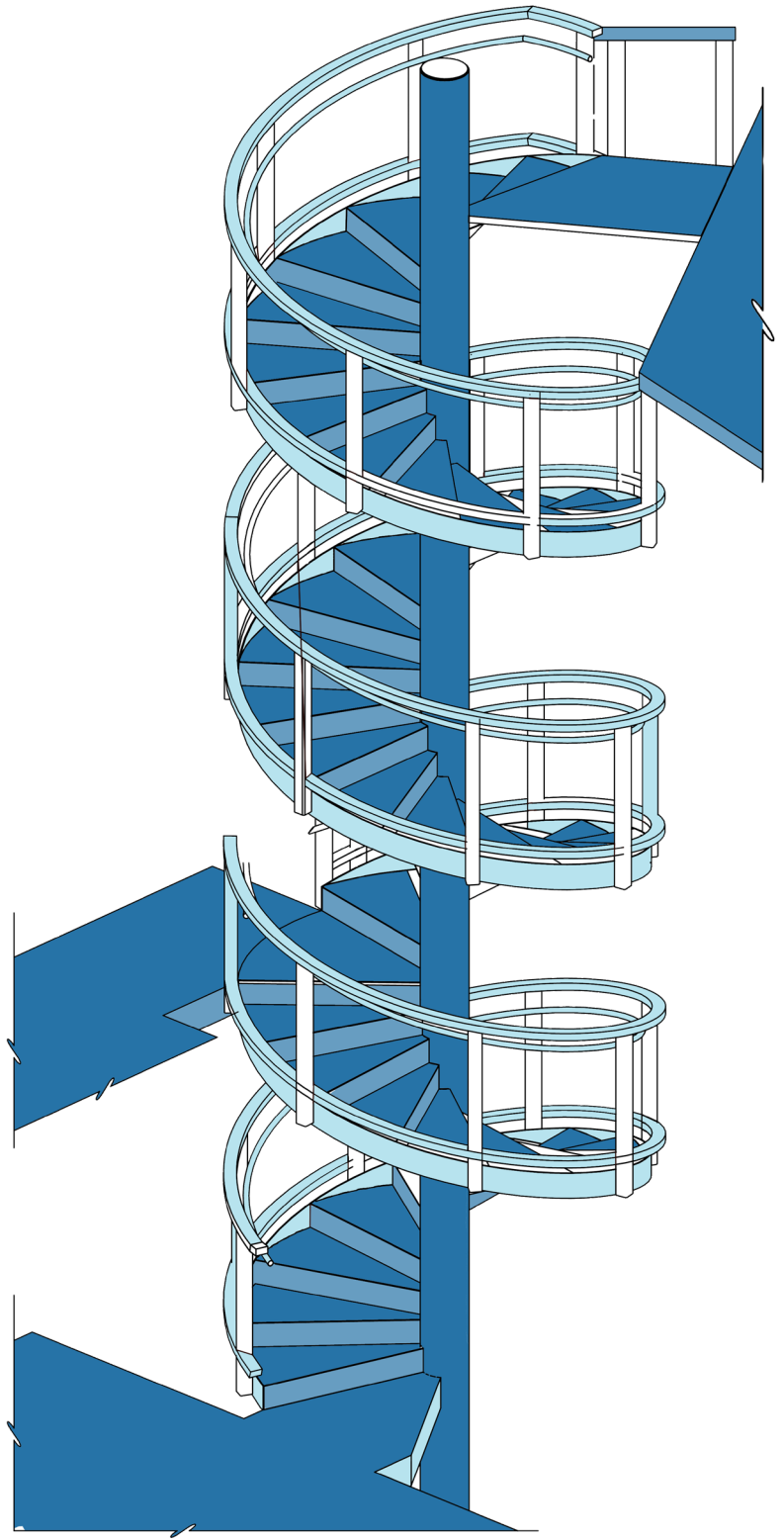
The Anan Bear Observatory project enhances the local communities by bolstering tourism and supporting economic growth. Serving tour operators from both Wrangell and Ketchikan as well as independent travelers, the observatory is a vital attraction for the region. The facility's expansion increases daily visitor capacity while preventing overcrowding, driving tourism without compromising the site's ecological integrity. By balancing visitor access with conservation efforts, the project ensures a sustainable, positive impact on the facility experience, the local economy and the surrounding wildlife.

