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CITY OF SEWARD



P. O. BOX 337
SEWARD, ALASKA 99664

CITY MANAGER	224-5214
COMPTROLLER	224-5216
INFORMATION	224-5215
CITY POLICE	224-5201
CITY CLERK	224-5214
HARBOR	224-3420

January 21, 1981

Honorable Jalmar M. Kerttula
President Alaska State Senate
Pouch V
State Capital
Juneau, Alaska 99817

Dear Sir:

The City of Seward, strategically located at the sea-going crossroad of the Gulf of Alaska, is pressing forward with the development of a full-service marine industrial park and major shipyard facility. With completion scheduled for the fall of 1982, this facility will offer major ship repair, a 3,000-ton shiplift, and a full range of marine support services for Alaska's fishing, commercial and pleasure boat fleets. Full scale marine service and ship building is currently unavailable anywhere in the state, a fact causing untold delay and expense to marine operations and resulting in wholesale exporting of jobs from our economy.

Our City and a leasing partner, VECO Construction of Anchorage, has initiated this vital shipyard project after considerable encouragement from state government and private business sources. Seward has generated seed money funding in the amount of \$6 million as a down payment on the total estimated cost of \$60 million for the completed Fourth of July Creek Industrial Marine Park. The balance of funding for this unique capital project, some \$54 million, is dependent on state appropriation.

In addition to providing vital and cost effective support services for our maritime fleets, the Seward - Fourth of July Creek Shipyard will provide hundreds of permanent jobs and a large measure of economic stability for our city and the surrounding Kenai Peninsula. Additionally, VECO anticipates spending \$15 million over the next three years to develop their portion of the facility. Dozens of spin-off marine oriented businesses will be created and subsequent service industry increases will substantially increase the economic picture for our region.

Honorable Jalmar M. Kerttula
January 21, 1981
Page 2

We firmly believe that our shipyard project epitomizes the kind of lasting economic development that is essential to the well-being of a growing Alaska. The impact of this project is statewide, and we have done our homework in preparing for the population growth in Seward that will be triggered by the venture.

We are proud to report this project is:

- * on time
- * on budget
- * on target

Seward has done its job in carrying this Alaskan shipyard project to its current viable status. We offer the attached engineering project description for your review or comments you might have on the topic.

The entire City thanks you for your careful consideration and deliberation on this matter.

Very truly yours,

Raymond L. Hugli
Mayor
City of Seward

3/20/81

Seward

Coal Hearings - send calendar

- Daryl - asst city mgr - Seward
Johnny Johnson - Seward

↓
Thelma -

→ dock facility in Seward

20,000 yrly to City for maint - agreement

to 25,000 - 40,000 for Tastermexia

ferry striping fenders ^{system} of dock

~~the~~ threat to moves just to Homer

Nash Rd - 4th of July Creek - rd leading to

city 1 last yr

paving this yr

3.5 mil - now 1.7 mil ()

Bates
to
okay

port bond money - trusted into Nash rd paving

Welder (contractor) ^{city mgr} rec to encl give contract
to ^{incl} Nash Rd paving & award kept away

4.45 mil

→ total amt of work for Welder
i jobs

need: amt of add'l monis needed
length of road

4/10/81

Johnny Johnson

2500.0

6 mil sheet pile cells for freshwater

25 sq ft mitigation being new

Sep '87 ~~##~~ completion

operational stage < Cargo dock

Century Graduate - doing current
A/E

no decision on final sq ft -
B.G. on shared contract

→ min 200 ft jobs - peron
(exclusive of const.)

Alicia
Dunbar
Whard

FOURTH OF JULY CREEK

INDUSTRIAL MARINE
PARK

CITY OF SEWARD, ALASKA

PROJECT DESCRIPTION

DECEMBER 1980



Executive Overview

The City of Seward, in conjunction with VECO of Anchorage, Alaska has undertaken the development of a Marine Industrial Park on 100 acres of land on the Fourth of July Creek Delta three miles across Resurrection Bay from the City. This project was initiated to expand Seward's employment base and to provide a much needed service to the marine industry operating in Alaskan waters.

In anticipation of this type of development, Seward has been in the process of expanding and upgrading the City's services to accommodate a population influx. This plan, initiated several years ago and still underway, will add capacity to the City's basic infra-structure and will provide over 100 new residential lots for new home construction.

The Industrial Marine Park includes the construction of a 300 x 80-foot shiplift with a 3,000 ton-capacity and seven public and seven private dry berths. These facilities will be used for both ship repair and ship building purposes. Additional public features include a 1000 x 650-foot basin sheltered by breakwaters, a general cargo dock, a transit shed, 700,000 square feet of cargo storage and a 10-acre industrial subdivision available for small shops and supporting facilities to the shipyard. The project also includes construction of an access road, utilities and other related support services. Work was initiated in the spring of 1980, and completion of the project and operations start-up is scheduled for the fall of 1982.

VECO is leasing land from the City and will construct seven dry berths and other shipyard improvements for the purpose of ship repair and ship building. Additionally, under a license agreement, VECO will operate the shiplift and other facilities within the complex.

The total estimated cost for the public features of the project is \$60,000,000. Presently, the City has \$6,000,000 of this amount in place and has committed these funds to the initial phases of the development. An additional \$54,000,000 is required for the successful completion of the Development. VECO anticipates spending \$15,000,000 on the project, and they have also initiated their planning and engineering efforts.

An expanded review of the project is available in the Introduction and Summary Section of this document and detailed information is available in the sections following.

**FOURTH OF JULY CREEK
INDUSTRIAL MARINE PARK
CITY OF SEWARD, ALASKA**

DECEMBER 1980

PROJECT DESCRIPTION

Prepared By:

CENTURY.

*A Joint
Venture*

QUADRA

**301 EAST FIREWEED LANE
ANCHORAGE, ALASKA 99502
(907) 276-3770**

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Introduction & Summary

The City of Seward, intending to increase industrial opportunities which will provide more stable employment - particularly in marine related areas - is proceeding with the development of the Fourth of July Creek Industrial Marine Park. Historically, Seward's economic growth and stability have been based on the natural features and resources of the region. The present economy, relying heavily on tourism, recreation, timber, fishing, and government employment, tends to be seasonal, resulting in a serious fluctuation of unemployment rates, often soaring as high as 16-18% during winter months.

In an effort to stabilize this sagging and seasonally dependent economy, Seward has initiated this project. However, the people of Seward do not view the development as just benefiting their City, instead they see the project as having a positive economic benefit to the Maritime and Fishing Industry throughout the State. Since there are no major repair or fabrication facilities within the State, the Maritime Industry must rely on sources outside Alaska for these services. This costs both lost time and revenues due to the greater distances a vessel must travel for repairs or other shipyard services.

Since the 1964 earthquake, local facilities which could support industrial development in Seward have been limited, thereby restricting opportunities for large-scale economic expansion. After several years of planning and preparation, the City is now capable of meeting the challenge created by the introduction of this new large-scale marine industry development. Seward has been expecting and preparing for this type of development. Water, power, and wastewater improvements are in progress; paving of all the City's streets has been completed, and a number of Subdivision developments, including one funded by the City, are underway to accommodate the housing needs of a population increase.

A major part of Seward's improvement plan is the upgrading and extension of Nash Road into the Fourth of July Creek area. This project was started in the spring of 1980 and construction began in September, and is currently still underway. When this \$3,000,000 project is completed, there will be a paved 55-mph highway leading from the Anchorage-Seward Highway directly into the Fourth of July Creek area.

