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ECONOMICS and TRANSPORTATION

Nome is the regional distribution center for most of the Seward Peninsula and the southern coast of Norton Sound. This area is rich in natural resources such as offshore oil and gas, hardrock minerals and fisheries. A modern, medium draft port at Nome will offer lower shipping costs to and from the area, thus helping to make development of these resources more economically feasible.

The port will be a transshipment center for materials and equipment used in offshore development. Increased activity in the area will require incoming shipments of fuels, supplies and equipment, and by the turn of the century the mines are projected to generate large volumes of bulk ore shipments. The proposed port will also



MAJOR IDENTIFIED MINERAL PROSPECTS AND DEPOSITS, NORTHWEST ALASKA

encourage the development of a more efficient regional fishing operation.

Today the port at Nome serves as the distribution center for supplies to villages throughout the region — an estimated population of over 11,200. By the year 2000, that service area will include more than 15,000 people. This population will rely more and more on a cash economy and larger volumes of incoming and transshipped cargoes.

Economic development in northwest Alaska has been hindered by the high cost of transportation. Access is available only by sea and air.

Today, ocean-going vessels must anchor one mile off the shore at Nome. From there, cargoes are "lightered" ashore: transported to the Snake River harbor and then to coastal villages. The current harbor is subject to considerable siltation and must be dredged each year to a depth of 8 feet by the U.S. Army Corps of Engineers.

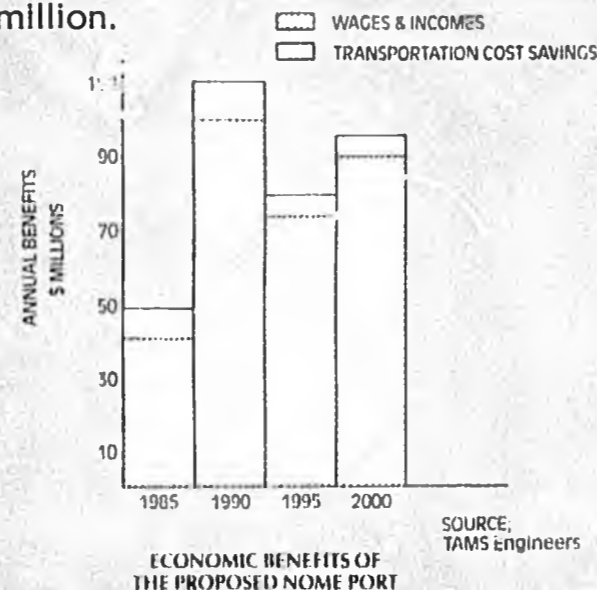
Northwest Alaska has no link to the railbelt. Any plan to extend the Alaska Railroad into the region would take considerable time and money, since right-of-ways would be needed across federal, state, and native lands. The cost alone makes rail construction questionable in the foreseeable future.

Therefore, a medium draft port at Nome is the most economical alternative to bring low cost, viable transportation to an area of the state on the verge of very significant economic development.

STATEWIDE BENEFITS

The statewide economic benefits of the proposed project are measured in terms of wages and salaries. As the port helps to spur development of the area's vast natural resources, these activities will expand the employment base in the region and throughout the state. When the total employment in offshore oil and gas, minerals and fisheries development is combined, more than 1,400 jobs will be created by the Nome port within its first decade. This will generate more than \$101.5 million statewide in direct, indirect and induced incomes by 1990.

The port will also reduce the cost of living and doing business in the northwest by lowering shipping costs to Nome. A summary of the total economic benefits for selected years ranges from a low in 1985 of \$48.3 million to a high in 1990 of \$115 million.