This attraction is the highlight of many tourists that visit Wrangle every summer. The process to transport tourists from Wrangle to Anan Bay has grown as the area cruise passengers have grown. The options involve both tour operators using marine vessels and sea planes, providing a strong economic impact to the local community for both supplying the services, but also maintenance of equipment in the off-season. These operators provide well-paying jobs and maintain a need for skilled labor in the community.

Innovation

The Anan Bear Observatory project demonstrated significant innovation in its approach to construction and materials, given the site's remote location, limited access and USFS desire to limit the impact to the site around improvements. The USFS wanted to extend the observatory area to allow a better visual experience with minimal impact to the site. To provide a more immersive experience and increase the facility capacity, the observation deck was cantilevered over the 30-foot tall rock face along the river. The design incorporated rock anchors in the concrete foundations to reduce the volume of concrete and meet the large uplift forces from the cantilevered structure. To meet the U.S. Forest Service's concerns about deflection, the deck's allowable deflection was reduced by half compared to code requirements, ensuring stability when visitors are taking photos while others are moving around the structure. Additionally, a unique "breakaway" foundation design was implemented to mitigate the improbable risk of rock collapsed along the face of the cliff, allowing the structure to safely detach in the event of a geological hazard without catastrophic failure.

For the lower viewing platform, a spiral staircase was selected to access the 30-foot descent to the landings at the river elevation. Aluminum components were chosen for their lightweight and corrosion-resistant properties in the wet environment to reduce maintenance and increase longevity of the structure. The fabrication of the aluminum components required careful design to match existing site conditions at three different elevation points since modifications in the field to aluminum components is difficult. The reduced components provided an advantage at the remote site due to the light weight allowing for easy transport and field assembly. The structure incorporated a bolted splice connections to allow the structure to be set with the limited picking capacity of a helicopter. The staircase design considered how patrons may be evacuated in an emergency rescue situation and snow load requirements, ensuring safety and functionality in challenging terrain and weather conditions.