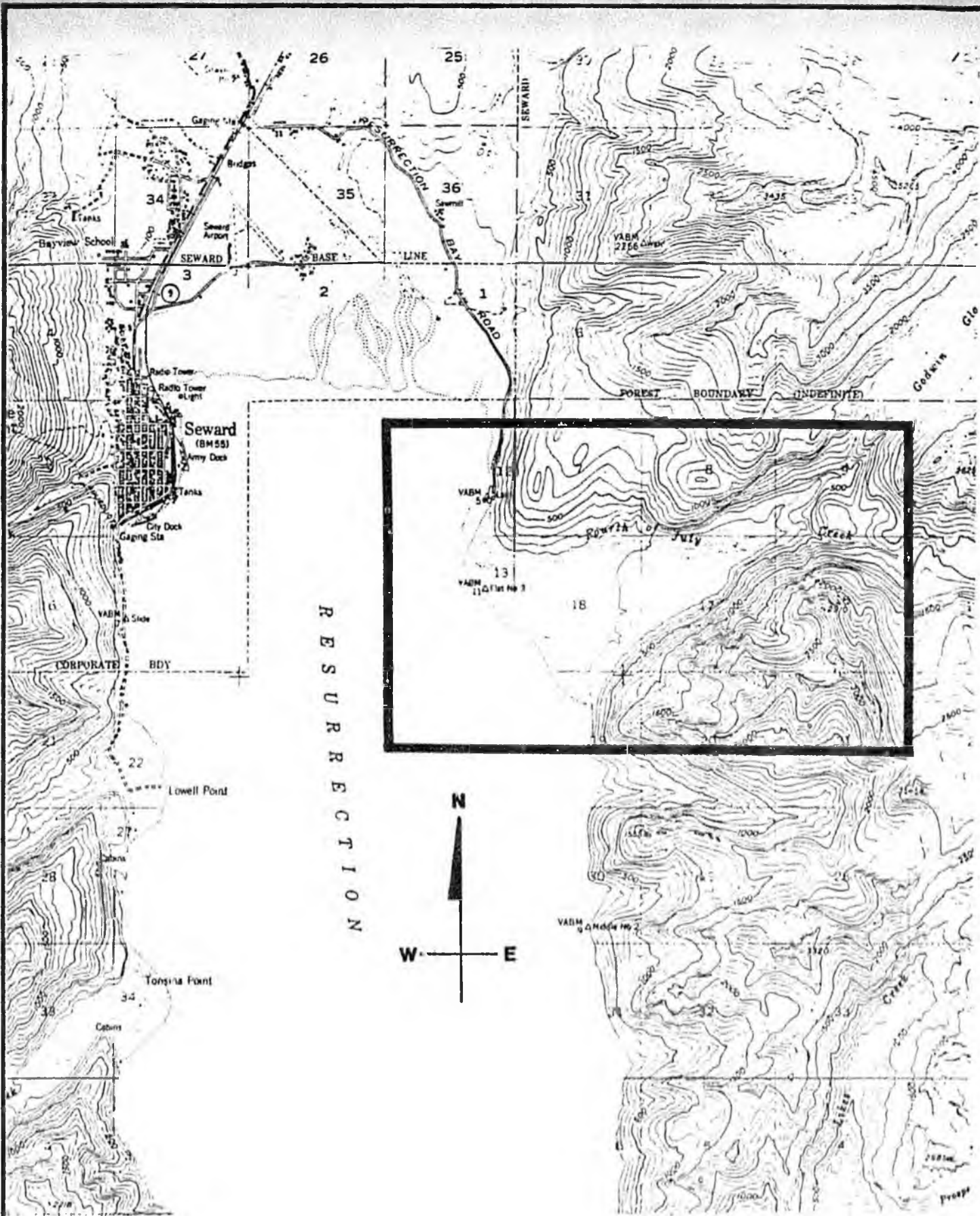
For the past four years the City has been evaluating land which could be developed with the facilities necessary to coax new industries into Seward. The City is convinced that lands available around the Fourth of July Creek delta can provide the necessary elements for such future development. Thus, this location was selected as the site of the New Industrial Marine Park. The location of this site with respect to the City is shown on Figure No. 1.

In June of 1980, Seward engaged a consulting team to investigate the Fourth of July Creek site, prepare a development plan, and obtain the necessary permits for its development. Investigations produced the following conclusions: 1) The valley floor is gently sloping and well drained; 2) The soils are coarse sands and gravels, with excellent foundation properties; 3) Natural, deep water is available within several hundred feet of the beach; and 4) The valley is not a sensitive habitat for wild life, and there is no significant fish production in the area. These factors all indicate that the Fourth of July Creek Valley is an excellent site for almost any type of marine related industrial development. Using this information and other physical data, the development plan described in this document has been prepared, and applications for permits to implement the plan have been filed.

Pursuing the development plan, the City entered into an agreement with VECO, an Alaskan company which proposes to construct a ship repair and ship building facility in the project area. VECO, having analyzed the regional economy and determined that there is a substantial market available in the repair of vessels on the Alaskan Gulf Coast, has agreed to lease land from the City of Seward for these purposes, assuming Seward can provide the sheltered basin and other facilities necessary for the successful operation of an industrial marine park.

Project Description

The Industrial Marine Park entails development of a sheltered basin through construction of breakwaters and a cargo--docking--facility. The project requires dredging an inner basin area to a depth of 22-feet below Mean Lower Low Water (MLLW), constructing a sheet pile breakwater approximately 56-feet high, filling adjacent land areas to an elevation of 16-feet above Mean Sea Level, and constructing a training levee to direct flow of the Fourth of July Creek along the southern boundary of the project area. In addition, an access road, waste treatment and water supply systems, cargo--storage--areas, and a shiplift with associated dry docking facilities will be constructed. These improvements and the general site layout are shown on Figure 2.



SCALE 1:63,900



CONTOUR INTERVAL 100 FEET
 DATUM IS MEAN SEA LEVEL
 DEPTH CURVES AND SOUNDINGS IN FEET - DATUM IS MEAN LOWER LOW WATER
 SHORELINE DASH REPRESENTS THE APPROXIMATE LINE OF HIGH AND LOW WATER
 THE MEAN RANGE OF TIDE IS APPROXIMATELY 20 FEET

Figure 1
Site Location
 CENTURY-QUADRA
 December 1980

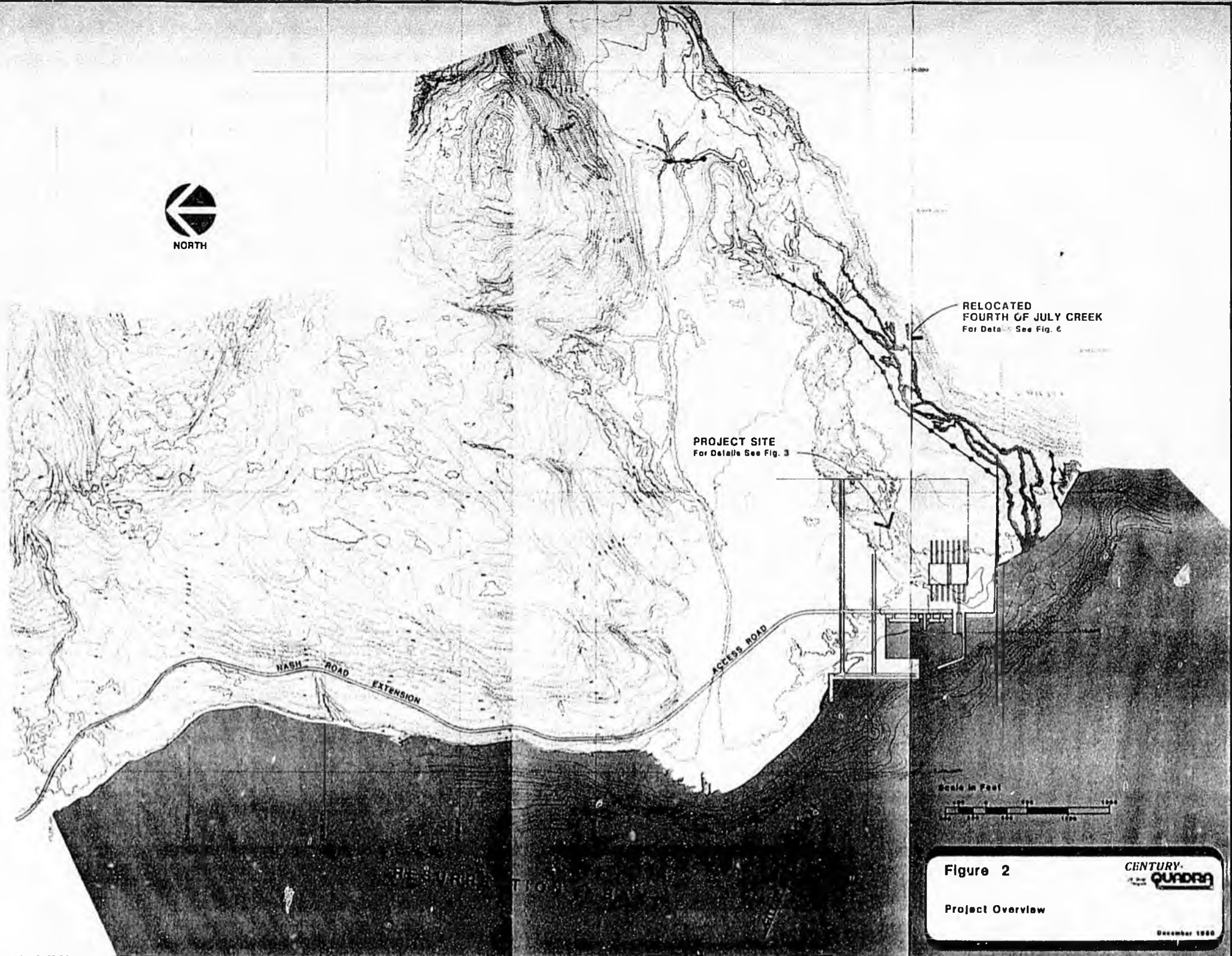


Figure 2
Project Overview

CENTURY
by QUADRA

December 1980

The publicly funded portion of the project includes a 1,300-foot long general cargo dock with associated staging areas, a shiplift with a 300 x 80-foot platform having a 3,000-ton capacity, seven (7) dry berthing positions for ships up to 250-feet in length, and a ship transfer area which serves both the seven (7) public, and seven (7) private dry berths. A section of the Marine Industrial Park, leased by the City to VECO for private development, contains ship repair and vessel fabrication facilities and seven (7) dry berths for ships up to 300-feet in length.

