SAINT PAUL HARBOR

IMPROVEMENTS AND EXPANSION FEASIBILITY STUDY

NOVEMBER 6, 2020

R&M CONSULTANTS, INC.
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Anchorage, AK 99507
907.522.1707

rmconsult.com

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November 6, 2020

Philip Zavadil
City of Saint Paul
P.O. Box 901
Saint Paul, Alaska 99660
Via e-mail: pazavadil@stpaulak.com

Dear Mr. Zavadil:

The City of Saint Paul is looking to partner with a consultant experienced in conducting feasibility studies for harbor improvements and expansion to complete a feasibility study for proposed expansion of and improvements to the Saint Paul Harbor. Expansion of and improvements to the harbor would allow the community of Saint Paul to better support increasing volume in the commercial fishing industry, as well as take advantage of growing opportunities in tourism and mining.

R&M CONSULTANTS, INC. (R&M) is an Alaskan professional services firm with a 51-year history in the state. R&M has provided planning, design and construction administration services for Alaska's waterfront facilities since our inception. Our key project team members have a breadth of experience providing port and harbor engineering services throughout Alaska, including commercial ports, harbor float systems, ramps, docks, bulkhead wharfs, barge facilities, breakwaters and other coastal protection, and master planning projects. Our successful project history has earned the firm a reputation for quality, integrity, reliability and professional excellence. This is demonstrated by our repeat business with clients such as the City of Seward, City of Homer, City of Valdez and the Port of Alaska.

R&M's in-house expertise is complemented by the specialized skills and experience of our subconsultants:

- **Northern Economics** will perform economic studies to determine the economic feasibility of improvements to the Saint Paul Harbor and to inform development of a business plan to support the selected alternative. Northern Economics has 35 years of experience in Alaska and the Pacific Northwest, providing clarity for clients through meaningful, unbiased analyses of projects.
- **HNS Coastal Planning and Design** will provide coastal engineering and harbor planning support. HNS is a sole proprietorship focused on harbor, navigation and shore protection projects in Alaska.
- **Haight & Associates, Inc.** (HAI) will provide recommendations for electrical improvements. HAI has been serving Alaska for 40 years, and have a long history of involvement with harbor projects.
- **KPB Architects** will provide programming for the new harbormaster's office. KPB is an Alaska-based architectural practice with experience in commercial and industrial facilities throughout the state.

R&M is familiar with the St. Paul Island COVID-19 Dashboard and the required COVID-19 Travel Form. We have a COVID Mitigation Plan on file with the State of Alaska and a sincere commitment to the health and welfare of our employees and the communities we serve. R&M staff members have traveled to and worked safely without incident in communities throughout Alaska for the duration of this pandemic. We will strictly adhere to all testing and documentation requirements prior to any travel to Saint Paul.

R&M is confident that after reviewing this proposal, the City of Saint Paul will agree we are the right team to partner with you to complete this harbor improvements and expansion feasibility study. Please consider the following:

- **Extensive Experience with Alaskan Dock and Harbor Projects**. **John Daley, PE,** our proposed project manager and lead engineer, is a senior waterfront engineer with more than 25 years of experience in waterfront and coastal planning, design, construction and inspection. His experience is complemented by that of **Ben Haight, PE** (electrical) and **Harvey Smith, PE** (coastal). This team has successfully and collaboratively partnered on numerous Alaskan waterfront projects since 2013.
- **Experience in Remote Locations.** With a 51-year history in Alaska, R&M has worked in many of Alaska's remote communities, including Saint Paul. We have so extensively developed expertise in remote locations, that we are currently lending our knowledge to a pier reconstruction project in Palmer Station, Antarctica.
- **Extensive Experience Inspecting and Assessment Dock and Harbor Facilities.** R&M has inspected, assessed and provided engineering recommendations for waterfront facilities throughout Alaska. Recent projects include the Homer Deep Water Dock Feasibility Study, and assessments of the Seward Small Boat Harbor, Whittier DeLong Dock, Haines Lutak Dock

and Yakutat Dock. Our team also includes National Highway Institute-Certified Bridge and Pile Inspectors, as well as National Association of Corrosion Engineers-certified Corrosion Technologists.

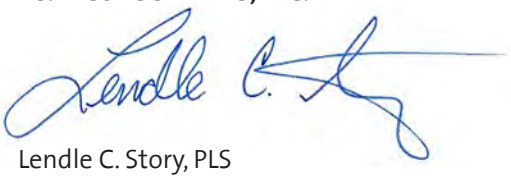
- **Alaskan-Owned and Readily Available.** R&M is truly 100% committed to Alaska, with our entire staff located in-state. Over the past 51 years, R&M has grown from a sole proprietorship focused on geotechnical engineering to a multi-discipline firm of more than 100 staff members. R&M provides quality professional services focused on improving the infrastructure that makes a real difference in the lives of Alaskans - roads, water and wastewater systems, ports and harbors, airports, schools and health clinics.

The R&M team is committed to partnering with the City of Saint Paul to deliver thorough inspection and condition assessment services and high quality economic analysis and engineering recommendations to evaluate the feasibility of expansion and improvements at the Saint Paul Harbor. We will remain flexible and responsive in our approach, working closely with the City to provide the appropriate level of service, partnership and representation. R&M has built its reputation on sound engineering practice, affordable and sustainable solutions, and honesty in communications with our clients to aid them in making well-informed decisions, and we will continue to do so on this project.

The R&M team has a solid understanding of the project goals and we will work directly with you to ensure your expectations are met. As R&M's Chief Executive Officer, I am fully authorized to make representations on behalf of the firm. I can be contacted at the address or telephone numbers on this letterhead or by e-mail at lstory@rmconsult.com. If you have questions with regard to this proposal, please contact Project Manager John Daley at jdaley@rmconsult.com.

Sincerely,

R&M CONSULTANTS, INC.



Lendle C. Story, PLS
Chief Executive Officer

Enclosures

CONTENTS

FIRM INFORMATION

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907.522.1707

John Daley, PE
Project Manager

jdaley@rmconsult.com

Firm History

R&M CONSULTANTS, INC. (R&M) is an Alaskan professional services firm with a long and successful history on a variety of projects throughout the state. Founded in 1969, on the cusp of our young state's infrastructure boom, R&M has been involved in some of Alaska's most significant projects.

R&M is truly 100% committed to Alaska, with our entire staff located in state. Over the past 51 years, R&M has grown from a sole proprietorship focused on geotechnical engineering to a multi-discipline firm of more than 100 staff members. R&M provides quality professional services focused on improving the infrastructure that makes a real difference in the day-to-day lives of Alaskans - *bridges, roads, utilities, airports, health clinics, schools, and ports and harbors*.

From offices in Anchorage and Fairbanks, R&M offers:

- Waterfront Engineering
- Civil Engineering
- Structural Engineering
- Environmental Services
- Geotechnical Engineering
- Geology
- Hydrologic and Hydraulic Engineering
- Surveying and Mapping
- Right of Way Services
- GIS Services
- Community Planning
- Transportation Planning
- Land Use Planning
- Public Involvement
- Special Inspections
- Materials Testing

R&M has provided planning, inspection, design and construction administration services related to waterfront facilities for ports and harbors for more than 50 years and in every region of Alaska. Port and harbor facilities in Alaska are unique in that designs must consider the often remote locations, unique geologic conditions, extreme tides, and cold, harsh climate. Such considerations may include robust, low-maintenance facilities and easy-to-repair components, as well as design considerations for snow; icing within port and harbor facilities and related problems with slipping hazards, bonding ice interfaces, etc.; consideration of snow loads and removal activities; and cold temperature effects on utility design and seasonal versus year-round services to waterfront facilities. R&M is experienced with planning and designing for these challenges, as is exemplified by our staff's wide range of waterfront planning and engineering experience.

R&M's experience encompasses all of the following marine facility types:

- Port and Harbor Master Plans
- Facility Inspection, Repair and Maintenance Planning
- Condition/Damage Assessments
- Docks/Wharfs/Bulkheads/Piers
- Breakwaters and Wave Barriers
- Dredging
- Boat Launch Ramps
- Fender Systems
- Shoreline Erosion Protection
- Port and Harbor Upland Facilities Design

R&M's history in Saint Paul dates back to 1989. We have performed more than 20 separate projects ranging from airport surveys to a fish waste outfall study to a harbor plan. Team member Northern Economics has also completed numerous projects in Saint Paul, including a 2018 market analysis and feasibility study of a scoria and cement products plant. Our institutional knowledge of Saint Paul will inform the development of alternatives for this project.