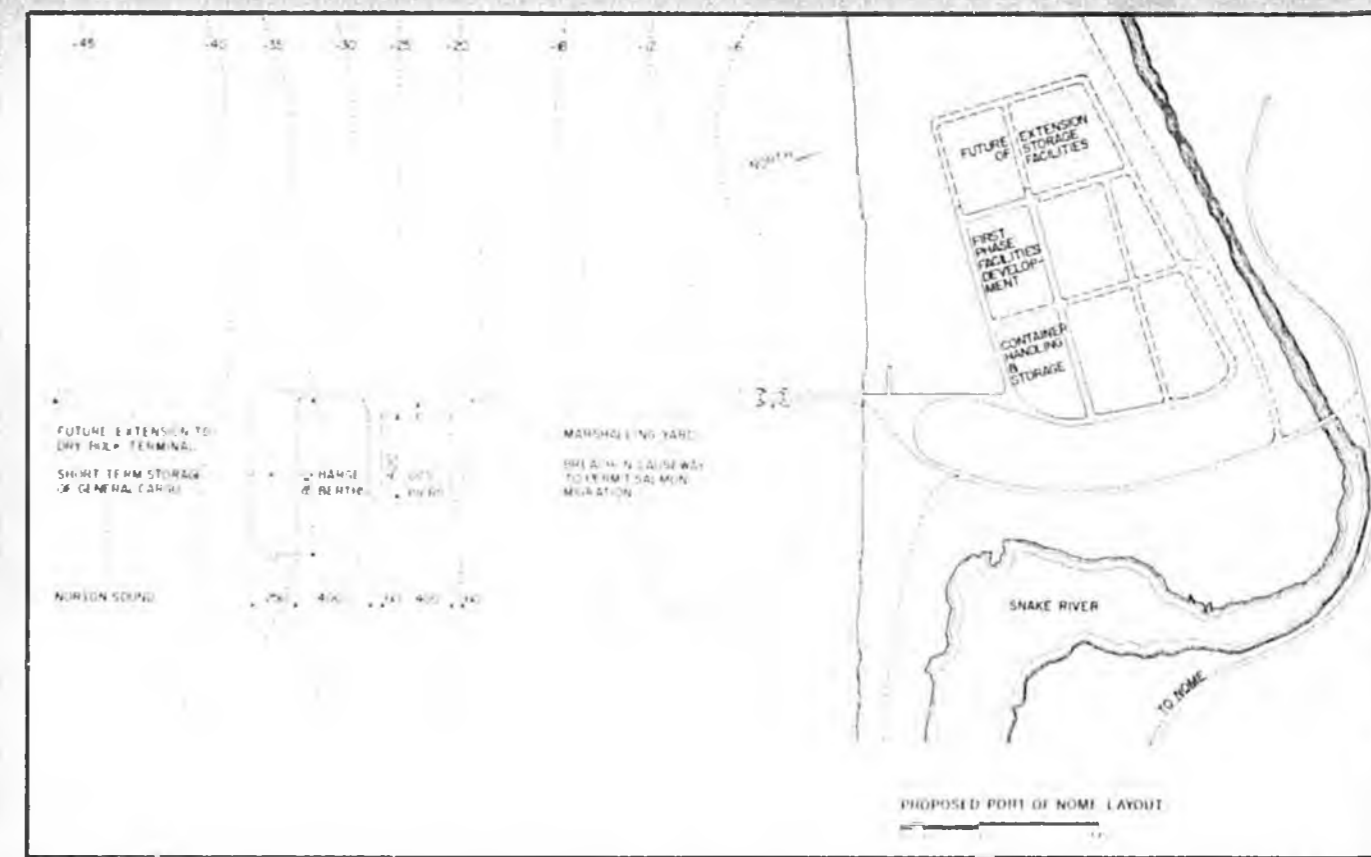
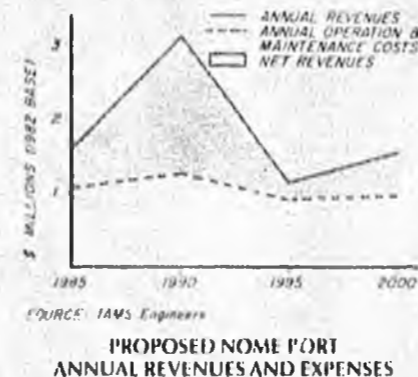
OPERATION and MAINTENANCE

The proposal calls for the port facility to be owned and operated by the City of Nome, in order that a break-even price structure to minimize transportation costs can be established.

Using a schedule of tariffs similar to rates at other Alaskan ports, the Nome facility will generate 75 percent of its total revenues from wharfage and handling tariffs. Equipment rentals, storage and dockage fees will provide the balance, for a total estimated revenue each year that will exceed the annual operation and maintenance costs.

Operational costs include salaries for a harbormaster and longshoremen, equipment for cargo handling and utilities. Maintenance costs include repair to buildings and yards, periodic resurfacing and repair of the causeway, etc..

Assuming the state provides capital funds for construction, the Nome port will be a self-supporting facility from the very first year of service.