Utilities such as water and electricity, sewage disposal, storm drainage systems, and access roads will be publicly funded, whereas disposal systems for industrial wastes requiring special treatment will be provided by the shipyard operator. Certain additional areas of the site will be set aside for lease to other future tenants, e.g., ship chandlery, a fish processing plant, a fish cold storage facility, and various workshops providing services to small and medium sized crafts. The present Fourth of July Creek stream bed interferes with the developments described above. Conceptual engineering plans to relocate the creek on the south side of the valley have been prepared to eliminate this conflict.

Project Responsibilities

VECO has completed preliminary agreements with the City of Seward to lease approximately 43.4 acres of land within the industrial park. These agreements require VECO to construct and maintain their own facilities, including ship repair, dry berths, and waste treatment systems. The City is responsible for construction of the basin, shiplift, dry berths, cargo dock, and storage areas. However, the City will transfer the operation and maintenance of these facilities to VECO and they will operate the facility under a license agreement.

Schedule of Development

The entire project has been divided into four major construction phases with total time required to complete the public portion of the project set at approximately 19 months. Each of the construction phases has been scheduled, when possible, to avoid conflicts with environmental constraints and commercial or recreational fisheries. The project is scheduled for completion and operations start-up in the fall of 1982. It should be noted, however, that the schedule depends on the timely issuance of permits from State and Federal agencies, and the appropriation of funds to finance construction. Extension of the permit process or delays in funding will significantly alter this schedule.

Estimated Project Costs

The total budget for all public improvements is currently estimated to be \$60,000,000. This figure includes all Engineering, Administrative, Construction, and Supervision expenses as well as a contingency and inflation factor.

The City of Seward has \$6,000,000 of this amount in place and they are using these funds to proceed with the completion of Phase I and the Engineering and Design of Phase II. Since the City has exhausted all of its financial resources improving the infra-structure of the City itself, it must look to outside sources to aid in the financing of the remaining improvement costs. Thus, the City is seeking aid from the State via a legislative appropriation for the remaining \$54,000,000 necessary to complete the project.

All of the funding that has been appropriated and released by the State to Seward for this project has been encumbered for the ongoing effort towards its completion. The City is proceeding as expeditiously as possible, and is now limited only by the receipt of additional financial aid.

Seward's Growth Potential

Because of Seward's low growth and high unemployment rates since 1964, the community strongly desires to encourage new industrial and business development. This desire is reflected in the City Government's aggressive pursuit of oil or marine related industry developments. Seward has been expecting and preparing for this industrial expansion for several years. Water, power, and sewer improvements are in progress, and paving of all city streets has been completed. A number of subdivision projects are underway to accommodate the housing needs of a rapid population increase. This section is a brief discussion of the existing community services, including those projects underway for expansion and upgrading.

Population and Housing

The Census Bureau currently estimates the City's population to be 1,850 persons. Presently, the vacancy rate is near zero for residential properties. There are about 100 undeveloped residential lots available throughout the community that have full utility service.

To relieve the anticipated housing shortage, planning and design for resubdivision and development of the Terminal Subdivision is underway by the City. When completed, in 1981, the development will include approximately 100 single family and 150 multi-family dwelling units with full community services. There are also several subdivisions being developed north of Seward by private parties. The developments are adjacent to the Seward Highway and rely on on-site water supply and wastewater disposal.

Water

Seward has an abundance of good quality groundwater, most of which comes from groundwater wells. The minimum combined pumping capacity at this time is approximately 3,800 gpm with a total of 600,000 gallons storage. Pressure ranges from 30 to 70 psi, and is supplied by well pumps and one 1,700 gpm constant pressure pump for the school and Jessie Lee Heights Subdivision. Treatment consists of chlorination, and the water is of excellent quality.

The distribution system serving existing development is in good condition. Plans to expand the system to serve new residential and commercial areas in the harbor area have been developed with expansion occurring on an as-needed basis.

The existing supply is capable of serving the community for some time. Additional storage is required to meet fire reserve requirements and plans are underway to accomplish this objective.

Sewerage

Construction is underway on a new secondary treatment lagoon, interceptors, and force mains to serve the City with completion now scheduled for September 15, 1981. When completed, the existing outfall will be eliminated and the wastewater from those portions of the community that have sewers will be treated at the lagoon.

Components of the system are designed to handle the following populations:

Interceptors	-	15,000
Pump Stations	-	10,000
Pumps	-	5,000
Lagoon	-	5,000

Thus, excess capacity will be installed in the initial system. Expansion of the Sewage Collection System is planned to coincide with development on an as-needed basis.

Electrical

Seward is served by Chugach Electric, and purchases power delivered at Lawing, about 25 miles north of the City. All retail customers south of that point are served by the City's utility.

Up to this fall, Seward has had 5,000 KW available which served a population of about 2,000, the Kenai Lumber Company Mill, Seward Fisheries, and all other industrial and commercial users. The capacity of that system was reached several times in recent years.

Improvements completed this fall include a new substation at Mile 2.2 with two 7,500 KVA transformers and the abandonment of the Chugach owned substation at Mile 7.5. The current capacity is 9,000 - 10,000 KW at 24.9 KV split into 5 distribution circuits.

The transmission line from Lawing to Seward is capable of 30,000 KW at 69 KV, but Chugach's line from Dave's Creek Substation to Lawing is not. Negotiations with Chugach are now underway to have that line upgraded to 30,000 KW at 69 KV capability.

Service of the Nash Road area is now 2,000 KW at 12.5 KV. A project planned for the spring of 1981 will include a new transmission line to the Nash Road and Fourth of July Creek areas capable of 25,000 to 30,000 KW at 69 KV with a new substation to be installed as needed.

After the sewage lagoon is completed at Lowell Point, service to that area will be 2,000 KW at 12.5 KV and will support many residences as well as the sewage treatment facilities.

Seward now has a total of 5,500 KW in standby diesel generators, and plans to add 5,000 KW in 1981. This standby capacity is important due to the potential for interruption of service from avalanches.

Telephone

General Telephone serves the Seward area. Since they are a demand type service, expansion of the system will occur as growth requires. A sudden large influx of people will cause a backlog in the installation of services but the response time to meet the demand is estimated to be one to two months.

Other Basic Community Services

Seward has recently completed several capital improvement projects including paving of all City streets and upgrading their 33-bed hospital.

The basic community services include:

- | | |
|---------|---|
| Schools | - Elementary - capacity for 500 students |
| | - High School - capacity for 300 students |
| Police | - Sufficient for population of 3,000 |

- Fire - Full time Fire Chief and 20 volunteers. Fire Rating of 5.
- Medical - Hospital facilities sufficient for 5,000 population, 2 full time doctors.
- Communications - 3 television channels, 1 radio station, 1 weekly newspaper.

Waterfront Improvements

The Fourth of July Creek Industrial Marine Park entails construction of a number of facilities. Figure 3 shows the detailed plan for the development. All of the improvements listed as public and infra-structure (Items 1-19 and 31-36) on Figure 3 will be constructed as part of the overall project. Additionally, Item 51, the private shipyard, will be constructed by VECO, the shipyard operator. The remaining features (Items 52-59) are conceptual only, and presently there are no current proposals to develop any of these improvements. The following is a discussion of the Shiplift and Transfer System, Breakwater, General Cargo Dock, the Shelter Basin, and Dredge and Fill Activities.

Shiplift and Transfer System

The Shiplift and Transfer System for docking, undocking and dry berthing of vessels will be the major feature of the Fourth of July Creek Industrial Marine Park. These facilities will be constructed as Public Improvements and operated under license by the shipyard operator, VECO. The facilities will service the shipyard operations as well as the public dry berthing spaces.