To complement our in-house team, we have chosen to work with the following sub-consultants:

- **Northern Economics** will perform economic studies to determine the economic feasibility of improvements to the Saint Paul Harbor and inform development of a business plan to support the selected alternative. Northern Economics has 35 years of experience in Alaska and the Pacific Northwest, providing clarity for a variety of clients through meaningful, unbiased analyses of projects. Their professionals are experts in economics, financial feasibility analysis, business planning, demographics and population studies, resource economics, market research and socioeconomic impact assessment.
- **HNS Coastal Planning and Design** (HNS) will provide coastal engineering and harbor planning support. HNS is a sole proprietorship focused on harbor, navigation and shore protection projects in Alaska.
- **Haight & Associates, Inc. (HAI)** will provide recommendations for electrical improvements. HAI has been serving Alaska for 40 years with electrical engineering design and construction services. They have a long history of involvement with harbor projects, including large and small docks/wharfs for large vessel moorage, marinas for small vessel moorage, fueling facilities and uplands facilities. They provide engineering for electrical power, lighting and camera surveillance systems, and have been instrumental in the development of products and installation strategies used in numerous Alaska waterfronts.
- **KPB Architects** (KPB) will provide programming for the new harbormaster's office. KPB is an Alaska-based architectural practice with experience in commercial and industrial facilities throughout Alaska.

R&M has a collaborative and successful relationship with these teaming partners. We have teamed on numerous waterfront projects since 2013, including Seward Harbor float system projects, Kodiak Ferry Terminal Improvements, Sitka Crescent Harbor, Homer Deep Water Dock Feasibility Study, Valdez Harbor Facilities, Hoonah Cruise Dock, Mertarvik Barge Landing and Kivalina Airport Erosion Control.

The diverse experience of the R&M team will allow us to respond to any of the City of Saint Paul's needs under this contract with high quality, responsive service. R&M's vision is *Innovating Today for Alaska's Tomorrow*. We will apply our innovative approach and commitment to Alaska to ensure we carefully evaluate the feasibility of improvement and expansion options for the Saint Paul Harbor. We will ensure our recommendations are realistic, cost-effective and appropriate for Saint Paul's location and the use of the facilities.

Why R&M?

- **Strong Multi-Discipline Team.** Project outcomes are better when several disciplines are involved during the problem identification and solutions phases. The R&M team includes coastal and waterfront engineers, transportation and land use planners, and public/agency outreach specialists supported by economists, electrical engineers and environmental professionals, to give this project the technical rigor needed to make realistic and implementable recommendations.
- **Fresh Perspective.** The R&M team does not have previous experience at the Saint Paul Harbor and therefore, have no preconceived notions about the facilities and their condition. Our team will bring an objective approach to this project and will listen closely to the client and project stakeholders to determine what types of improvements would be of the most benefit to the community. We will apply lessons learned from similar projects completed throughout Alaska to bring lasting solutions to the City of Saint Paul.

R&M

EXPERIENCE AND REFERENCES

Firm's Relevant Experience

Seward Marine Industrial Center Harbor Improvements

SEWARD, ALASKA

R&M provided planning, surveying, inspection, geotechnical analysis, coastal/waves modeling, public involvement, engineering and permitting for harbor improvements associated with the Seward Marine Industrial Center (SMIC).

This three-phase project included:

- **Phase 1** included a breakwater, turning dolphin, channel dredging, shoreline erosion protection, and sewer and seafood outfall relocations.
- **Phase 2** included repairs and improvements to a cellular sheetpile dock, expansion/widening of the travel lift dock and a new heavy-duty moorage float. The new floats include a new approach dock, gangway, 4,400 SF of heavy duty moorage float and associated lighting, power and water services. The new moorage-floats were designed with steel bullrails to accommodate vessels greater than 100' LOA, as well as a drill rig that occasionally moors in the basin during the off season.
- **Phase 3** included a new pile supported dock, berthing dolphins and other support facilities.

References

Norm Regis, Harbormaster 907.224.4049
City of Seward

R&M has completed several projects for the City of Seward, including Synchrolift dock repairs, an evaluation of the TravelLift dock, Phases 1 and 2 of the SMIC redevelopment, and replacement of floats in the City's Small Boat Harbor.

Bryan Hawkins, Harbormaster 907.224.4049
City of Homer

R&M has served the City of Homer under a Ports/Harbors/Marine term contract since 2012. To date, our team has completed the following tasks:

- Ramp 3 Replacement
- System 5 Improvements
- System 5 and Ramp 3 Construction Support
- Ramp 7 Repair Plan Review
- DWD Uplands Improvements
- DWD Four Cleat Addition
- Small Boat Harbor Cathodic Protection
- TOTE Support
- DWD Damage Assessment

R&M also completed a feasibility study of the market-based and economically-sound expansion of the Homer Deep Water Dock to support increased cargo operations, cruise ships and industrial deep water moorings.

George Newman, Engineering Program Manager
907.952.3697
Jacobs (POA Port Modernization Program)

R&M is providing multi-discipline support for the Petroleum Cement Terminal project, the first new terminal in the overall Anchorage Port Modernization Project. R&M is providing geotechnical field investigations, survey and mapping, planning, coastal and waterfront engineering, structural engineering, civil engineering, corrosion engineering, environmental and project management support.

Stan Eliason, Harbormaster 907.747.3439
City and Borough of Sitka

R&M provided overall design project management for the design/build renovation of the Sitka Crescent Harbor. This project replaced the aging harbor float system (Floats 1-4) and associated ramps and utilities.

Seward Small Boat Harbor

SEWARD, ALASKA

R&M was responsible for replacement of A, B, C, D and S Floats in the southwest (oldest) portion of the Seward Harbor, originally built in 1965-66.

D Float was completed in 2015 and consisted of replacing 13,000 SF of 1960s-era State of Alaska timber float system, gangway and timber approach trestle with a new float system that accommodates 58 vessels. The new floats were fully designed (design-bid-build) and included timber frame and deck with polyethylene flotation tubs that keep the timber out of the water. The floats are equipped with potable water, fire suppression system, shore power and lighting. The seasonal utilities are housed in an accessible chaseway within the float located above the waterline to reduce issues associated with corrosion. In addition, a new 80' long ADA-compliant covered gangway ramp and access trestle was provided.

A, B, C and S Floats were completed in 2016, using grant funds from the Alaska State Harbor matching grant program, for which R&M helped prepare grant applications. This project included replacing the floats with similar style timber floating docks and gangways. This was done as a Performance Specification package where the float manufacturer had input and flexibility with the design. At B Float, the existing timber trestle was shortened and an existing City-owned 100' long gangway installed. All new floats are timber framed/decked with polyethylene flotation tubs and equipped with shore power/lighting, potable water and dry fire suppressions service.

HAI was responsible for the electrical systems design. This project featured a new style of shore-tie

pedestals constructed with marine grade, extruded aluminum and a bollard style luminaire on top. The luminaire was intended to better illuminate the float deck and mitigate light pollution. The monolithic concrete floats were provided with cylindrical ducts and handholes configured for the distribution system. Antiquated on-shore power services were replaced and new feeders were provided to each finger float. A variety of single and three-phase pedestal configurations were provided, with vessel service up to 200 amperes.

References

Nathan Duval, Assistant City Manager 907.835.5478
City of Valdez

R&M developed a long-term Waterfront Development Plan that included the old and new harbors, as well as the Kelsey Dock and Valdez Container Terminal. We developed four concept plan alternatives, associated cost estimates and economic analyses. Follow-on work included geotechnical investigations, permitting and design for the new harbor facilities.

Chris Chuhran, Research Vessel Program Manager 720.568.2249
Leidos (Antarctic Support Contract)

R&M is providing project management, surveying, planning and design for a replacement dock at the Palmer Station, Antarctica. The project consists of construction of a new steel pipe pile-supported concrete deck dock to replace the existing sheet pile bulkhead.

Valdez New Harbor Development

VALDEZ, ALASKA

In 2016-17, the U.S. Army Corps of Engineers (USACE) constructed a new harbor basin in Valdez. In 2012-13, R&M worked with the City to develop a long-term Waterfront Development Plan that included the old and new harbors, as well as the Kelsey Dock and the Valdez Container Terminal. This planning work included condition inspections, public involvement surveys, vessel fleet/transportation analysis and public meetings, economic analysis, conceptual design and cost estimating to optimize the old and new harbor facilities to meet current needs and long-term development opportunities.

This work began with developing four concept plan alternatives, associated cost estimates and economic analyses, which were presented to the Port and Harbor Commission at a public meeting. This was followed up by several City work sessions and more than 10 iterations of the preferred alternatives. This effort ultimately determined the facility layout for the new harbor.

Follow-on work included geotechnical investigation, permitting, engineering design value engineering analysis, and bid and construction support for the design associated with the new harbor facilities.

- **Phase 1** included major rock removal (Hotel Hill) and off-shore fill/armor stone protection to create a 10-acre uplands area, including access roads, drainage, pedestrian walkways/boardwalks, high mast lighting and utilities services to future facilities.
- **Phase 2** included the Upland Facilities and Inner Harbor Facilities. It included a 150-slip vessel moorage float system for 40' to 100' vessels; a 90'x 90' drive down float and 117' x 17' transfer bridge; and uplands facilities, including a harbor maintenance building/office and restrooms, laundry facilities, a restroom building, a bilge water treatment facility, picnic areas, pedestrian amenities and landscaping features. The moorage float system consists of a cost-effective timber float design. The drive down float and transfer bridge float include steel pontoon style floatation. Other facilities were designed, but deferred for future construction. These include a new three-lane boat launch ramp and a vessel wash down pad. An area of the uplands has been set aside for the future fuel tank farm, and includes conduit to run fuel lines to Ramp 3 and a future Fuel Float.