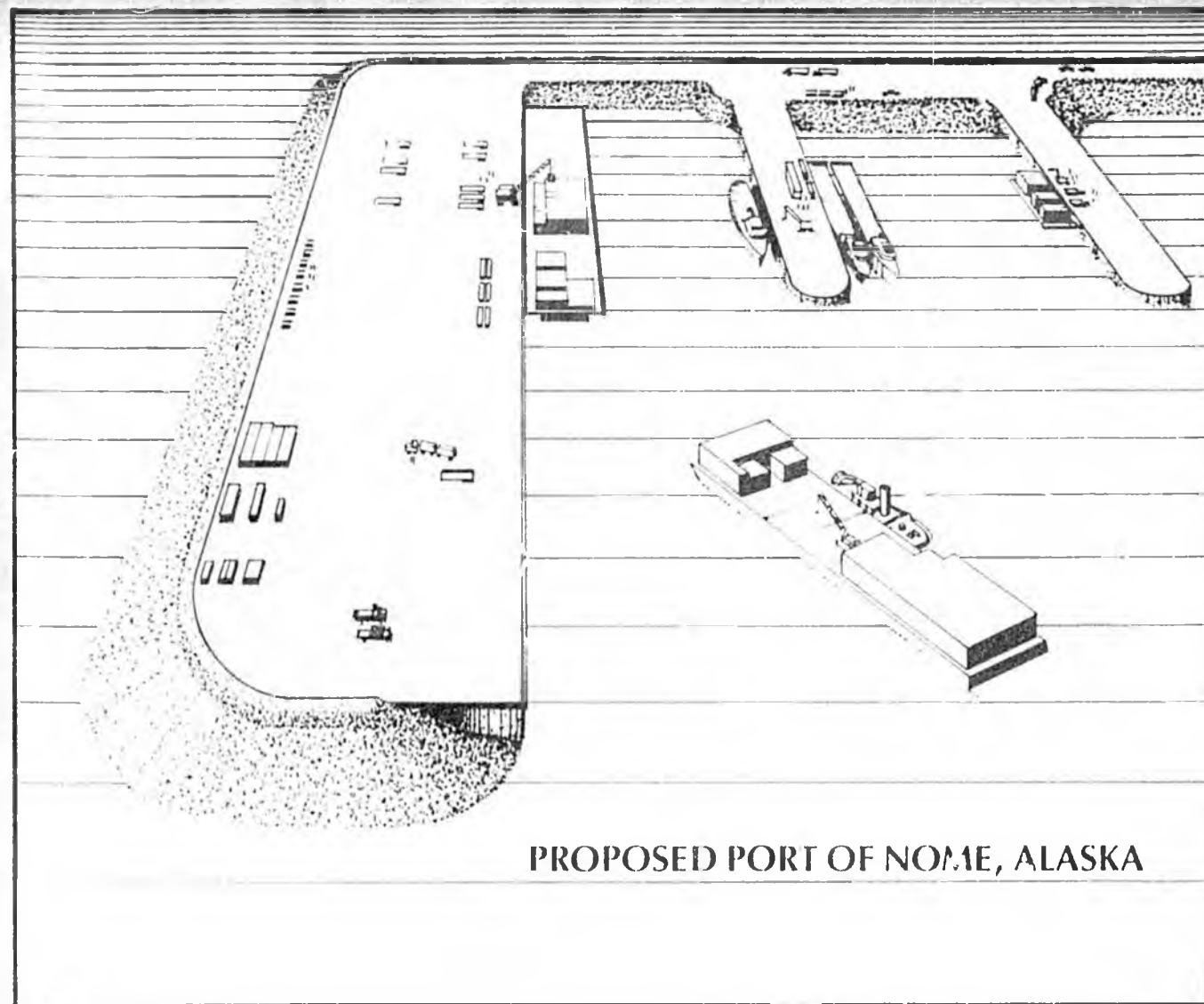
The layout of Nome's port features a 3,600 ft. causeway with a breach near shore to permit fish migration. At the seaward end, in water 30 feet deep, the causeway design shows barge berths and a short term cargo storage area. The design allows for later construction of piers for work boats servicing Outer Continental Shelf

oil platforms, and the causeway can also be extended 1,000 to 1,500 feet to provide a dry bulk terminal for deeper draft vessels. Onshore facilities will include container handling and storage facilities on 10 acres of land, with an additional 50 acres available for future storage expansion.

HOW YOU CAN HELP SUPPORT THE PROJECT

As the State Department of Transportation and Public Facilities' number one marine construction priority for the northern half of Alaska, funds for the Nome port will be included in

the 1983 budget proposal sent to the governor. You can help make sure those funds are not cut from the budget by contacting legislators and the governor. Tell them you support the project because a modern port at Nome will benefit all Alaskans.