The shiplift will be able to launch and retrieve vessels up to 3000 long-tons displacements, having lengths up to 300-feet and widths to 65-feet. The vertical shiplift consists of a platform hung from wire ropes attached on two sides. The upper ends of the wire ropes wrap around the drums on a pair of synchronized hoists, positioned on piers flanking the platform. A section through the shiplift is shown on Section AA of Figure 4.

Using the winches, the platform is lowered and raised into and out of the water. When retrieving a vessel from the water, a cradle with blocks shaped to the bottom of the ship is placed on the platform. The platform and cradle are then lowered to a depth below the draft of the vessel. The vessel, moored elsewhere, is floated over the platform, and then the platform, cradle and ship are raised.

The ship transfer system consists of an end-transfer cradle on rails and a transfer table, also on rails, connecting to fourteen dry berth positions. When transferring a raised ship from shiplift to dry berth, the transfer table is positioned so its rails align with the extension rails of the shiplift. The cradle and ship are pulled by tractor or winch from the shiplift platform onto the transfer table. The ship, now supported by two cradles, is transferred laterally to a pre-assigned dry berth position, where the

LIST OF FACILITIES

PUBLIC

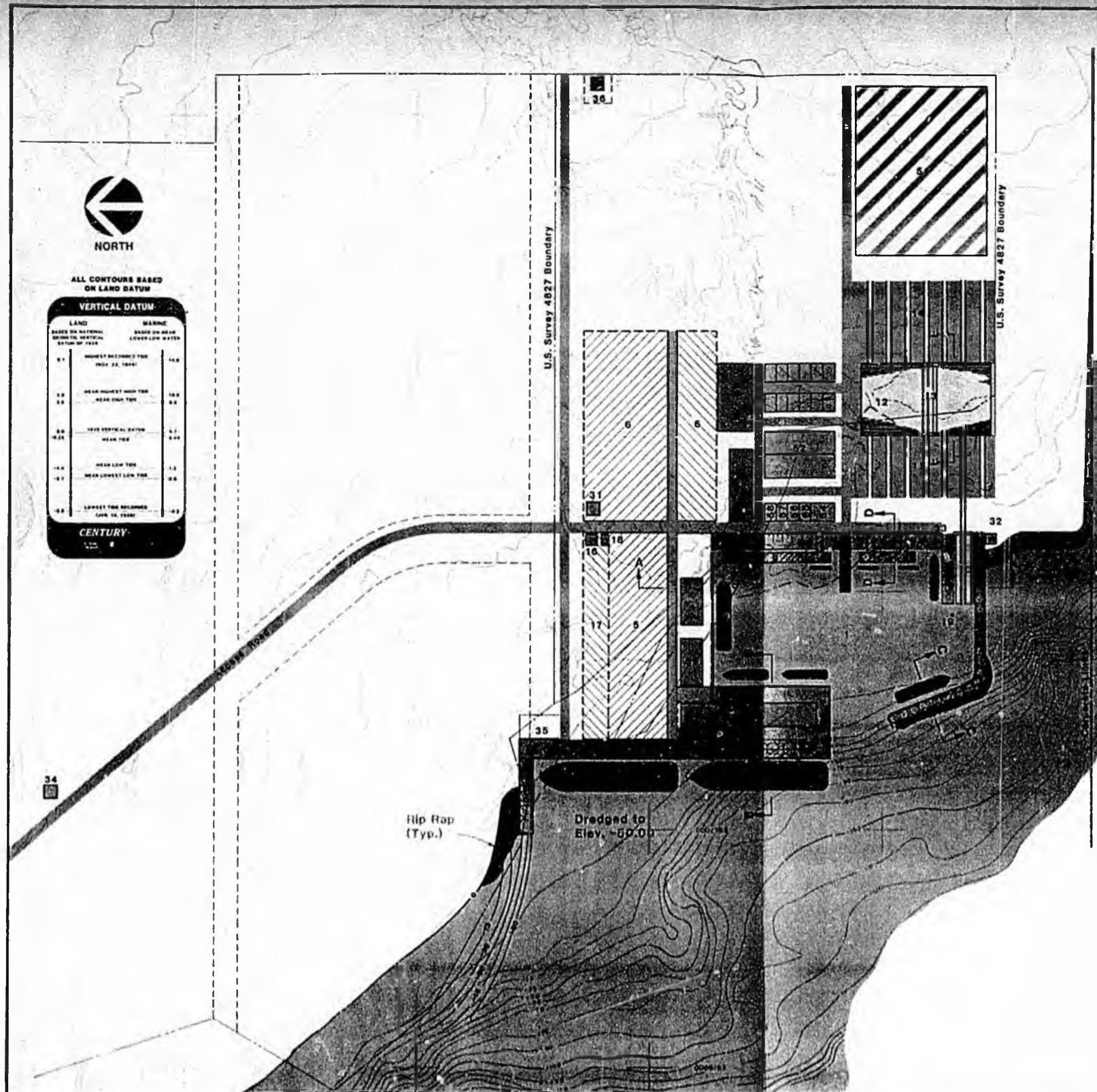
1. Sheltered Harbor Basin 1000' x 850'
Bottom EL: - 22.00 Ft. Marine Datum (-27.70 Land Datum)
2. General Cargo Dock, 1300' x 300' Wide
Capacity 160,000 T/Yr.
3. Transit Shed, 100' x 600' x 20' Clear Height.
4. Bonded Warehouse, 100' x 200' x 20' Clear Height
5. Open Buffer Storage, 212,500 S.F.
6. Open General Storage, 428,500 S.F.
7. Dry Boat Repair Yard For 43 Boats, 50' x 20'/Boat.
8. Boat Ramp , 30' Wide.
9. Small Floating Dock For Tugs, Fire Boats and Small Crafts.
10. Shiplift, 300' x 80' Platform Size.
11. Dry Berths, 7 Positions, 250' Long.
12. Transfer Pit, 300' x 560' x 5' Deep
13. Transfer Carriage, 300' x 40'.
14. Dry Berths, 7 Positions, 350' Long (Leased To Shipyard Operator)
15. Covered Small Boat Storage, 150' x 300', Double Deck, 120 Spaces at 25' x 30'.
16. Guard House, First Aid Station, Ambulance 50' x 70'.
17. Parking, 130' x 900' For Approximately 350 Cars.
18. Harbormaster 50' x 30'.
19. Warping Dolphin

INFRASTRUCTURE

31. Sewage Treatment Plant.
32. Storm Water Disposal Plant.
33. Shiplift Control Booth
34. Master Sub-Station.
35. Recreational Parking
36. Well & Reservoir

PRIVATE

51. Private Shipyard Area 385,000 S.F.
52. Ship Chandlery, 200' x 300' Including Storage.
53. Fish Processing Plant, 100' x 300'.
54. Net Loft, 100' x 80'.
55. Plastic and Fiberglass Repair Shop, 50' x 80'
56. Electronic Repair Shop, 50' x 80'.
57. Propeller Repair Shop, 50' x 80'.
58. Boat Engine Repair Shop, 50' x 80'.
59. Cold Storage Building, 100' x 200' - 4 Stories w/setback