Northern Economics supported the R&M team on this project, with responsibility for economic analysis.

Homer Deep Water Dock Feasibility Study

HOMER, ALASKA

R&M was responsible for a feasibility study of the market-based, economically sound, expansion of the Homer Deep Water Dock to support increased cargo operations, cruise ships and industrial deep water moorage. R&M examined economics, market demands and local infrastructure, and outlined upgrades and development to the DWD as required to meet the long-term needs of the City, Kenai Peninsula Borough and port users.

As part of this study, R&M completed a condition evaluation of the existing dock, including above-water and underwater inspection, load rating, condition inspection and ADCP tidal current study. R&M also completed environmental scoping, concept alternatives analysis and cost estimates, geotechnical engineering, surveying, current and wave studies, and preliminary design. Follow on work included design of uplands/backlands improvements at the dock.

Northern Economics was part of the R&M team on this project. Their initial work entailed research of current and projected economic activity in the community, stakeholder interviews and development of projected cargo activity. The second effort built on the initial work and focused on areas of opportunity, including assessment of the potential for industrial moorage and a barge service facility, evaluation of lease rates for land on the Homer Spit adjacent to the Deep Water Dock, and identification of potential funding and financing strategies for dock, uplands and other improvements.

Sitka Crescent Harbor

SITKA, ALASKA

R&M provided overall design project management for the design/build renovation of the Sitka Crescent Harbor. One of five harbors operated and maintained by the City and Borough of Sitka, the Crescent Harbor is located in Crescent Bay and is accessed by Lincoln Street. This harbor was built in the 1960s, beginning with the breakwater and basin in 1964, Floats 1-4 in 1966, followed by Floats 5-7 in 1969. There have been many projects to replace and upgrade portions of the harbor and its utility services over the years.

This objective of this project was to replace the aging harbor float system, including Floats 1-4 and associated access ramps and utilities. The access ramps were designed to be 80' long to meet minimum ADA Guidelines for boating facilities. All facilities were designed for pedestrian loads and for access by a four-wheeled ATV, used by the City for snow removal.

The basic features of the design included:

- Floats 1-4: demolition and removal of existing floats, trestle, gangway ramps and associated utilities and appurtenances.
- A new floating dock system that provides moorage for vessels ranging in lengths from 18' to 75'.
- Timber framed floats with HDPE floatation.
- All season water and fire suppression to all new floats.
- Shore power and lighting.
- Three new 6' wide, 80' long aluminum gangway ramps.

The project includes a timber frame/decked float system with HDPE floatation drums and glulam bullrails. Primary timber stringers are above the normal water surface under normal design loads. Primary timber stringers shall be capable of resisting all vertical loads including lifting and construction loads, and service live loads such as vessel berthing, wind and wave loads. The design provided a horizontal shear diaphragm capable of distributing the horizontal loads, such as wind on vessels, through the float system to the piling.

Palmer Pier

PALMER STATION, ANTARCTICA

R&M is providing project management, surveying, planning and design for a replacement dock at Palmer Station, a U.S. research station located on Anvers Island in Antarctica. There is no airstrip at Palmer Station, so all supply and personnel transfer operations are by vessel. The nearest major port facility is Punta Arenas Chile, about 1,100 miles to the north.

The existing pier is a 27' diameter cellular cofferdam type sheetpile bulkhead structure constructed in 1967. The bulkhead is backfilled with gravel, cobble and boulders. The existing structure is in poor condition due to age and corrosion. There is severe section loss in places and it has been patched numerous times over the years. It is now in critical need of replacement.

This project consists of the construction of a new steel pipe pile-supported concrete deck dock to replace the existing sheet pile bulkhead. The new pier will have an energy absorbing fender system, bollards and on-dock power/lighting. It will be configured to accommodate the following design vessels that service the facility.

- **Nathaniel B Palmer** - 308' length overall, 60' beam, 22.5' draft, 6,800 long ton displacement. It has an over-the-side main crane with 25-ton capacity and 60' reach. This is the current primary vessel that services the Station.
- **Future Antarctic Research Vessel** - 335' 9" length overall, 68' 7" beam, 28' draft, 10,248 long ton displacement. This vessel is currently under concept design. Delivery is planned for 2029.

The construction project is being advanced under a construction manager/general contractor (CM/GC) method. It is currently in the prefabrication and procurement phase. Mobilization to the site is planned for fall 2021.

Port of Alaska Petroleum Cement Terminal

ANCHORAGE, ALASKA

R&M is providing engineering support for the Port of Alaska Petroleum Cement Terminal (PCT) project. The PCT is the first new terminal in the overall Anchorage Port Modernization Project (APMP), which will eventually replace all existing aging docks at the POA.

The PCT has been designated as an "essential facility" for the port and as such, has very high seismic design standards. The recently published ASCE COPRI 61-14 standards are being used for seismic design. One of the goals of the seismic design is for the facility to return to operation within one week following a major design level earthquake. The design team has conducted detailed nonlinear evaluation of the piling and pile to deck connection and has provided considerable analysis of soil to structure interaction. Soils improvements along the near shore area are being incorporated into the design.

The design also includes a providing a long service life in an aggressive environment. Fusion bonded epoxy coatings and various pile jackets are being evaluated for a long service life and low life-cycle cost.

R&M is providing geotechnical field investigations, survey and mapping, planning, coastal and waterfront engineering, structural engineering, civil engineering, corrosion engineering, environmental and project management support.

City of Emmonak Port Tariff Rate Study

EMMONAK, ALASKA

Northern Economics conducted a review of tariffs for selected ports in Alaska to develop an updated tariff for the City of Emmonak. The City won a federal grant to support construction of a new dock and barge landing facility, to which the updated tariff will apply. In addition to reviewing the contents of the tariff, Northern Economics used a life-cycle cost approach to recommend rate updates and provided an accompanying memo with additional recommendations, including regular rate increases.

Kodiak Harbor Cash Flow Analysis

KODIAK, ALASKA

Northern Economics updated its life-cycle cost analysis of the City of Kodiak's harbor facilities and then used that information to evaluate the cash flow and debt requirements of three rate structure scenarios, including the baseline, annual inflation adjustments, and a one-time increase plus annual inflation adjustments.

Assessment of Options to Reshape the Alaska Marine Highway System

ALASKA

Northern Economics created a data driven model to estimate impacts of 11 options to reshape the Alaska Marine Highway System in this high-profile report for the Alaska Department of Transportation and Public Facilities (DOT&PF). The goal of the project was to assess options that would reduce the operating subsidy of the system, while maintaining acceptable levels of service. The analysis included econometric modeling of travel demand in response to changes in prices and frequency of port calls. The analysis considered changes in the ownership structure and examined the impacts of changes in daily operating hours, as well as the impacts of lower wages.

Homer Harbor Rate Structure Study

HOMER, ALASKA

Northern Economics conducted a rate structure study for the Homer Harbor to determine the impact of different rate structures on individual vessels and total revenues, including vessel length tiers and different rates by type of vessel.

Fish Meal Plant Feasibility Assessment

SAINT PAUL, ALASKA

The Central Bering Sea Fishermen's Association (CBSFA) commissioned this study in response to changes in U.S. Environmental Protection Agency discharge permitting that would affect a local fish processing facility. To facilitate continued harvest and delivery of halibut to the Trident plant during the summer months, CBSFA sought to develop plans to eliminate discharge of processing waste through the existing outfall. The study also examined the possibility of expanding to other fisheries, which would have a significant impact on the type and scale of the approach needed to eliminate waste discharge.

The analysis had two primary objectives:

1. Assess which of three waste disposal methods was best suited to CBSFA processing.
2. Investigate the fishery resources available in and around Saint Paul and assess whether the potential exists for the harvest and process of species other than halibut, in particular, a shore-based Pacific cod fishery.

PROJECT APPROACH

Project Background

The existing Saint Paul breakwater and small boat harbor were completed in phases. The primary rubble mound breakwater was completed in 1989. Previous breakwaters in the same general location had failed. From the early 1990s through 2011, several important projects were advanced, including spur breakwaters, harbor dredging, underwater reefs and the small boat harbor. The small boat harbor and ramp project was completed in 2011. An additional 50' of dock and a vessel repair facility was constructed in 2014.

The waterfront facilities in Saint Paul Harbor include the North and South Docks along the breakwater, floating docks arranged in a large U-shaped configuration with 12 slips and side tie transient moorage, a launch ramp and a harbormasters office. There are a number of associated buildings, uplands and vessel repair areas.

Key stakeholders include:

- Harbor Improvements Planning Team
- City of Saint Paul
- Saint Paul Island
- Tanadgusix Corporation
- Trident Seafoods
- Central Bering Sea Fishermen's Association

The Saint Paul Harbor Improvements and Expansion Feasibility Study centers on identifying economically viable alternatives for:

- Dock expansion for fishing vessels.
- Harbor expansion for large vessels.
- New Harbormasters office.
- Harbor amenities.

Project Approach

R&M understands the unique challenges of operating a boat harbor in extremely remote areas. The Saint Paul Harbor is a key element in the economic engine that supports the community. It is also a vital part of the lifeline for goods and services to the island.