PROPOSED PORT OF NOME, ALASKA

THE PROPOSED PORT FACILITY

The city of Nome proposes construction of a modern, medium draft port near the mouth of the Snake River to serve the entire northwest region of Alaska. The design consists of a 3,600 ft. rubble mound causeway with berthing and loading facilities at its seaward end and container and general cargo storage facilities on shore. As demand

requires, additional berths for oil company activities can be added, and the causeway can be extended another 1,000 to 1,500 ft. into deeper water to service larger ships and ore carriers. The estimated cost of the proposal is \$40 million. The state is being asked to fund construction of Nome's port, as it has funded similar facilities throughout Alaska.

The City of Nome produced this brochure to outline its plans for a modern port that could serve as the key to economic development in Alaska's northwest. By allocating a small portion of its oil revenues to con-

struct the port, the state of Alaska can take the vital first step toward development of the vast natural resources in the region. This development will benefit all Alaskans for many years to come.

ALASKANS SUPPORT NOME PORT PROJECT

Grass roots support for the Nome port project is growing across the state. The Bering Straits Regional Corporation endorses the plan, as does the local Chamber of Commerce. Miners and business people are eager to see the project complete because of the economic development it will bring to the state. Voters have put their

initial stamp of approval on the project in two separate statewide bond votes. Recognizing the potential impact of a modern facility at Nome, the state Department of Transportation and Public Facilities has included construction funds for the project as northern Alaska's number one marine construction priority in its 1983 budget for the governor's consideration.

- HB 118 Bear
 - HB 79 Dis = overhaul of judges



For more information about the port proposal, contact:

Ivan Widom
 City Manager
 P.O. Box 281
 Nome, AK 99762
 (907) 443-5242

PORT OF NOME

Unlocking the resource wealth of the northwest region for all Alaskans to share.

FISCAL NOTE

Revision Date: 11/16/93

I. REQUEST

Bill/Resolution No.: HB #283 452
 Title: Nome Port Facility
 Sponsor: Fuller and Busse
 Requestor:
 Date of Request:

II. FISCAL DETAIL

Agency Affected: DOT & PF
 Program Category Affected: Buildings & Harbor
 BRU, Program of Subprogram(s) Affected:
 Northern Region

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89
OPERATING						
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL						
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC						
TOTAL OPERATING	-0-					
CAPITAL	12,000.0					
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND	12,000.0					
FEDERAL FUNDS						
OTHER (Specify Source)						
TOTAL	12,000.0					

POSITIONS:

FULL-TIME						
PART-TIME						
TEMPORARY						
TOTAL						

III. SOURCE OF FUNDS TO OFFSET FISCAL IMPACT OF BILL:

Not identified by Sponsor.

IV. ANALYSIS: Attach a separate page for any Analysis

Prepared By: Mim Dixon, Director Phone: 479-4281
 Division: Planning and Programming Date: 11/16/83

Approved by Commissioner: H. Glenzer, Jr Deputy Commissioner Date: 11/16/83
 Department: DOT & PF, Northern Region

Distribution:

- Original to Legislative Finance
- Copy to Office of Management and Budget (for Legislature introduced bills)
- Copy to Department (for Governor introduced bills)
- Copy to Sponsor
- Copy to Requestor (if different from Sponsor)

9/14/83

TITLE	LOCATION	PROJECT CLASSIFICATION	ELECTION DISTRICT	START DATE	COMPLETE DATE			
				7/84	12/85			
NOME PORT FACILITY (Ph. 4)	Nome	02-631-02-02	23	PRIORITY 34	OF 49			
	GENERAL FUNDS	FEDERAL FUNDS	G.O. BONDS	OTHER	POSITIONS		AGENCY REQUEST	GOVERNOR
					PFT	PT/SEA.	FY 85 TOTAL	
REQUESTED FUNDING:	12,000.0						12,000.0	
SITE ACQUISITION								
PLANNING AND DESIGN								
CONSTRUCTION AND EQUIPMENT	12,000.0				0	0	12,000.0	
PREVIOUS APPROPRIATIONS (NON-ADD)			6,980.0					
OPERATING COSTS:								
FIRST YEAR OPERATING COSTS	*							
FULL ANNUAL OPERATING COSTS	*							

PROJECT DESCRIPTION AND JUSTIFICATION: *See note, page 3.

PROJECT DESCRIPTION

Construction of a 3600' rubble mound causeway or acceptable alternative, to provide either full or partial service accommodating a baseline tonnage of 36,000 tons in both liquid and dry cargo. Project is ready to advertise.