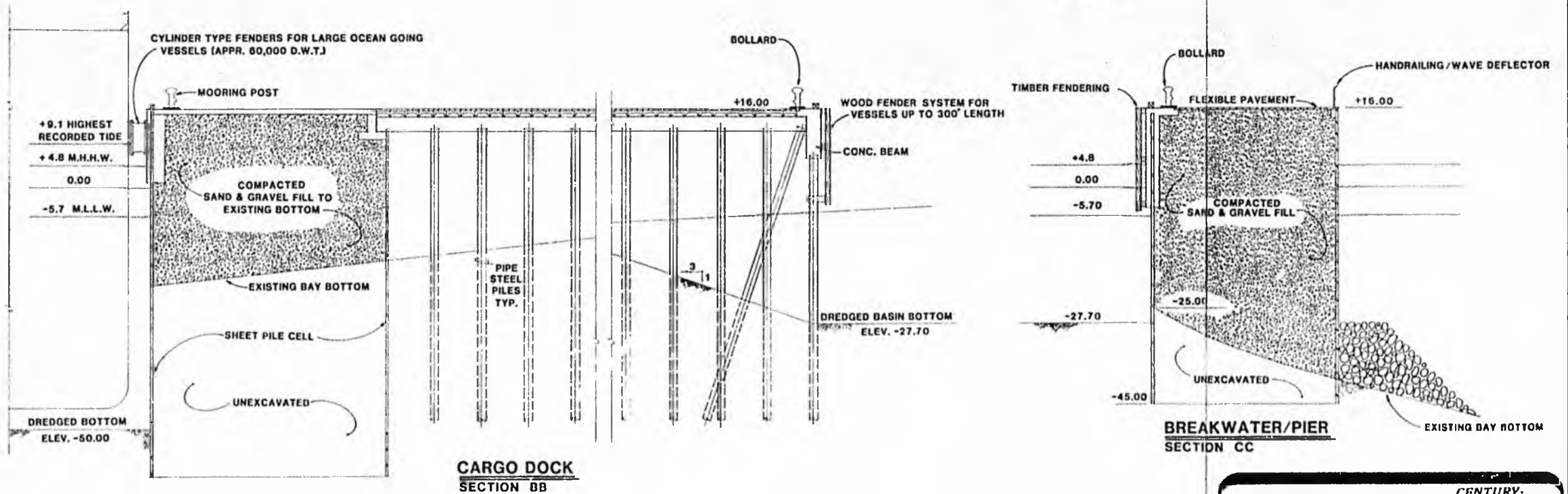
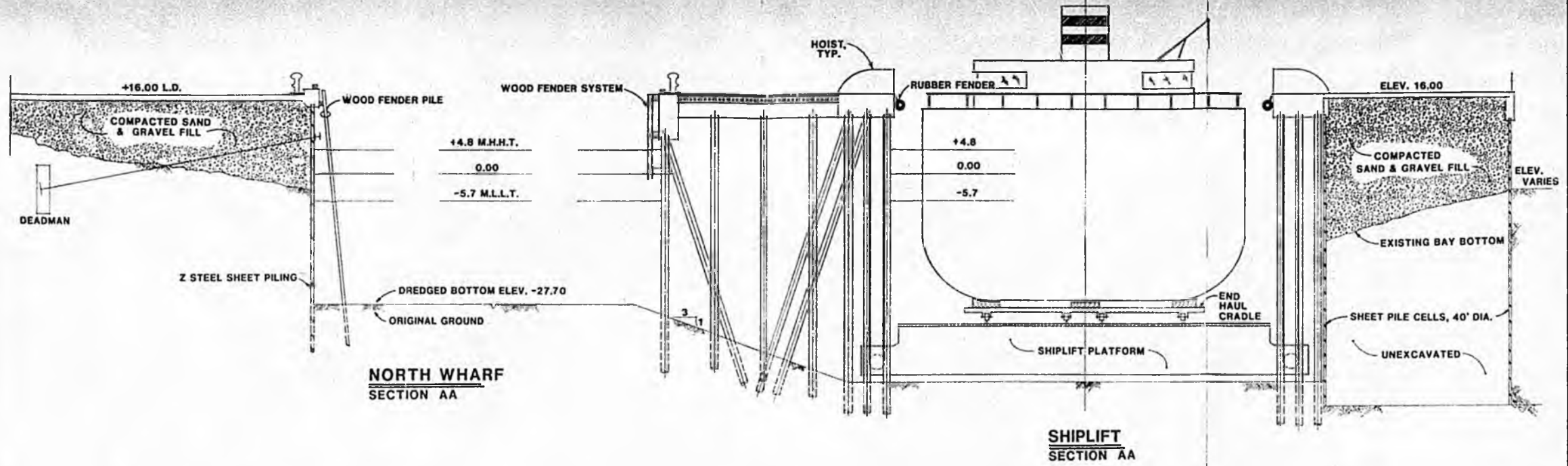


Figure 4

CENTURY-
QUADRA

Cross Section through North Wharf, Shiplift, Cargo Dock, and Breakwater Pier

December 1988

end haul cradle is pulled off the transfer table to the designated dry berth. A typical section through the transfer pit with a ship in position is shown on Section EE, Figure 5.

When the lift and transfer system become operational, and the dry berthing facilities are completed, there will be seven 350-foot long berths for the shipyard operator and seven 250-foot long berths available for public use. Additionally, the shiplift itself is available for simple and quick repairs. With this combination, the facility will be able to service in excess of 200 vessels per year.

Breakwater

Analysis of the physical features at the Fourth of July Creek Site indicates that a breakwater is necessary to protect the inner harbor facilities and to provide all-weather operations of the shiplift. The basic considerations are protection from wind, waves and currents plus the reduction of siltation problems. An elaboration on these follows.

Based on weather records at Seward and wind records obtained at the Fourth of July Creek site, it is predicted that winds in excess of 20 mph will occur an average of 40 days per year. Winds of this magnitude will seriously hamper work on ships afloat, and will interfere with the shiplift operation.

The anticipated 5-year wave heights are 9-feet from the south and 7-feet from the north. The breakwater configuration shown on Figure 3 will protect most of the inner harbor completely from these waves. Waves that enter through the harbor entrance will be attenuated to approximately 30% of their original height. Thus, the maximum 5-year wave anticipated in the Shelter Basin is approximately 3-feet.

Tidal and wind currents in excess of 1-foot per second are anticipated to occur an average of 68 days per year at the site. Currents in excess of 1-foot per second will interfere with work on ships afloat and add difficulty to docking and undocking on the shiplift.

Since the Fourth of July Creek has a significant bed load, siltation at the site is a serious problem. The estimated siltation rate without a breakwater is 1-foot per year. At this rate maintenance dredging of the basin will be required often. With the breakwater, the siltation rate in the inter-basin will be virtually zero.

The breakwater layout was determined with these factors in mind. All the major operations are sheltered by the breakwater except for two berthing spaces for large ships at the General Cargo Dock.