Our approach includes the following tasks:

1. Data Collection and Evaluation
2. Condition Assessment
3. Draft Feasibility Study
4. Preferred Alternative
5. Draft Business Plan
6. Final Feasibility Study and Business Plan

Each of these elements is more fully described below.

Virtual Kick-Off Meeting

R&M will schedule a virtual kick off meeting with the team members, including the inspection team and key individuals from the City (i.e., City Manager, City Planner, Harbormaster, Public Works and utility staff). R&M uses a variety of virtual platforms, including Microsoft Teams and WebEx, to efficiently conduct virtual meetings.

The purpose of the kick off meeting is to fully introduce the team players, establish communication protocols, outline key schedule tasks and milestones, and to hear directly from City personnel about any key issues or concerns they would like addressed.

1 - Data Collection and Evaluation

Identify Fleet

The fleet is one of the prime drivers for any harbor. It includes local known users and transient vessels. A "design vessel" (or vessels) is also an important consideration. This is typically the largest vessel the harbor can accommodate and will drive the depth of the basin, as well as the length of the moorage facility.

Online commercial fishing fleet data indicates there are 11 vessels that listed Saint Paul as their homeport in 2020; however, the RFP says there are 12 locally-owned fishing vessels, ranging in length from 24' to 81'. There are also a number of vessels associated with the Trident plant that fish in the area seasonally, but are homeported elsewhere. In addition, there are occasional tourism-related vessels and various tugs and barges that supply the island with building materials, fuel and commodities.

R&M will use moorage records and other information from City staff, fleet information from Trident, and online commercial fisheries data (including vessels, permits and activity) to outline the local and transient fleet and a design vessel.

Mapping and Base Drawing

A clear base drawing is critical to providing a master plan for the harbor. R&M will use existing data to create this base drawing.

In July 2019, the USACE completed a detailed hydrographic survey of the harbor as part of the Federal "condition survey". This includes the depths of water and a map of the adjacent uplands. The Corps uses this to determine when maintenance dredging and other Federal works may be required. This information is available publically and includes PDF files of the maps and digital survey background data. R&M has this information in our possession for Saint Paul.

High resolution air photos of the harbor are also available commercially. The air photos can be set to a precise scale and rectified to match known control points on the ground.

R&M will develop a project site plan using an ortho-rectified to-scale high resolution air photo, combined with the recent USACE condition survey drawing. This base drawing will outline existing structures, topography, bathymetry, property lines and land ownership. We will use the base drawing to describe the existing conditions and to outline several alternatives for expansion. The base drawing and alternatives will be at a preliminary level and some information will be approximate.

As part of the mapping effort. R&M will identify any potential geometric constraints that may affect or limit development. Examples are land ownership, geologic features such as rock outcroppings, transportation corridors or existing buildings.

Commercial Fishing Data and Forecast

The importance of commercial fisheries to the Saint Paul Harbor cannot be overstated. Trident Seafoods is by far the largest employer on the island. Opilio and King Crab, Pollock, Pacific Cod and Halibut are all processed on the island. The City collects significant raw fish and sales tax from this industry. This is typically more than 70% of the City's total tax revenue. New development for the inner harbor should be done in a manner to support this important industry.

R&M and Northern Economics will collect data on the commercial fishing industry in Saint Paul. This will include reviewing online data and interviewing local and industry experts. We will examine realistic scenarios for future expansion. We will outline this in the feasibility report and produce plans and concepts accordingly.

Mining and Tourism Data and Forecast

Mining and tourism also play an important supporting role in the Saint Paul economy. New development for the inner harbor should also consider the needs of these industries.

R&M and Northern Economics will collect data on the mining and tourism industry in Saint Paul. This will include reviewing online data and interviewing local and industry experts. We will examine realistic scenarios for future expansion. We will outline this in the feasibility report and produce plans and concepts accordingly.

Federal Interest and Responsibilities

The importance of the Federal interest and responsibilities in Saint Paul Harbor cannot be overestimated. The Federal government has spent tens of millions of dollars to develop and maintain the breakwater and other features of the harbor. It is in the City's best interest to maximize Federal participation and to design new inner harbor facilities in such a way as to support this. For example, the Federal government has the responsibility to maintain the breakwater, entrance channel and turning basin in the harbor. New development for the inner harbor should be done in harmony of this so as to support continued Federal maintenance.

R&M will collect data on the specific limits of the Federal interest, along with a description of their responsibilities. We will outline this in the feasibility report and produce plans and concepts accordingly.

Economic Data Collection

Northern Economics will collect fleet and financial information from City staff, fleet information from Trident and the USACE, and commercial fisheries data (including vessels, permits and activity) from the Commercial Fisheries Entry Commission (CFEC).

Environmental Data Collection

Understanding site-specific environmental design parameters, such as wind and waves, is very important to the design of harbor facilities. **Harvey Smith, PE** of HNS is a former DOT&PF statewide coastal engineer. Harvey is experienced in the design properties of waves in the marine environment, including wave forecasting and hindcasting, outlining fetches and storm duration, significant and extreme wave heights and periods, wave refraction, diffraction, reflection and shoaling. He is also familiar with wind and wave forces on vessels and structures, including design methodology of developing these forces as outlined in several published standards such as the USACE Shore Protection Manual, NAVFAC and UFC design guides, and ASCE 7-10.

Harvey will work with the R&M team to examine meteorological and oceanographic data for Saint Paul Island Harbor. We will review previous work and reports by the USACE. We will also examine wind records from the Saint Paul Airport. R&M will identify a design wind condition for use in development of harbor alternatives. This design wind condition will be applied to the side and end profiles (sail area) of the design vessel. We will use the resulting forces to provide preliminary design of the piling for any new harbor facilities.

Data Collection Mechanisms

As mentioned above, our team will rely on a number of secondary data sets. We are familiar with a large number of public resources. We also plan to conduct interviews and to do specific in-depth primary research where applicable.

The economic realities of port and harbor business is often driven in part by large-scale events. For example, the cruise industry recently went from boom to bust due to the COVID-19 pandemic. Another example is the well-known, but unpredictable boom/bust cycle of the oil industry. Due to the large number of potential variables, these episodic factors are difficult to predict with statistical models. Therefore. there is often uncertainty in long-range planning that is difficult to quantify. One way to deal with uncertainty in

economic foresting is to outline realistic high, medium and low scenarios that encompass the spectrum of possibilities.

The R&M team has experience with statistical analysis related to design of port and harbor infrastructure. For example, waves have been found to generally follow a Rayleigh distribution. Waves are typically represented and reported by "significant" wave height, which is the average of the highest one-third of the waves. The design of coastal features is normally based on the average of the highest 1% for fixed structures and on the average of the highest 10% for flexible features, such as a rubble mound breakwater.

Northern Economics has extensive experience with statistical analysis. Specific to harbor facilities, the firm has experience working with harbor office database outputs, CFEC data downloads and other maritime data sets. It also has experience working with AIS vessel data in Alaska and Washington, as well as large data sets, such as the Alaska Marine Highway System ridership data. Each data set has a different focus, but by collecting all of the information, our team can verify information and identify gaps. We will deal with any data gaps on a case-by-case basis. The remedy may involve additional research, interviews and or data collection to ensure we have a good understanding of and data describing the fleet and the economics of the harbor.

2 - Condition Assessment

R&M will provide civil, structural, waterfront, and corrosion inspection and engineering, with support from HAI for electrical assessment and engineering.

Once we receive Notice to Proceed (NTP), we will plan for mobilization to Saint Paul for an in-person inspection of harbor facilities. R&M is familiar with the St. Paul Island COVID-19 Dashboard and the City's COVID-19 Travel Form. We have a COVID Mitigation Plan on file with the State of Alaska and a sincere commitment to the health and welfare of our employees and the communities we serve. R&M staff members have traveled to and worked safely without incident in communities throughout Alaska throughout this pandemic. We will strictly adhere to all testing and documentation requirements prior to any travel to Saint Paul.

If travel to the island is not practical within current COVID mandates, we will conduct the condition assessment virtually.

John Daley, PE of R&M will perform the on-site inspection, concentrating on the overall inspection and documentation of each facility. John will document the condition of all harbor facilities, including electrical systems.

Condition Assessment: Rating System Description

R&M plans to use national inspection standards, along with damage assessment and a rating system that follows the "*Waterfront Facilities Inspection and Assessment*" Manual of Practice 130 published by the American Society of Civil Engineers (ASCE, 2015).

The purpose of a rating system is to provide a uniform and repeatable method of tracking the condition of structures throughout their service life. The correct rating assignment requires professional engineering judgment and considers:

- Scope of damage
- Severity of damage
- Distribution of damage
- Types of components affected and their structural sensitivity
- Location of defect on the component relative to the point of maximum stress

Damage assessments are done on an element level. For example, consider the deck boards. The ASCE damage ratings for timber elements are shown in **Table 1**. There are similar ratings for other elements, such as steel piling. Condition ratings are done on an overall structure level. The ASCE rating system, summarized in **Table 2,** uses a scale of 1 to 6, with 6 corresponding to a structure in good condition, and a rating of 1 corresponding to a structure in critical condition.