PROJECT NEED STATEMENT

The consumers of the Seward Peninsula pay approximately 25% more for bulk cargo and petroleum products because of the lightering costs from ocean-going barges to the existing dock facility.

At present, barges calling at Nome are anchored 1/2 to 3/4 miles offshore for unloading and reloading of cargo and freight. Cranes on board the ocean-going barges are used to offload containers and other cargo to lighters. These shallow draft lighters are towed through the surf and the shallow 8-foot deep entrance channel for unloading at the lighterage company's transfer facility. The lighters are unloaded over the entrance channel retaining wall by portable cranes. Empty containers and outgoing shipments are reloaded to lighters inside the harbor area for return to the oceangoing barges anchored offshore. This is an extremely costly operation.

AGENCY DOT&PF

CATEGORY TRANSPORTATION

PROGRAM NORTHERN REGION PORTS & HARBORS

PROJECT TITLE NOME PORT FACILITY

CP-1 CAPITAL PROJECT
DESCRIPTION
FY 85

FY85

Page 1 of 3
Revised Date

PROJECT NEED STATEMENT (Cont.)

The average waterborne freight growth rate since 1969 according to Corps of Engineers' publications, has been approximately 12%. With the beginning of oil exploration already occurring offshore from Nome in 1983, (Navarin Basin, Norton Sound), the potential development of the bottomfish industry, plus the potential for Seward Peninsula area mining interests to expand dramatically, action should be implemented now to get a minimal marine terminal infrastructure in place.

Development of this project strongly supports several goal areas of this administration:

- (1) Using prior appropriations, the project has been thoroughly studied, analyzed, and designed to provide the best configuration and site location, as well as to tie into and make the best use of the existing Seward Peninsula highway system. The adjacent location of the Nome regional center airport allows excellent air logistical support.
- (2) The port development both serves a basic public service function (reducing freight lightering costs) and has the potential to stimulate economic development (mining, oil) and provide financial returns to the State.
- (3) Maintenance and operational costs have:
 - a. been minimized as much as possible through the design selected, and
 - b. will be borne by the user through the use of port tariffs.
- (4) The Nome port is being implemented as a joint venture with the private sector contributing financing and/or investment to a maximum extent and the State providing initial seed capital.

DOCUMENTATION OF ESTIMATED CAPITAL COSTS

Engineering estimates were developed by the design contractor. Figures were based on recent costs of similar construction in the Nome area and for expected construction market conditions at the time of contract award. Estimates were also based on historical costs of marine facility construction in other areas of Alaska, adjusted for the remote location of Nome, and on similar construction in other areas of the world.

AGENCY DOT&PF

CATEGORY TRANSPORTATION

PROGRAM NORTHERN REGION PORTS & HARBORS

TITLE NOME PORT FACILITY

CP-1
FY85

ADDITIONAL
EXPLANATION
FORM

43

FY85

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Revised Date

ANALYSIS OF ESTIMATE OF OPERATIONAL EXPENSE

*NOTE: Operational and maintenance costs together will approach a maximum annual figure of \$700,000. This cost will be borne by the user via an approximate \$9 per ton tariff, which is substantially lower than present and projected lighterage fees. At the same time, the dredging costs of the present Nome harbor, which are projected to approach \$1 million annually and which are financed entirely by governmental appropriations, will be substantially reduced.

IDENTIFICATION OF ALTERNATIVES CONSIDERED

1. Postpone action at this time. Failure to go forward with this project will result in continuing high lighterage costs and act as a retardant to future development in oil exploration, the bottomfish industry, and regional area mining extraction.
2. Scale down the scope of the overall project. This approach has been adopted. The project as now developed is a minimal level facility designed to meet current traffic and expandable to meet increased traffic as demand warrants. In order to arrive at and agree on the present design, seven basic alternatives, plus minor variations, all of which were technically feasible, were evaluated in depth.
3. Reduce or eliminate state funding insofar as possible. This has also been done. Private investment has been sought and secured to the maximum extent.