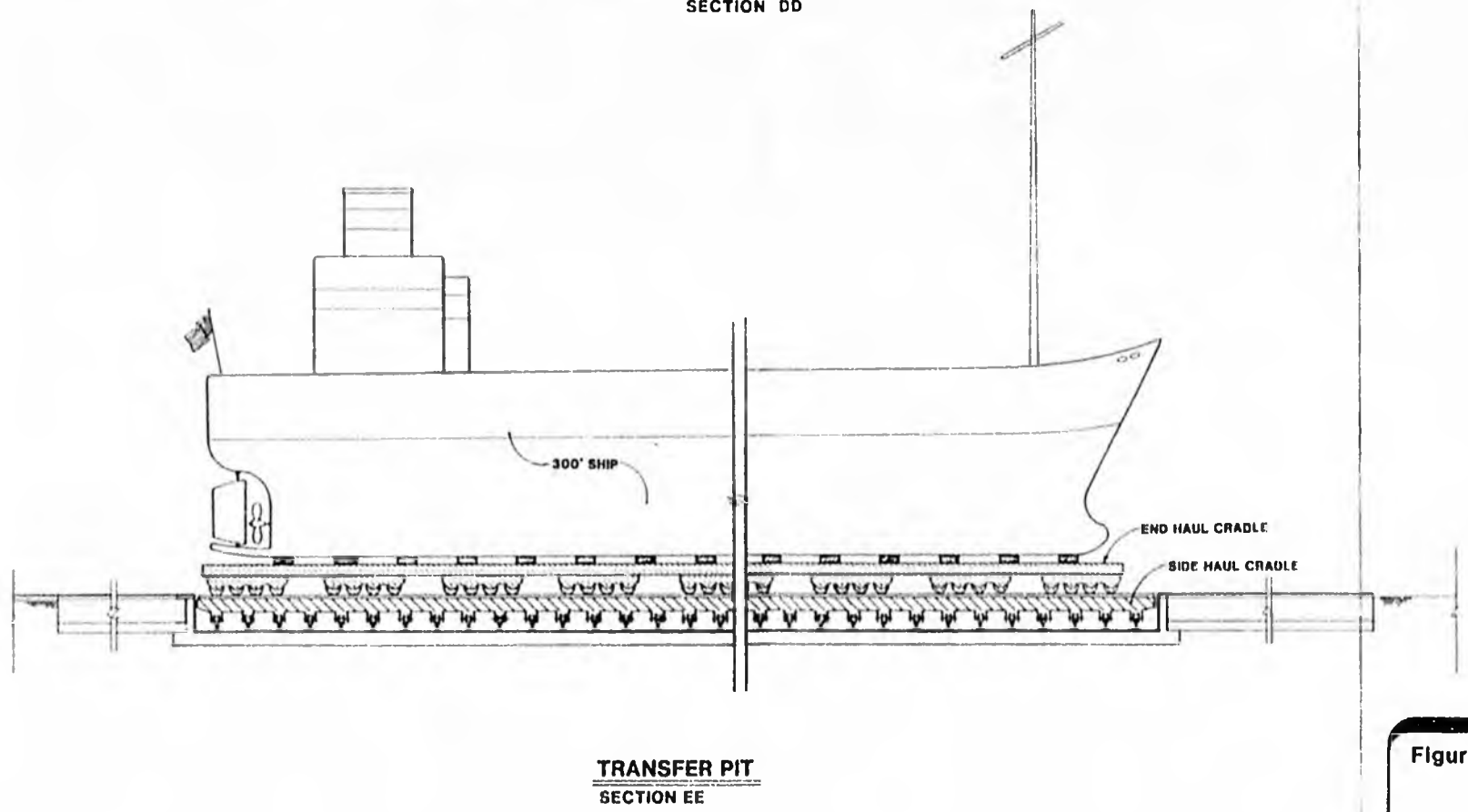
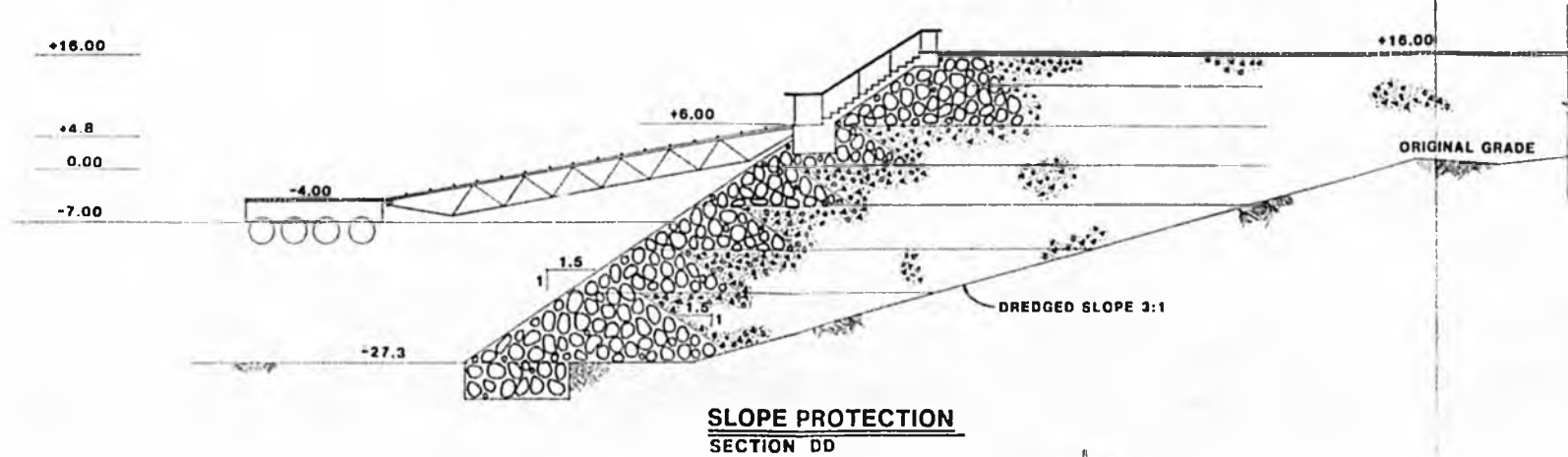


Figure 5

CENTURY
QUADRA

Cross Section through
Slope Protection and Transfer Pit

As shown on Figure 3, the north breakwater is an integral part of the general cargo dock and the south breakwater is extended from the south pier of the shiplift. The breakwater will consist of earth-filled sheet pile cells approximately 40-feet in diameter, and will have a finished top surface to allow vehicular access. The sheet piles will have an average length of 56-feet, and the top elevation will be 16-feet above mean sea level. The entrance to the breakwater will be 250-feet wide, allowing ample room for two 300-foot ships. Section CC on Figure 4 shows the general features of a typical section through the breakwater.

General Cargo Dock

A 1,300-foot long wharf is planned for berthing two ships of approximately 600-foot length. With a water depth dredged to minus 50-feet MLLW, the dock will be capable of servicing vessels up to 100,000 DWT with loaded drafts of 45 to 47-feet on the exposed (west) side. Berthing space is also available in the Shelter Basin for vessels with a maximum draft of 19 to 20-feet.

As stated earlier, the dock will be constructed as an integral part of the north breakwater which will form the foundation system for the west edge. The remainder of the foundation will be a conventional pile system. A typical section of the dock, depicting the major details, is shown on Section BB of Figure 4.

The annual capacity of this dock is estimated at 160,000 tons of cargo. This is computed on the basis of 100 ships per year calling at the port and unloading an average of 1,600 tons per call. Estimated operations will require four longshoreman gangs, handling an average of 400-tons per 10-hour day, working 4 days per ship call.

On the large-vessel side of the dock, bollards and cleats will be provided alternately at intervals of 50-feet. The bollards will have a pulling capacity of 100 tons and the cleats 5 tons. Two electric capstans per berth will be provided on the west face of the cargo dock, for emergencies.

On the east side of the dock, facing the protected harbor, 50-ton bollards and 5-ton cleats will be provided at 25-foot spacings alternately.

A prefabricated transit shed, with a floor area of 60,000 square feet and 15-foot clear height, is planned for cargo requiring short-term storage. This transit shed, located on the dock will provide approximately 30,000 square feet of storage area, or a storage volume of 450,000 cubic feet per berth. Port offices and operations and maintenance activities can also be headquartered in this structure.

A total storage capability of 8 acres per berth (approximately 700,000 square feet) will be provided. The storage is made up of the following:

Transit Shed	60,000 SF
Buffer Storage	212,500 SF
General Storage	<u>427,500 SF</u>
Total Storage	700,000 SF

No revolving gantry or container cranes are envisioned for the cargo dock. General cargo will be unloaded by the ship's own gear and with the help of rubber tired cranes. The ship's gear will place the cargo on the apron from where it will be picked up by forklift trucks and either loaded on trucks or placed in the transit shed.

The dock is considered to be an essential part of the development, serving the Shipyard and Marine Industrial Park and ultimately, other development that will occur in the surrounding lands of the Fourth of July Creek Valley.

Shelter Basin

A small shelter basin will be provided by dredging the area enclosed in the breakwater to a depth of minus 22-feet MLLW. The basin will be 1000-feet long and 650-feet wide and can accommodate vessels up to 300-feet in length. This harbor will provide shelter for: 1) loading and unloading smaller vessels at the cargo dock; 2) emergency berthing for vessels during storms; 3) permanent mooring of vessels assigned to the Industrial Marine Park; 4) providing repairs on ships afloat; and 5) docking and undocking of vessels on the shiplift.

A wooden floating dock inside the shelter basin is planned to provide mooring for small boats and harbor master crafts. Access from yard level to the water will be via a fixed stairway in the upper portion and an articulated ramp in the lower part of the walkway. The arrangement of the floating dock and inter-basin shore protection is shown on Section DD of Figure 5.

Dredge and Fill Activities

The project design will require the land area adjacent to Resurrection Bay to be filled to a minimum elevation of 16-feet (Land Datum). This will require approximately 1.6 million cubic yards of fill material. The harbor will require a minimum depth of minus 22-feet MLLW which will necessitate the removal of approximately 1.5 million cubic yards of bay bottom material.

Fill material for the land will be provided from the dredging operation. Any deficit of fill materials will require a supply to be transported from an on-land source.

Plans call for the dredge and fill operations to utilize bucket dredgers or cutter suction dredgers. The type of equipment used will depend on the type of material encountered.

In order to maintain normal turbidity conditions in the Bay, a protective curtain consisting of a plastic sheet, weighted at the bottom, will be suspended from a floating boom so as to surround the area where dredging is taking place. Fill will be placed partly in the tidal zone and partly on uplands in a diked area or behind steel sheet pile bulkheads. Openings, overflows, and flap valves will be provided in the enclosing dikes to serve as inlets and outlets for tidal water.

Relocation of Fourth of July Creek

In recent Geologic time the Fourth of July Creek has migrated back and forth across the floor of the valley created by Godwin Glacier. The stream made a major shift in the mid-1960's, relocating the mouth from the north end of the valley approximately 4,000-feet south to its present location.