Table 1: Damage Ratings for Timber Elements

RATING	EXISTING DAMAGE
NI Not Inspected	• Not inspected, inaccessible or passed by
ND No Defects	• Sound surface material
MN Minor	• Checks splits and gouges less than 0.5" wide • Evidence of marine borers or fungal decay
MD Moderate	• Remaining diameter loss up to 15% • Checks and splits wider than 0.5" • Cross-section area loss up to 25% • Corroded hardware • Evidence of marine borers or fungal decay, with loss of section
MJ Major	• Remaining diameter loss of 15% to 30% • Checks and splits through full depth of cross-section • Cross-section area loss of 25% to 50% • Heavily corroded hardware • Displacement and misalignment of connections
SV Severe	• Remaining diameter loss more than 30% • Cross-section area loss more than 50% • Loss of connections and/or fully non-bearing condition • Partial or complete breakage

Source: *Waterfront Facilities Inspection and Assessment Standard Practice Manual 130 (ASCE, 2015)*

The ASCE condition ratings are used to describe the existing in-place structure relative to its condition when newly constructed. The fact the structure was designed for loads or conditions lower than the current standards have no influence on the damage or condition ratings. For example, an electric

Table 2: Rating System for Overall Condition of Structures

RATING	DESCRIPTION
6 GOOD	• No visible damage or only minor damage noted. • Structural elements may show very minor deterioration, but no overstressing observed. • No repairs required.
5 SATISFACTORY	• Limited minor to moderate defects or deterioration observed, but no overstressing observed. • No repairs required.
4 FAIR	• All primary structural elements are sound, but minor to moderate defects or deterioration observed. • Localized areas of moderate to advanced deterioration may be present, but do not significantly reduce the load bearing capacity of the structure. • Repairs are recommended, but the priority of the recommended repairs is low.
3 POOR	• Advanced deterioration or overstressing observed on widespread portions of the structure, but does not significantly reduce the load bearing capacity of the structure. • Repairs may need to be carried out with moderate urgency.
2 SERIOUS	• Advanced deterioration, overstressing or breakage may have significantly affected the load bearing capacity of primary structural components. • Local failures are possible and loading restrictions may be necessary. • Repairs may need to be carried out on a high-priority basis with urgency.
1 CRITICAL	• Very advanced deterioration, overstressing or breakage has resulted in localized failure(s) of primary structural components. • More widespread failures are possible or likely to occur and load restrictions should be implemented as necessary. • Repairs may need to be carried out on a very high priority basis with strong urgency.

Source: *Waterfront Facilities Inspection and Assessment Standard Practice Manual 130 (ASCE, 2015)*

pedestal may be in "satisfactory" condition based on its original design, but not in compliance with modern codes for GFCI protection. Another example is a finger float that may be in "fair" condition based on original design, but may have lower freeboard and reserve floatation than modern standards and may be used to moor vessels larger than originally intended. Based on the above, in addition to the ASCE ratings, our team will describe the level of service the structure provides compared to modern standards. An example might be that a finger float might be rated as being in "fair" condition but is "functionally deficient" based on current use and "not in compliance with current standards" based on low freeboard and little reserve floatation.

R&M has extensive experience with modern harbor design standards including *"Planning and Design Guidelines for Small Craft Harbors"* ASCE Manual of Practice No 50, ports and harbor standards outlined by the National Fire Protection Association (NFPA), and the current version of the National Electric Code (NEC). We will outline and quote applicable sections of these standards when evaluating the level of service provided by the existing facilities.

Using the above outlined methodology, R&M will provide ASCE damage and condition ratings, along with a description of the level of service and information about how the facilities compare to current codes and standards.

Corrosion/Cathodic Protection Inspection - R&M will inspect the steel piling and other steel elements, such as pile collars and hinges for corrosion. This will include a visual inspection at low or minus tides, select ultrasonic thickness readings to evaluate section loss, and select cathodic protection 1/2 cell readings to evaluate if any galvanizing remains.

Silver Chloride Cathodic Protection 1/2 Cell

We will use a silver chloride cathodic protection reference cell in seawater. The 1/2 cell will be lowered next to the piling and connected to a multi-meter. We will use the millivolts reading to evaluate the corrosion potential of the piling. The National Association of Corrosion Engineers (NACE) publishes standards and criteria for cathodic protection. One widely used criteria for adequate CP is to maintain the structure at -0.850 volts or more negative with respect to a reference cell. If the piling is -0.850 volts or more negative it will be considered protected. It is unlikely any existing piling will meet this criteria unless they have functioning anodes installed. Readings of between about -0.700 and -0.850 typically indicate that some galvanizing remains. Readings below -0.700 typically indicate that galvanizing has been consumed and active corrosion of the base metal has begun.

R&M will summarize the results of the corrosion protection inspection and will provide a preliminary design of sacrificial anodes for the piling. This will include the number and size of anodes required to protect the various facilities.

Electrical Systems - Ensuring provision of an appropriate electrical system for the Saint Paul Harbor requires a strategy engaging several tasks:

- Evaluation of drawings that possibly illustrate the configuration of the existing systems. This will involve gathering and examining original and as-built drawings.
- Evaluation and characterization of the utility system that supports the harbor. This may involve discussion with utility personnel.
- Characterization the electrical loads presently experienced at the existing harbor.
- Collection of assessment information with regard to the condition of the existing harbor electrical system. This may include reviewing photographs, video and other information gathered in the site inspection.
- Evaluation of the collected information to determine code compliance, maintenance and operational issues.
- Performance of load calculations on the existing facilities. Load assessment of the system with optional upgrades and additions may also be incorporated in alignment to proposed new construction.
- Development of a report describing conditions and recommending modifications and upgrades.
- Augmentation of the report with recommended power and lighting system development.

Our team's involvement will extend beyond normal analysis to incorporate the effect harbor construction might have on the community's electrical utility.

3 - Draft Feasibility Study

The draft feasibility report will identify several alternatives, including a no build option. It will include identification of the current and future fleet. We will outline infrastructure to meet projected future demand. Key features of the plan will include:

- Drawings that show existing and proposed alternatives.
- Means to support the fleet.
- Means to support commercial fishing.
- Means to work in harmony with the Federal interest.
- Means to support tourism, mining and other business entities.

The report will include budgetary cost estimates and a life-cycle cost analysis.

Northern Economics will use the life-cycle cost model to assess the financial feasibility of each alternative under consideration and then write a supporting narrative for inclusion in the draft feasibility study. The focus in the feasibility study will be a determination of whether the different alternatives are feasible based on assumptions about harbor use, rates for that use and assumptions about how facility costs will be covered.

4 - Preferred Alternative

R&M will work with the City's project manager and the Harbor Improvement Planning Team to identify a preferred alternative. We will outline this on the project base map and describe the various features in a narrative description. We will also outline a budgetary cost estimate.

Electrical service is a primary key to the operation of modern harbor facilities. Full electrical services should attend to the needs for on-shore power for vessels, and dock and shore side lighting. These facilities can equate to as much as 25% of the cost of a new facility.

The R&M team wants to ensure that any development can be economically reasonable for the community. We acknowledge the limitations of power and energy production on St. Paul Island and we are aware of its associated high costs.

Once the preferred alternative has been selected, Northern Economics will finalize its life-cycle cost model with the detailed operations, maintenance and capital cost estimates developed for that alternative. This will allow for an update of the feasibility study and provide financial inputs to the business plan.

5 - Draft Business Plan

Northern Economics will write a draft business plan with support from R&M. The plan will include the financial findings developed from the life-cycle cost model, including a five-year pro forma income statement and balance sheet. Non-financial elements of the plan will include a discussion of the market for harbor facilities, a description of the regional fishing activity, a SWOT analysis, a high-level discussion of funding and financing mechanisms, and management considerations.

R&M will submit a Draft Feasibility Study and Business Plan to the City and will meet with the Harbor Improvement Planning Team to present and discuss the Draft.

6 - Final Feasibility Study and Business Plan

Our team will participate in a review meeting with the City and other stakeholders. We will log comments and questions related to the draft documents. We will respond to and adjudicate each comment.

Following this review and comment resolution effort, we will finalize the feasibility study and business plan.

INSURANCE

Client#: 575329 R&MCONSU

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 05/07/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer any rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Marsh & McLennan Agency LLC 1031 W 4th Ave, Suite 400 Anchorage, AK 99501 907 276-5617	CONTACT NAME: Jenny Yousey PHONE (A/C, No, Ext): (907)2765617 FAX (A/C, No): (907)2766292 E-MAIL ADDRESS: Jenney.Yousey@marshmc.com
INSURED R&M Consultants, Inc. 9101 Vanguard Dr. Anchorage, AK 99507	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : American Fire and Casualty Company — 24066 INSURER B : Ohio Casualty Insurance Company — 24074 INSURER C : Continental Casualty Company — 20443 INSURER D : Ohio Security Insurance Company — 24082 INSURER E : INSURER F :

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE / X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY / X PRO-JECT / LOC OTHER:			BKA2057658978	12/31/2019	12/31/2020	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $1,000,000 $5,000 $1,000,000 $2,000,000 $2,000,000
D	AUTOMOBILE LIABILITY X ANY AUTO OWNED AUTOS ONLY / SCHEDULED AUTOS X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY			BAS2057658978	12/31/2019	12/31/2020	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000 $ $ $
B	X UMBRELLA LIAB / X OCCUR EXCESS LIAB / CLAIMS-MADE DED / X RETENTION $0			USO2057658978	12/31/2019	12/31/2020	EACH OCCURRENCE AGGREGATE	$4,000,000 $4,000,000
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N: N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		XWA2057658978	12/31/2019	12/31/2020	X PER STATUTE / OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$1,000,000 $1,000,000 $1,000,000
C	Professional Liab			AEH591910379	05/29/2020	12/31/2020	2,000,000 4,000,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

Evidence of Insurance; subject to policy terms, conditions & exclusions.