Fabricated Spiral Staircase

Project Management

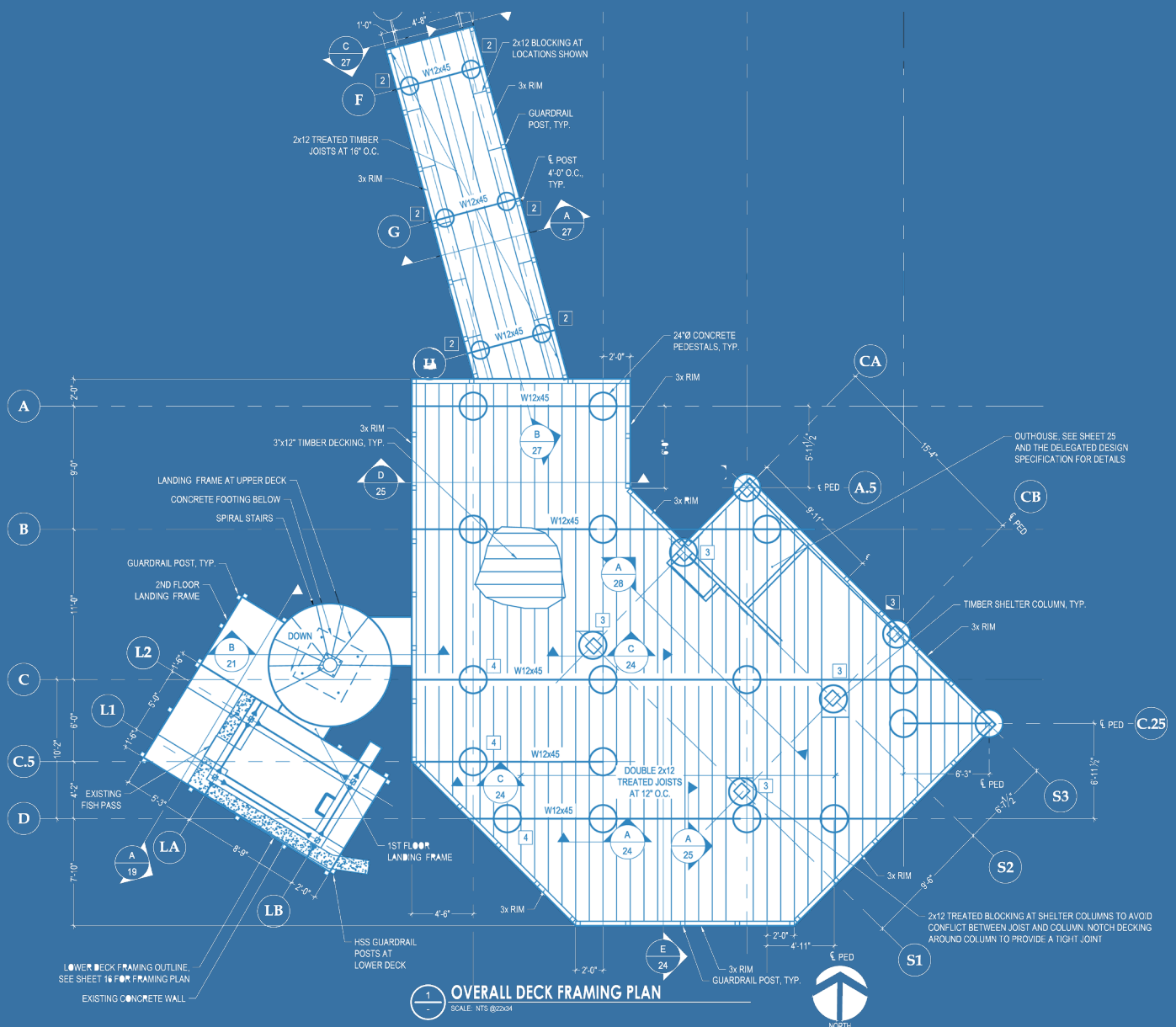
The Anan Bear Observatory project showcased resourceful planning and effective scheduling to navigate several challenges. The initial survey utilized Lidar scanning to collect data at the site, particularly at difficult-to-reach locations around the cliff face. After processing the data, it appeared that the vegetation limited the collection of accurate data points. A second survey was conducted to supplement the Lidar data since understanding the 3-dimensional shape of the cliff was critical for locating the spiral staircase. The increased accuracy of the supplemental survey data was critical in minimizing costly rock excavation necessary to accommodate the staircase. The challenging terrain and remoteness of the site required extensive and thoughtful planning and coordination with both designers and owners. The various components of the project were implemented through multiple contracts to meet different funding streams and efficiently address the limitations of constructing at the remote site.

The construction windows were limited to the shoulder seasons to reduce the impacts on viewing opportunities, growing seasons, late-season snow, and bear activities. This required designers to phase work such that pieces could be constructed within the limited work windows, allowing the facility to operate seasonally throughout construction over a three-year period. The strong and consistent project management team ensured that design understanding was maintained over the long duration of the project, and solutions to field conditions encountered during construction were efficiently employed.



Value Engineering

The design team employed several cost-effective strategies to meet the project's functional requirements without compromising quality. By maximizing the use of timber members, the team reduced both weight and material costs while maintaining structural integrity and facility aesthetics. Existing structures were also incorporated wherever possible to minimize cost of foundations. The incorporation of the existing fish passage structure allowed for larger observation decks to be constructed with minimum in-water foundation work, limiting the difficulty constructing the low observations decks. Detailed planning and precise design allowed the contractor to fabricate and install the spiral staircase without the need for complicated field modifications to the aluminum components, streamlining the process and avoiding costly delays. Accommodating the splicing of the stair structure allowed installation using locally available helicopters for a reduced cost. These strategic decisions helped to overcome critical scheduling constraints, ensuring the project was completed on time and within budget.



THANK YOU FOR REVIEWING OUR NOMINATION. FOR MORE INFORMATION, PLEASE CONTACT SEAN SJOSTEDT, PE,
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