AGENCY DOT&PF

CATEGORY TRANSPORTATION

PROGRAM NORTHERN REGION PORTS & HARBORS

TITLE NOME PORT FACILITY

CP-1
FY85

ADDITIONAL
EXPLANATION
FORM

KJ

FY85

Page 3 of 3
Revised Date

TITLE
NOME PORT FACILITY

PRIORITY 34 OF 49

OPERATING		TOTAL PREVIOUS APPROPRIATIONS	FY 84	FY 85	FY 86	FY 87	FY 88	FY 89
100 PERSONAL SERVICES								
200 - 800 LINE ITEMS								
TOTAL			*					
1002 FEDERAL RECEIPTS								
1004 GENERAL FUNDS			*					
OTHER FUNDS								
FULL-TIME POSITIONS					3	3	3	3
CAPITAL								
TOTAL		6,980.0		12,000.0				
1007 FEDERAL RECEIPTS								
1004 GENERAL FUNDS				12,000.0				
OTHER FUNDS (G.O. Bonds)		6,980.0						
REVENUE								

EXPLAIN PREVIOUS APPROPRIATIONS (GIVE SECTION, CHAPTER, SLA) AND ASSUMPTIONS FOR COST, FUNDING SOURCE, POSITION AND REVENUE ESTIMATES:

Previous appropriations for preliminary engineering and design of this project: Ch 86/74, Ch 118/80/6/24.

*Maintenance on the completed Nome Port Facility will be the responsibility of the City of Nome. Maintenance costs will be entirely offset through port revenues collected from the users. At the same time, the dredging costs of the present Nome harbor, which are projected to approach \$1 million annually and which are financed entirely by government appropriations, will be substantially reduced.