CERTIFICATE HOLDER

Evidence of Insurance

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Jenney Yousey

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SCHEDULE AND TIMELINE

EVENT	2020	2021					
	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
NTP							
Virtual Kick-Off Meeting							
Data Collection and Evaluation							
Site Visit and Condition Assessment							
Concept Plan Development							
Virtual meeting with harbor improvement planning team							
Draft Feasibility Study and Business Plan Development							
Preferred Alternative – Virtual meeting with Harbor Improvement Planning Team							
Virtual report presentation meeting with Harbor Improvement Planning Team							
Draft Feasibility Study and Business Plan comment resolution and revisions							
Final Feasibility Study and Business Plan							

REQUIRED DELIVERABLES

1 – Saint Paul Harbor Improvements and Expansion Feasibility Study

The study will contain plan drawing outlining key features of new and improved facilities, including:

- Expanded moorage
- Utilities (electrical, lighting)
- New harbormaster's office
- Other infrastructure, as outlined

We will provide a cost estimate for the improvements.

The financial feasibility component of this study will employ a life-cycle cost model to determine the annualized cost of operating and maintaining the current and proposed facilities, the annualized revenue requirement, and proposed rate changes to support the cost of the facilities.

2 – Saint Paul Harbor Improvements and Expansion Business Plan

The business plan will include sections of a typical business plan, as agreed upon between the City and the R&M team. For this study, the plan is anticipated to include a five-year pro forma income statement and balance sheet, a discussion of the regional market for harbor facilities, a description of regional fishing activity, a SWOT analysis, high-level funding and financing mechanisms, and management considerations.

COST

Estimated Cost for All Work

TASK	R&M	NORTHERN ECONOMICS	HAI	KPB	HNS	TASK TOTAL
TASK 1 DATA COLLECTION AND EVALUATION	$8,087	$6,919	$4,950	$2,200	$1,650	$23,806
TASK 2 CONDITION ASSESSMENT	$11,401	-	-	-	-	$11,401
TASK 3 AND 5 DRAFT FEASIBILITY STUDY AND BUSINESS PLAN	$7,571	$12,469	$3,300	$1,650	$1,100	$26,090
TASK 4 PREFERRED ALTERNATIVE	$10,439	$13,508	$8,800	$5,500	$1,650	$39,897
TASK 3 AND 5 DRAFT REPORT PRESENTATION	$1,825	$1,744	$550	$550	-	$4,669
TASK 6 FINAL FEASIBILITY STUDY AND BUSINESS PLAN	$6,020	$3,707	$2,200	$1,100	$1,100	$14,127
TOTALS BY FIRM	**$45,343**	**$38,347**	**$19,800**	**$11,000**	**$5,500**	**$119,990**

KEY STAFF

R&M's management structure is focused on client satisfaction. This structure gives the City of Saint Paul two distinct points-of-contact - a Project Manager (**John Daley, PE**), who serves as the primary point-of-contact for all project-specific needs, and a Contract Manager (**Len Story, PLS**), who serves as a secondary contact. Our Contract Manager serves as a separate contract for the City, with whom they can discuss contract-specific topics, including administrative items or performance issues.

John Daley, PE will be the primary point-of-contact with the City. He will be responsible for the operational aspects of the project, including project coordination, scheduling, day-to-day QA and overall performance of project tasks. John will ensure coordination of the project team, and serve as the connection between the R&M team and the City. He will ensure deliverables are developed to City standards, and project schedule and budget are maintained.

John has managed numerous waterfront projects over the past 25 years, including planning, design and construction phases. He has consistently demonstrated his ability to lead multi-discipline teams to find innovative solutions to design challenges, resulting in the delivery of quality products. All task leaders will report to John as depicted in the organization chart on this page.

John understands the need for regular, clear and consistent communications. He is familiar with numerous virtual meeting platforms and uses these tools to enhance team productivity. John will conduct weekly internal meetings with project staff to keep progress on-track, resolve issues and identify coordination issues for follow-up.

R&M's Chief Executive Officer (CEO), **Len Story, PLS**, will serve as Contract Manager, with responsibility for the administrative relationship between the City of Saint Paul and the R&M team. As Contract Manager, Len assists with contract negotiations, reviews project

CITY OF Saint Paul ALASKA

LEN STORY, PLS
Contract Manager

Assist with contract negotiations, review budget compliance.

JOHN DALEY, PE
Project Manager, Lead Engineer

Primary contact and lead engineer; liaison between City and R&M team.

JEAN CUMLAT, EIT
Staff Engineer

Harbor planning, CAD support.

MIKE FISHER
Economist

Economic studies.

VAN LE, AICP
Planner

Planning and stakeholder engagemement.

HARVEY SMITH, PE
Coastal Engineer

Evaluation of environmental design parameters.

KRISTI MCLEAN, LEED AP BD+C, CESCL
Environmental Lead

Outline permit requirements for future development scenarios.

BEN HAIGHT, PE
Electrical Engineer

Assessment of electrical components.

LISA MORRIS
Graphic Designer

Graphics to support stakeholder engagement, final deliverable layout.

JAE SHIN, AIA
Architect

Programming for harbormaster's office.

budget compliance, and communicates with the Project Manager about contract amendments, project issues and resource needs. He offers our clients a neutral party they can contact if they need to discuss contract administrative items or project team performance issues that cannot be resolved through our Project Manager. Len's involvement ensures project decisions have executive-level support, and provides an independent view of project resources, budgets and schedule. This allows our Project Manager to focus on technical aspects of the project, leaving administrative items to our Contract Manager. Len has worked on many waterfront projects over his 41-year career with R&M, and has served in a Contract Manager role for more than 20 years.

Resources

R&M has 100 Alaska-based professional, technical and administrative staff members, all available to support this project. While R&M is not a large, global firm with thousands of employees, we are one of the largest entirely Alaskan firms and have more than adequate resources and availability to complete this project within the City's desired timeframe. R&M is also supported by the resources of our subconsultants.

R&M is headquartered in Anchorage, with a branch office in Fairbanks. Our Anchorage office space includes our 18,000 SF main office complex, where the majority of our staff are housed; a 2,500 SF materials laboratory, located within walking distance of our Anchorage headquarters; and the upper floor of the Alaska Structures Building, located across the street from our main complex, which houses our construction administration team.

R&M is currently working with the 2018 and 2020 versions of AutoCAD Civil 3D, Revit and with ArcGIS 10.4.

PROJECT MANAGER, LEAD ENGINEER
John Daley, PE | R&M

John will be the primary point-of-contact with the City, and provide liaison between the City and the R&M team. He will also perform the site investigation and be the lead engineer for development of alternatives.

John is a senior waterfront engineer with more than 25 years of experience in waterfront and coastal planning, design, construction and inspection. He has managed and/or participated in a wide variety of coastal, arctic and waterfront engineering projects, including breakwaters, harbors, float systems, various types of docks and wharves (sheetpile bulkheads, pile supported docks, fender systems, floating docks), bridges, flood control projects, erosion control projects, and bridge, dock and harbor inspections. John is also an experienced corrosion engineer and has designed anode systems for underground and submerged structures.

John is actively involved in two committees for the ASCE Coasts, Oceans, Ports and Rivers Institute (COPRI). The first is for the development of seismic design standards for piers and wharves. This committee is tasked with creating comprehensive national seismic design standards for ports. The second committee is tasked with developing waterfront infrastructure inspection standards. He is also a long time member of NACE and has rotated through the various Alaska Section officer positions, including chairman and trustee.

Before becoming an engineer, John worked in the marine construction industry for 12 years. He is also a certified commercial diver and has participated in numerous diving and underwater inspection-related projects.

John has extensive waterfront planning experience. He was involved (*under former employment*) in the **1999 Port of Anchorage Master Plan** and was heavily involved in the "facilities plan" portion of that project. Following the master plan, John was project manager for the Port of Anchorage Intermodal Marine Facility project. This project was the first phase of the 1999 master plan and had many elements that are similar to the current Port Modernization Project. John was the project manager of the **Homer Deep Water Dock Feasibility Study**. This project included an examination of alternatives to bring maritime container cargo

directly into the Kenai Peninsula. It included an examination of docking alternatives, as well as upland storage areas and connectivity to the road system. Northern Economics completed an economic study that included costs, benefits and funding alternatives. John has also been involved in a number of harbor expansion planning and design studies, as well as development projects, including recent work in the Seward and Valdez harbors.