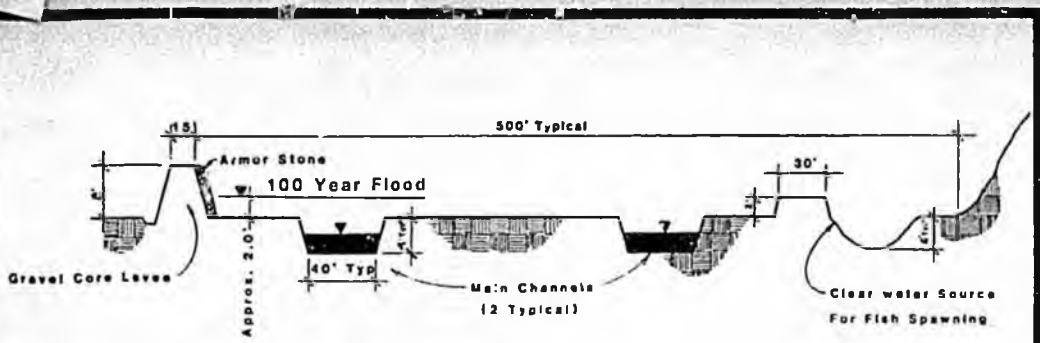
If permanent, man-made structures are to be located in the Fourth of July Creek Valley, they will need to be protected both from flooding and from the eventuality of a natural, major stream relocation. Thus, a commitment to develop in the valley also carries with it a commitment to train and control the Fourth of July Creek.

Planning for the Fourth of July Creek area, and specifically the Industrial Marine Park, was influenced by many things including the stream location, land ownership, and future development potential. Even though the City owns two major parcels of land within the Valley, it is not totally free to locate this project anywhere in the Fourth of July Creek delta area. The principle constraint is a privately owned 120-acre parcel located squarely in the middle of the fan. To accommodate all these problems, it was concluded that the stream should be relocated to the extreme southern end of the Valley with a levee system to provide flood protection.

This approach has several distinct advantages:

- 1) All development will be located north of the creek, allowing a natural setting on the southern bank.
- 2) The need to provide access crossings via bridges, culverts, etc., is eliminated.
- 3) Only one levee will be required, thereby minimizing the extent of man-made imposition on the stream.
- 4) Public contact with the creek is reduced, minimizing the potential for pollution and personal injury.

The final configuration of the relocated stream is shown on Figure 6. This includes a cut off levee between a large rock outcrop in the center of the Valley and the North Valley wall, to protect against the possibility of the stream seeking its last major course; a main levee approximately 4,400-feet long; and a shorter levee to protect a wetlands area on the extreme southern end of the Valley.



SECTION A-A Typical Section of New Channel



MOUNTAINS

MOUNTAINS

RESURRECTION BAY

PROPOSED

STREAM

BED

SPAWNING POND (Typical)

TRAINING DIKE (Typical)

PROJECT SITE
For Details See Figure 3

EXISTING

STREAM

BED

LEGEND

- Proposed Stream Bed
- Existing Stream Bed

Scale in Feet



Figure 6

CENTURY QUADRA

Fourth of July Creek Realignment

December 1980

The construction sequence for implementing the creek relocation is as follows: The entire length of the new channel way will be cleared of all timber and shrubs which would interfere with both the floodway and the stream's initial effort to seek a natural course. After clearing, the streamway will be graded to a profile similar to that of the existing stream. Excavation of two 40 x 4-foot meandering channels will be constructed to resemble the existing stream pattern. Ongoing concurrently with the grading and channel excavation will be construction of the gravel core levees using material from the excavations. Finally, the diversion will be effected during late fall when stream flow is low. It is envisioned that the initial pilot channels will approximate the natural stream course, and the final course will be established by the stream itself.

Included in the earthwork will be construction of clearwater spawning areas similar to those occurring naturally. The spawning areas will be created by excavating into the clearwater underflow, thereby allowing a small stream to flow into the main channel. A wide, low berm between the clearwater pond and the main stream will be constructed to protect the system from minor flooding and encroachment by the main stream channels. Establishment of these clearwater spawning areas is considered to be very essential for maintenance of the habitat which currently exists, as well as mitigation for the possible disruption of other small spawning streams.

Section AA on Figure 6 shows a typical cross section through the stream. Based on a 500-foot wide floodway, the hydrologic height calculated for a 100-year flood of 7,400 CFS is 2-feet. The levee height was set at 8-feet to allow for backwater and for buildup in the stream course created by bed load deposition. The stream channels are designed to be 40-feet wide by 4- feet deep. The 500-foot floodway was planned to accommodate the meander character of the stream, currently having a do amplitude ranging from 300 to 500-feet, and to allow sufficient room for the spawning channels. The interior face of the levee will be rip-rapped with armor stone to protect against erosion. The top of the levee will be 15-feet wide to allow access for maintenance equipment.

A major factor in relocation of the Fourth of July Creek is the requirement for a continuous monitoring and maintenance program. Calculations predict that up to 0.25 feet per year of bed load deposition may occur in the relocated portion of the stream. If this remained unchecked, the enclosed portion

of the floodway would eventually fill, allowing a flood event to breach the levee and cause the stream to seek a new channel. Clearly, periodic removal of deposition will be required to ensure that sufficient capacity exists within the enclosed section. Based on the estimate of 0.25 feet per year, a major excavation program every eight to ten years will be required.

Infra-Structure Improvements

This section addresses the basic utilities, access, storm water management, and other facilities necessary to support the Industrial Park. Generally, the services described will be provided and operated by the City of Seward. Some specialty infra-structure components such as storm water treatment, bilge water treatment, and waste oil handling and disposal will be the responsibility of individual tenants. The basic infra-structure plan is presented on Figure 7. Shown on the plan are the locations and general arrangements of the water supply and distribution systems, and the storm drainage and treatment system. The following paragraphs outline the conceptual plan for each of the major components of the infra-structure systems.

Water Supply

Domestic potable and industrial water will be supplied by a community water system owned and operated by the City of Seward. The source of supply will be groundwater taken from wells, at depths of 75 to 100-feet below ground surface. Based on field work done at the site and previous experience with wells in Seward, it is anticipated that supply wells with sustained yields of 200 to 400 GPM can be installed with little difficulty.

The estimated average daily demand for the completed complex is 100,000 gallons per day including the shipyard's washdown requirements. The estimated peak flow is 500 GPM. Thus, storage will be required to meet peak demands. Storage is also required to accommodate the anticipated fire flow of 1,500 GPM for a duration of two hours. A 200,000-gallon aboveground storage tank will provide sufficient capacity for all storage requirements.

Waste Water Disposal

Wastewater generated on the site will come from two sources: 1) domestic sewage from cafeteria and sanitary facilities; and 2) industrial waste from the shipyard operations and potentially from other tenants. In addition, sewage and bilge waste from ships drydocked at the shipyard will require treatment and disposal.



NORTH

ALL CONTOURS BASED ON LAND DATUM

VERTICAL DATUM

LAND		SEAWE	
BASED ON NATIONAL BENCH MARK VERTICAL DATUM OF 1988		BASED ON MEAN LOWER LOW WATER	
8.1	HIGHEST RECORDED TIDE (MAY 21, 1982)	16.2	
8.0	MEAN HIGHEST HIGH TIDE (MAY 20, 1982)	16.1	
7.9	TIDE VELOCITY AT DATUM (MEAN TIDE)	16.0	
7.8	MEAN HIGH TIDE	15.9	
7.7	MEAN LOW TIDE	15.8	
7.6	MEAN LOWEST LOW TIDE (MAY 21, 1982)	15.7	

CENTURY



Well 2 Reservoir

Master Sub Station

Sludge Storage Treatment

Storm Water Treatment

Legend

- Water Line
- Sewer Line
- Buried Drainage Structures
- Pavement



Figure 7

Infrastructure

CENTURY-QUADRA

December 1990

A City owned and operated wastewater system will be an integral part of the project. The initial engineering concept calls for a treatment plant using a conventional biological process capable of meeting current regulatory discharge standards.

It is planned to dispose of the treated effluent in a leach field located on the site. The leach field will eliminate a point-source outfall and the requirement for dechlorination. Waste sludge will be disposed of by either incineration or landfill.

Shipboard sewage and bilge waste from drydocked vessels will be pumped to separate holding tanks for each waste type. Sanitary sewage will then be metered to the Public Treatment Plant. Bilge waste will be treated to separate oils, and then discharged through the storm water outfall to Resurrection Bay. There will be no provisions to receive waste from floating vessels, and discharge from these vessels will be prohibited unless Coast Guard and EPA requirements are met.

The estimated waste water treatment capacity is 50,000 gallons per day. It is anticipated that some industrial waste from the non-shipyard users will be handled through the City's plant. Pretreatment at the source will be required by the City prior to entrance into the public system. The level and type of treatment will be different for each case, but will be such that waste treated by the City's plant will meet State and Federal water quality standards.