AGENCY DOT&PF

CATEGORY TRANSPORTATION

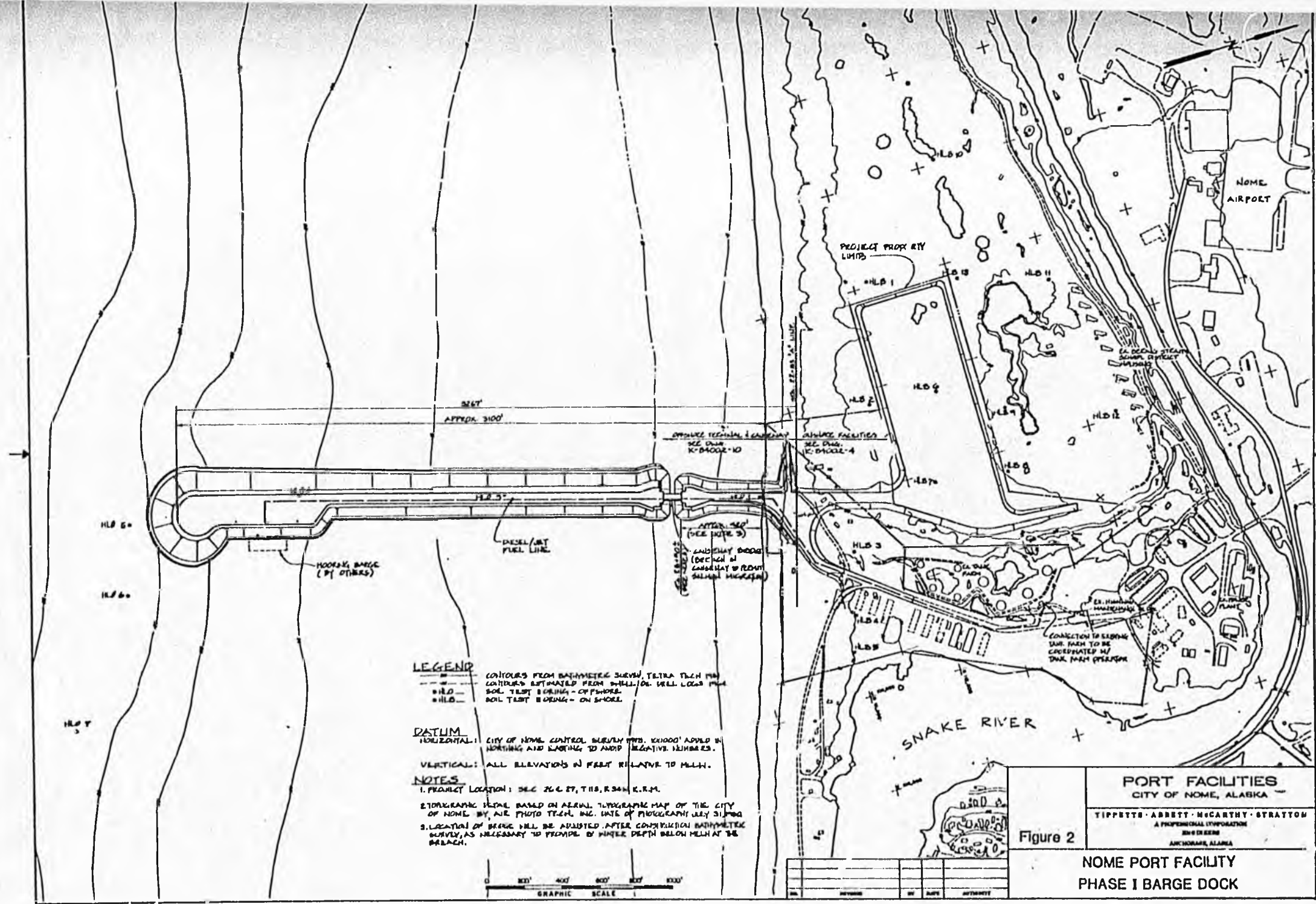
PROGRAM NORTHERN REGION PORTS & HARBORS

PROJECT TITLE NOME PORT FACILITY

CP-2 CAPITAL PROJECT COSTS
 FY 85

FY85

Page 1 of 2
 Revised Date



LEGEND

CONTOURS FROM BATHYMETRIC SURVEY, TETRA TECH MAP
 CONTOURS ESTIMATED FROM BATHY. OR WELL LOGS FROM
 SOIL TEST BORING - OFF SHORE
 SOIL TEST BORING - ON SHORE

DATUM

HORIZONTAL: CITY OF NOME CONTROL SURVEY 1978. 81000' ADDED IN
 NORTHING AND EASTING TO AVOID NEGATIVE DIMENSIONS.

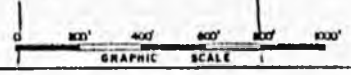
VERTICAL: ALL ELEVATIONS IN FEET RELATIVE TO MLLW.

NOTES

1. PROJECT LOCATION: SEC 26 E 27, T18, R34N K.R.M.

2. TOPOGRAPHIC MAPS BASED ON AERIAL TOPOGRAPHIC MAP OF THE CITY
 OF NOME BY AIR PHOTO TECH. INC. DATE OF PHOTOGRAPHY JULY 31, 1969

3. LOCATION OF BARGE WILL BE ADJUSTED AFTER CONSTRUCTION BATHYMETRIC
 SURVEY, AS NECESSARY TO PROVIDE 10' WATER DEPTH BELOW MLLW AT THE
 BARGE.