John recently completed a condition assessment, load rating and replacement concept design for the **ARRC Seward Marine Terminal**. This included an above and below water inspection, a structural analysis of the dock, taking into consideration the significant section loss of the piling due to corrosion; an evaluation of the seismic capacity of the dock, including the piling and pile to cap connections; and developing concepts, details and cost estimates for repairs. A modern replacement dock was also outlined, along with a site plan, critical features and budgetary cost estimate.

In addition, John (*under former employment*) was involved in a wide range of reconnaissance and feasibility study projects, as well as detailed design, bidding and construction support, for docks, ports and harbors projects under a term contract with the USACE. Specific projects under this term contract included the design of renovations to the **Cordova City Dock**, the **Valdez Harbor Feasibility Study**, **Akutan Harbor Feasibility Study**, **Douglas Harbor Expansion Study** and the **Fire Island Port Reconnaissance Study**.

John was the design manager for two recent design/build cruise ship terminals, one at Hoonah and one at Ward Cove near Ketchikan. In both cases, the projects were delivered successfully under an accelerated schedule. Both terminals included steel pontoon floating docks with pipe pile mooring dolphins and steel transfer bridges that allowed vehicle access to the floating docks. Both projects included site-specific wind wave studies and detailed mooring and berthing analysis.

John is currently the assistant project manager for the design of the **POA Petroleum Cement Terminal.** This is the first new dock under the Port Modernization Project. It includes very stringent and high seismic design criteria. The first phase of this project is under construction and the second phase is out for bid.

John is also currently the design manager for a new pier at Palmer Station, Antarctica for the National Science Foundation. This project requires paying significant attention to providing prefabricated, easily constructible details for erection in the very remote location. Modular deck panels and pile caps are currently being designed. The design includes a robust lateral load resisting system to accommodate large seasonal floating ice loads.

John is a NACE-certified level 3 Corrosion Technologist. He has inspected and designed cathodic protection systems for numerous waterfront facilities, including Ketchikan Ship-Lift Facility, Seward Harbor, Valdez Harbor, Homer Harbor, Sitka Crescent Harbor, Unalaska Marine Facilities, Bartlett Cove Marine Facilities, Palmer Station (Antarctica), Hoonah Berth 2 Cruise Ship Terminal, Ward Cove Cruise Ship Terminal and others. He is also a FHWA-certified bridge inspector and has provided condition assessments for a number of waterfront facilities and bridges. These typically include a condition rating of various elements, along with cost estimates for repairs and renovations. Recent condition assessments include docks and harbor facilities in Whittier, Hydaburg, Seward, Sand Point, Valdez, King Cove, Yakutat and Anchorage.

John's port planning experience includes:

- **Port of Anchorage Master Plan (1999)**. John (*under former employment*) participated in this project as a sub to VZM Transystems. Following the master plan, he was project manager for the Port of Anchorage Intermodal Marine Facility project. This project was the first phase of the 1999 master plan and had many elements that are similar to the current Port Modernization Project.
- **Homer Deep Water Dock Feasibility Study (2015).** John was the project manager of the Homer Deep Water Dock Feasibility Study. This project included an examination of alternatives to bring maritime container cargo directly into the Kenai Peninsula. It included an examination of docking alternatives, as well as upland storage areas and connectivity to the highway.
- **Fairhaven Shipyard (2019).** John was the project manager for a study involving relocating American Seafoods from Seattle to Fairhaven Shipyard near Bellingham. Various layouts were considered to accommodate the fleet and budgetary construction cost estimates were provided.
- **Ward Cove Cruise Ship Facility (2019).** John was the project manager for the study and eventual design/build project to provide a floating cruise ship dock in Ward Cove near Ketchikan. The project included conceptual design, cost estimates, detailed mooring and berthing analysis, and final design. This project is currently under construction.

John holds a M.S. in Civil Engineering (coastal emphasis) and a B.S. in Civil Engineering, both from the University of Alaska Anchorage (UAA). He is a registered civil (1995 Alaska #CE9579) and structural (2014 Alaska #SE14151) engineer.

CONTRACT MANAGER
Len Story, PLS | R&M

Len, who is R&M's CEO, will have overall responsibility for the contract and the administrative relationship between the City and R&M. He will monitor performance of the project team and will coordinate closely with John Daley to ensure R&M is providing services that meet the City's objectives. Len will ensure R&M's work complies with our contract and the project team is provided with adequate resources to perform the required services.

An employee of R&M for more than 41 years, he served as manager of R&M's Surveying and Mapping Department for 12 years prior to being named Chief Operating Officer in 2008, and CEO in 2016. Len has served as Contract and Project Manager on many similar waterfront projects, and has previous experience in the community of Saint Paul, performing surveys at the airport.

Len holds an A.A.S. in Engineering/Surveying Technology from the Oregon Institute of Technology. He received his professional land surveying registration in 1989 (Alaska #LS7843).

PLANNER
Van Le, AICP | R&M

Van will serve as the project planner and public involvement lead. She will support the feasibility study by assisting with research, coordination and report drafting. Van will also support industry stakeholder coordination to inform the feasibility study and facilitate coordination with stakeholders such as the City of Saint Paul for review milestones and comments.

Van is a senior level planner with 17 years of planning and project development experience in Alaska, specializing in multi-modal transportation infrastructure projects in small communities. She has comprehensive planning experience in community revitalization and economic development; rural town district and comprehensive transportation planning; parks and open space planning; area-specific transportation planning studies; and functional step down plans. As a former Municipality of Anchorage Planner, Van has a thorough understanding of how local government operates.

In 2015, Van facilitated a charette for Valdez to create a vision for their downtown and to catalyze potential waterfront investments. She also provided survey support for harbor-related and harbor-impacted activity to estimate economic activity. Van worked with the City and an economics subconsultant on survey design, data collection and data analysis to engage recreation vessel owners, commercial fishing vessel owners, charter cruise owners/operators and business leaseholders.

Van provided planning support for business case plans and led industry stakeholder meetings for the Haines Lutak Dock Study. She supported upgrades to a surface transportation project in Skagway that connected the harbor to the City, and has supported projects at the POA to replace aging facilities, and expand capabilities for economic growth. Van also served as Project Manager and Planning Lead for the City of Houston (Alaska) Community Impact Assessment and Comprehensive Plan Revision and for the Big Lake Pedestrian Improvements Corridor Planning Study that integrates land use and transportation. In addition, she is the planning lead for multiple park master plans in Anchorage and Houston, where she is facilitating Advisory Groups and a Technical Advisory Group.

Van holds a M.S. in Environmental Sciences from Alaska Pacific University and a B.S. in Urban Geography from the University of British Columbia. She is a Certified Planner and holds certifications in Public Participation.

STAFF ENGINEER
Jean Cumlat, EIT | R&M

Jean will support harbor planning and provide CAD support. She has seven years of experience working in waterfront design groups for DOT&PF and R&M. Her experience with ports and harbors range from repair projects in Alaskan coastal communities to ongoing work at the POA on the PCT project and South Floating Dock Relocation.

Jean has supported engineering efforts for harbor assessment, renovation and development projects throughout Alaska. She assisted in drafting various alternatives for the Haines Lutak Dock Study and the Cold Bay Dock Rehabilitation. Jean also detailed the floating barge and fenders for the Sitka Gary Paxton Industrial Multi-Use Dock project and assisted with design of the new float system for the Valdez New Harbor Development.

Jean has also supported design efforts for the Yakutat Ocean Cape Dock Render System Repairs, Sitka Crescent Harbor, Hoonah Berth 2, SMIC Harbor Improvements and Seward A B & S Floats.

Jean holds a B.S. in Civil Engineering from UAA.

ENVIRONMENTAL LEAD
Kristi McLean, LEED AP BD+C, CESCL | R&M

Kristi will provide environmental support, to evaluate permitting requirements for fugure development alternatives. She has 15 years of environmental consulting experience, including NEPA document preparation, regulatory permitting, and managing associated consultations for marine construction projects that have included pile-supported and sheet pile structures, offshore fill, dredging and offshore disposal. Her experience includes substantial knowledge of municipal, state and federal permitting requirements and the ability to obtain necessary authorizations in a timely manner while navigating through the dynamic regulatory process. Kristi has led formal and informal consultations with the National Marine Fisheries Service (NMFS) to satisfy the Endangered Species Act and Marine Mammal Protection Act regulations on numerous projects and is very familiar with these agencies.

Kristi is the primary point-of-contact for environmental support at the Port of Alaska under an existing term contract for engineering and environmental services. She also provided environmental support for the SMIC Harbor Improvements project. Environmental tasks included initial public outreach to identify a preferred alternative, sediment sampling/chemical analysis to determine dredging/disposal options, USACE permit acquisition, including mitigation, and Alaska Department of Fish and Game and NMFS consultation, ADEC utility permitting and construction support (permit compliance). Kristi also has experience with waterfront permitting projects in Valdez, Homer, Anchorage, Kodiak, Biorka Island (Sitka) and Yakutat.