Storm Water Management:

The Seward area receives an average of 66-inches of precipitation per year. This amount of rain and snowfall places some special significance on storm water management, particularly in the berthing area of the shipyard. Unlike the Prince William Sound Communities, Seward does not typically accumulate a large amount of snow pack during the winter months. As a result, storm water flow is a yearround consideration.

Generally, activities within the industrial park are not anticipated to generate any special conditions causing concern about storm flow affecting water quality. Most of the

site will be open area for general cargo and boat storage, assembly of large steel fabrications, parking, etc. Most activities, like painting and engine repairs, which could introduce pollutants to the storm water drainage will be confined within shops and buildings. The dry berthing area of the shipyard, by necessity, provides the exception.

The basic approach to storm flow management requires that the site be divided into two drainage systems. The final site grading will establish a crown line running east-west across the full length of the development just north of the dry berthing area, creating a southern drainage cell and a northern drainage cell. In the northern cell, all drainage will be surface flow and will either percolate into the soils or flow into Resurrection Bay as non-point discharge. The southern cell will be graded to allow water to flow into a drainage channel network leading through a treatment system before entering Resurrection Bay as a point source.

As indicated on Figure 7, the dry berthing areas will be paved, with a drainage channel between each berth. These channels will be constructed in rectilinear sections and graded flat to act as grit chambers. The entire length of each channel will be covered at the top with a continuous inlet grate. Runoff from each collection chamber will flow through the drainage system to the treatment structure. The open area south of the shipyard, anticipated for use in large component fabrication, will also drain into the drainage channel system to provide control and treatment of this runoff.

The proposed treatment for storm water from the southern cell consists of settlement throughout the drainage channels with frequent removal and disposal of the solids. Treatment will take place in a settling basin equipped with a grease trap to contain grit, oils, and grease entering the system. Investigations with shipyard waste has indicated that dissolved metals are absorbed by the spend grit and are removed when these particulates are cleaned up. However, should future monitoring indicate that heavy metals are above acceptable levels, additional treatment can be added between the proposed settling structure and the outfall.

Sizing of the drainage system is based on the five-year storm of 1-hour duration. Calculations indicate that the total flow from the southern cell will be 15.5 CFS, which will require a 24-inch diameter outfall. For events greater than the five-year storm, ponding and on-site storage will occur as well as non-point discharge for major storms.

Solid Waste & Hydrocarbon Waste

Disposal of all solid waste and hydrocarbon waste will be the responsibility of the individual users. Refuse collection service is presently offered in the City by a private contractor, and this service will be extended to the Fourth of July Creek site. Disposal of solid waste will be accomplished at the Seward Sanitary Land Fill operated by the Kenai Peninsula Borough.

The total solid waste for the industrial marine facilities is estimated to be 450 tons, or approximately 400-500 cubic yards per year.

Hydrocarbon waste includes waste oils, solvents, cleaners, oil separated from bilge water and other greases, lubricants, and distillate products. It is projected that the shipyard will generate approximately 14,000 gallons per year with the remaining facilities contributing approximately 6,000 gallons, for a total of 20,000 gallons per year. As stated earlier, the responsibility for disposal of these products will belong to the tenants. Available options include contracting with an agency handling waste oils, incineration, and reclamation.

It is reported that Seward Fisheries, the local fish processing operator, is currently burning waste oil products in their boiler system. Thus, a local source for disposal is potentially already available. Regardless of how these products are handled, the City will require, through covenants and leases, that both on and offsite handling, as well as disposal, is accomplished in accordance with current regulations.

Electrical Power

All electrical power for the marine facility will be provided by the City of Seward as a utility service. Current plans call for a new master substation in the Fourth of July Creek area served by a new 30,000 KW, 69 KV transmission line coming to the site along Nash Road.

Site Access

Access to the site will be by both road and water. Presently, an extension of Nash Road into the Fourth of July Creek area is under design and construction. When completed, the road will be a 55 mph paved, two lane section connecting the site to the Seward-Anchorage Highway.

Completed waterfront facilities will accommodate vessels up to 600-feet long with drafts of 35-feet. Protected finger slips and a marine basin will also be included to service smaller boats.

Development Schedule

The proposed schedule for development of the Industrial Marine Park is shown on Figure 8, in bar graph form. The schedule identifies four phases and the major work items included in each phase.

The implementation of this schedule is highly dependent on approval of permits and the appropriation of funds to finance the Public Improvements. The permit application was filed in mid-December. Barring any unforeseen environmental objections, approval is anticipated by mid-March.

Currently, funding is in place for Phase I only. The remaining phases are expected to be funded primarily with State of Alaska appropriations as grants-in-aid. This project along with many other Statewide Capital Improvements will be considered in the 1981 Legislative Session. Thus, the completion of Phases II, III, and IV are totally dependent on the approval of State appropriation.

Each phase represents a discrete increment of work that is either seasonally sensitive or must be performed on a sequential basis. All work that could potentially impact the Salmon Fishery is scheduled to occur between September and April when the fish are not normally in Resurrection Bay. Likewise, all major onshore work and above-water offshore construction is scheduled to occur in the warm months, taking advantage of the superior working conditions.

Since the mouth of the Fourth of July Creek is presently in the middle of the site, relocation of the stream is essential before any significant site work can begin. Thus, Phase I consists of site clearing and stream relocation.

Phase II includes the construction of the bulkheads and sheet pile cells comprising the breakwater cells, and reclamation of land currently below high tides; completion of filling activities and grading of the entire site to elevation 16; and installation of riprap shore protection. When this phase is concluded, the site will be ready for installation of all the public and shipyard operation improvements.

Phases III and IV include the remaining public improvements necessary to complete the total project. As shown on the schedule, the entire project is programmed for completion and operations start-up in September, 1982.

Estimated Project Costs

The total estimated cost for completion of all public improvements is \$60,000,000. Exhibit I is a breakdown by major components. These costs include Engineering and Design, Construction and Project Administration. Additionally, a contingency and inflation factor was applied to cover uncertainties and cost escalation.

Presently, the City has available \$6,000,000 from various sources committed to this project. These funds are being used to finalize the preliminary engineering and concept planning and Phase I improvements, plus initiate engineering and construction activities on Phase II. There are not sufficient funds to complete Phase II or to begin any of the remaining phases of the work.

A total of \$54,000,000 in additional funding is needed to complete the public portions of the project. In order to have a logical and expeditious completion of the development, the entire \$54,000,000 should be appropriated at one time. This will allow the City to proceed with the authorization of engineering and the award of contracts without concern for scheduling of funding.

Since the City has exhausted all of its financial resources improving the infra-structure of the City itself, it must look to outside sources for aid in the financing of the remaining improvement costs. Thus, appropriation for the remaining \$54,000,000 necessary to complete the project.

EXHIBIT I
ESTIMATED PROJECT COSTS

<u>DESCRIPTION</u>	<u>ESTIMATED COSTS</u>
Preliminary Engineering and Concept Planning	\$ <u>500,000</u>
Phase I - Preliminary Site Work	
<i>Done</i> A. Site Clearing	800,000
B. Stream Relocation	<u>1,500,000</u>
Total Phase I	\$ <u>2,300,000</u>
Phase II - Site Preparation	
A. Tie Back Sheet Pile Bulkheads	\$ 1,800,000
B. Sheet Pile Cells for Breakwater	12,000,000 <i>6</i>
C. Dredging and Land Reclamation	12,300,000 <i>5</i>
D. Site Grading	700,000
E. Shore Protection	<u>1,000,000</u> <i>500,000</i>
Total Phase II	\$ <u>27,800,000</u> <i>12,200,000</i>
Phase III - Infra-Structure	
A. Utilities	
1. Water Supply and Distribution	\$ 1,300,000
2. Sanitary Sewer System	700,000
3. Storm Drainage	300,000
4. Power and Telephone	400,000
B. Access Roads	<u>1,000,000</u> <i>300,000</i>
Total Phase III	\$ <u>3,000,000</u> <i>5,000,000</i>
Phase IV - Shipyard Improvements	
A. Cargo Dock Deck and North Shiplift Pier	\$ 18,000,000 <i>5.</i>
B. Shiplift Equipment	4,000,000
C. Mooring Facilities	<u>300,000</u> <i>100,000</i>
D. Transfer Pit	2,200,000
E. Public Dry Berths	500,000
F. Open Storage	700,000
Total Phase IV	\$ <u>25,700,000</u> <i>9.8 mil</i>
	<i>9.8 mil</i>
TOTAL ESTIMATED PROJECT COSTS	\$ 60,000,000

TOTAL 25 mil