Kristi holds a M.S. in Environmental Science and Regional Planning from Washington State University and a B.S. in Conservation Biology from the University of Nevada, Reno. She is an ADEC Qualified Environmental Professional, LEED Accredited Professional with a Building Design and Construction Specialty, and is an Alaska Certified Erosion and Sediment Control Lead.

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ECONOMIST
Mike Fisher, PMP | Northern Economics

Mike has worked on a variety of business planning and feasibility analysis studies over the last 19 years. He is Northern Economics' primary consultant for port and harbor studies, and has provided economics analysis for more than a dozen feasibility studies for expansions, improvements, and facilities and equipment upgrades around the state.

Mike's relevant experience includes a feasibility study for the expansion of the Homer Deep Water Dock; a feasibility study of improvements at Port Clarence to support activity in the Bering Strait and the Arctic; a feasibility analysis and business planning for multiple projects at the Ouzinkie city dock; and a feasibility analysis of multiple marine infrastructure improvements to stimulate economic development in the community of Chignik Bay.

Mike's work for the community of St. Paul includes a feasibility study for a steel framing plant and a market analysis, a feasibility study of a scoria and cement products plant, and a visitor market analysis.

Mike holds an MBA from Western Washington University and a M.S. in Project Management from UAA.

COASTAL ENGINEER
Harvey Smith, PE | HNS

Harvey will work with the R&M team to examine meteorological and oceanographic data for Saint Paul Island Harbor.

Harvey began his professional career with the USACE in 1966. After three years of service as a Heavy Construction Specialist in Vietnam and Yuma Proving Ground, Arizona, he returned to the University of Washington to complete his degree programs in Civil and Coastal Engineering. After receiving his coastal engineering degree, he remained with the University of Washington, where he worked for eight years as a research engineer in the UW Coastal Research Laboratory. In 1982, Harvey moved to Alaska, where he worked for 33 years as the Statewide Coastal Engineer with DOT&PF until his retirement in 2016.

Harvey has more than 40 years of experience designing coastal structures, including harbors, rubble breakwaters, floating breakwaters and shoreline revetments for highways and airports. He has participated in the design of more than 100 coastal projects in Alaska, Washington and Oregon.

In his position with DOT&PF, Harvey was the final authority for planning and design of DOT&PF coastal infrastructure. His early years with DOT&PF focused on harbor planning and design, including breakwaters, mooring basins, inner harbor float facilities and adjacent uplands. In the 1990s, the State divested itself of small boat harbors, at which time Harvey began directing more of his attention to coastal protection of airports and highways. Much of this later work was in the Northern areas of Alaska where coastal processes are much more dynamic and uncertain. The challenges of the northern region required a sensitivity to changing climate trends, including melting coastal permafrost and reduction in sea ice, which exposes the coastline to longer periods of open water. Exposed infrastructure along the coastline normally requires some type of rock revetment. Harvey's revetment designs have included standard rock, dynamically stable rock, concrete armor, sheet pile, vegetated berms and artificial beaches.

Some of Harvey's relevant projects include:

- **St. George Harbor Redesign.** Harvey assisted the community of Saint George in exploring design alternatives to improve navigation and reduce the excessive wave action in their Harbor. He developed several alternatives, one of which could double the size of the harbor, while significantly reducing the wave climate. The design is currently on hold while it is being investigated by the USACE.
- **St. George Breakwater Repair.** Several severe Bering Sea storms impacted the Pribilof Islands, causing significant damage to the Saint George Harbor South Breakwater. Harvey was tasked by DOT&PF and FEMA to conduct a site investigation, and prepare a report documenting the damage and making recommendations for repair. He teamed with the City, FEMA and oth-

er design consultants to design and construct a repair. Harvey was the Engineer of Record for the redesign.

- **Seward Harbor Extension.** Harvey had a significant role during the Seward Harbor Breakwater relocation and reconstruction. Working cooperatively with the USACE, he explored layouts for the numerous inner harbor and breakwater configurations.
- **Unalaska Airport Erosion Control.** Harvey has worked different phases of the Unalaska Airport for more than 30 years. His designs for the airport have included standard armor design, specially placed armor stone, Eight ton concrete units (primarily to control runup and overtopping), Dynamically stable beach, and finally, 14-ton armor units when the airport was extended into deep water.
- **Diomede Harbor, Heliport and Barge Landing.** In 1992, the State of Alaska and USACE formed a partnership to design a harbor, barge landing and heliport at Little Diomede. Harvey was the engineer in responsible charge on the project. The USACE could not gain the required benefit/cost ratio for a Federal project, so the State proceeded with design of the heliport with FAA funding. The harbor and barge landing are still on the drawing board. The barge landing is scheduled for construction in the summer of 2021.

Harvey holds a MSCE in Coastal Engineering and a B.S. in Civil Engineering, both from the University of Washington. He received his professional civil engineering registration in Alaska in 1986 (Alaska #CE7463).

ELECTRICAL ENGINEER
Ben Haight, PE | HAI

Ben will provide electrical power system and lighting assessments based on R&M's site visit. He brings 46 years of electrical engineering experience to the R&M team with much of it attending to electrical systems for marine facilities. His experience includes electrical systems for seafood processing, hatcheries, small boat harbors, docks, fuel transfer docks, boat launches and upland facilities. Ben has been instrumental in the development of shore-tie pedestals, power centers and substations, power distribution and lighting for docks and harbors throughout Alaska. He is presently working with R&M replacing the pier at Palmer Station (Antarctica).

Ben's representative projects include:

- **Seward Small Boat Harbor.** With a series of projects beginning in 2000, much of the harbor has been retrofitted with upgrades to several finger floats, additional facilities constructed in the South Harbor, and an additional Float (Z) completed in September 2011. The projects for the main facility included replacement and realignment of several finger floats (including A, B, C, D, E, F, H, J, M, N, O, P, Q & S), and the headwalk float (G). These projects included replacement of approaches and gangways, and the provision of fish cleaning stations. The installation of the new Floats M, N, O, P and Q was completed in 2010.

  The electrical systems featured application of new shore-tie pedestals with integrated bollard style luminaires on top. The shore-tie components involve receptacles in a variety of configurations with single and three-phase power, including 30 ampere, 120 volt; 50 ampere, 208 volt; 100 ampere, 208 volt; and 200 ampere, 480 volts. The USCG 200 ampere shore-tie included an isolation transformer and ground fault relay protection. The initial lighting utilized compact fluorescent lamps, which later gave way to the application of LED sources. All the feeder circuits are configured with Type W cable. The most recent installations include Ground Current Protection devices as required by code.
- **Sitka Crescent Harbor.** Ben worked with R&M to renovate a large portion of Crescent Harbor. The electrical work involved new service and power distribution with 480 volt power feeding substations on the floating docks and 208 volt power distributed from the substations to shore-tie pedestals on the floats. The new lighting used marine grade luminaires with LED lighting. The project included an integrated surveillance camera system, networked to the harbormaster office. The design was initiated in 2019 and construction was completed in 2020.

Ben holds a B.S. in Electrical Engineering from Washington State University. He received his professional registration in electrical engineering in 1979 (Alaska #EE4800).

GRAPHIC DESIGNER
Lisa Morris | R&M

Lisa will develop graphics to support public and agency involvement, and will provide layout and design for the required deliverables. She has 19 years of professional design experience in Alaska and has provided visual communication assets to the A/E/C industry for 15 years. Lisa specializes in developing custom graphics that organize, clarify and attract attention to client projects and persuade and inform end use audiences. Her skills include corporate and project branding, print and digital collateral design, project visual identities, report design and layout, infographics, historical displays, copywriting and editing. Lisa has designed presentations and reports for local, national and international development projects; provided design support for public involvement campaigns; provided strategic design for programming and concept design projects; and developed comprehensive corporate marketing material packages.

Lisa has a proven ability to efficiently execute simple or complex ideas in graphic form and enjoys collaborating on projects from concept to completion. She provided strategic information graphics and presentation materials for large, phased planning projects, including the YKHC Paul John Calricaraq Hospital phased renovation plan and the Chief Andrew Isaac Health Center. She worked with local project management firms to complete the Alaska Deep-Draft Arctic Port System Study report, as well as produce visual assets for the New Valdez Boat Harbor. Most recently, she created the graphics and the document layout for the 2020 Juneau Fisheries Terminal grant application.

Lisa holds a B.A. in Journalism and Mass Communications from the University of Oregon.

ARCHITECT
Jae Shin, AIA | KPB

Jae will provide programming for the harbormaster's office. He is a lifelong Alaskan with more than 25 years of experience in architecture throughout Alaska, including Municipal and State-owned facilities and projects with intensive use during construction. His leadership and managerial skills involve concise data driven decision-making and formulating a consensus between owners, managers, design consultants and the public in an efficient and effective collaboration, a strong tool in a project with multiple stakeholders. Jae is currently providing architectural services in support of the POA PCT project.

Jae holds a Bachelor of Architecture and a Bachelor of Fine Arts, both from the Rhode Island School of Design. He obtained his professional registration in architecture in 2000 (Alaska #A10240).

Thank you for considering R&M's proposal.