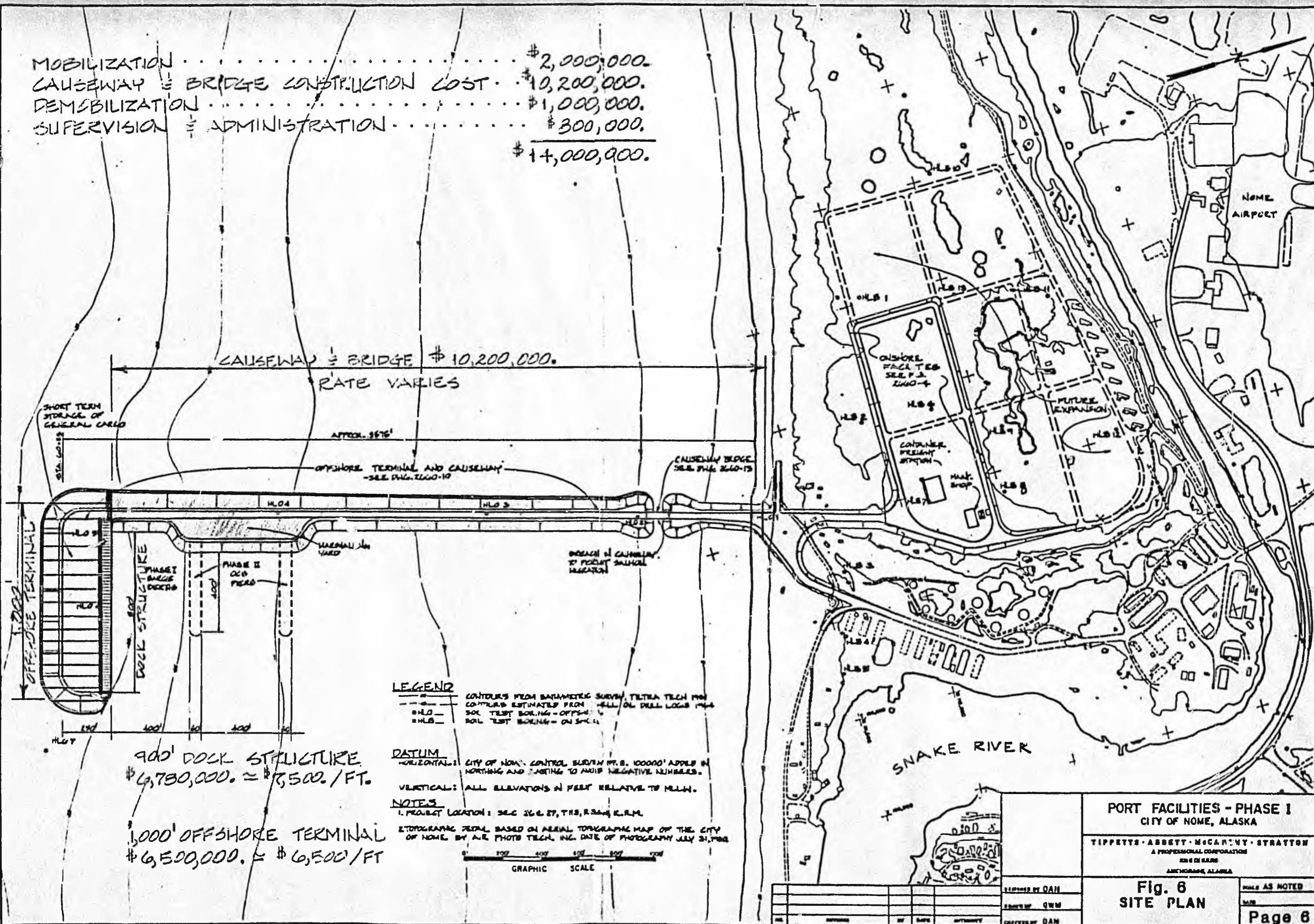
PORT FACILITIES
 CITY OF NOME, ALASKA

TIPPETTS · ABBETT · MCCARTHY · STRATTON
 A PROFESSIONAL CORPORATION
 816 D STREET
 ANCHORAGE, ALASKA

Figure 2

**NOME PORT FACILITY
 PHASE I BARGE DOCK**

MOBILIZATION \$2,000,000.
 CAUSEWAY & BRIDGE CONSTRUCTION COST \$10,200,000.
 DEMOBILIZATION \$1,000,000.
 SUPERVISION & ADMINISTRATION \$300,000.
 \$14,000,000.



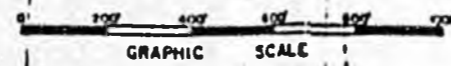
CAUSEWAY & BRIDGE \$10,200,000.
 RATE VARIES

900' DOCK STRUCTURE
 \$6,730,000. = \$7,500./FT.
 1,000' OFFSHORE TERMINAL
 \$6,500,000. = \$6,500./FT.

LEGEND
 --- CONTOURS FROM BATHYMETRIC SURVEY, TETRA TECH P&O
 --- CONTOURS ESTIMATED FROM WELL OR DRILL LOGS 1944
 OHL --- SOIL TEST BORING - OFFSHORE
 OHLB --- SOIL TEST BORING - ON SHORE

DATUM
 HORIZONTAL: CITY OF NOME CONTROL SURVEY N.T.S. 10000' ADJUSTED IN NORTHING AND EASTING TO AVOID NEGATIVE NUMBERS.
 VERTICAL: ALL ELEVATIONS IN FEET RELATIVE TO MLLW.

NOTES
 1. PROJECT LOCATION: SEC 26 & 27, T15S, R30W, K12M.
 2. TOPOGRAPHIC DATA BASED ON AERIAL TOPOGRAPHIC MAP OF THE CITY OF NOME BY A.E. PHOTO TECH. INC. DATE OF PHOTOGRAPHY JULY 31, 1968.



PORT FACILITIES - PHASE I
 CITY OF NOME, ALASKA

TIPPETTS · ABBETT · MCCARTHY · STRATTON
 A PROFESSIONAL CORPORATION
 208 S. BARRIE
 ANCHORAGE, ALASKA

Fig. 6
SITE PLAN

SCALE AS NOTED
 DATE
 Page 6

DESIGNED BY DAN
 CHECKED BY QWM
 CHECKED BY DAN

CITY OF NOME PORT DEVELOPMENT PROJECT
PHASE I BARGE DOCK
PROJECT SUMMARY

Project Description

The City of Nome and Alaska Department of Transportation and Public Facilities (DOT/PF) have worked together the past four years to develop a design for port facility in Nome. As a result of a detailed investigation of harbor development alternatives, and in-depth engineering analyses of potential ice, storm and other design considerations, a design has been completed for a modern, two-berth offshore barge terminal.

As shown in Figure 1, the proposed harbor will provide the moorage, offloading area, and cargo handling facilities needed to meet the long term needs of the approximately 12,000 resi-

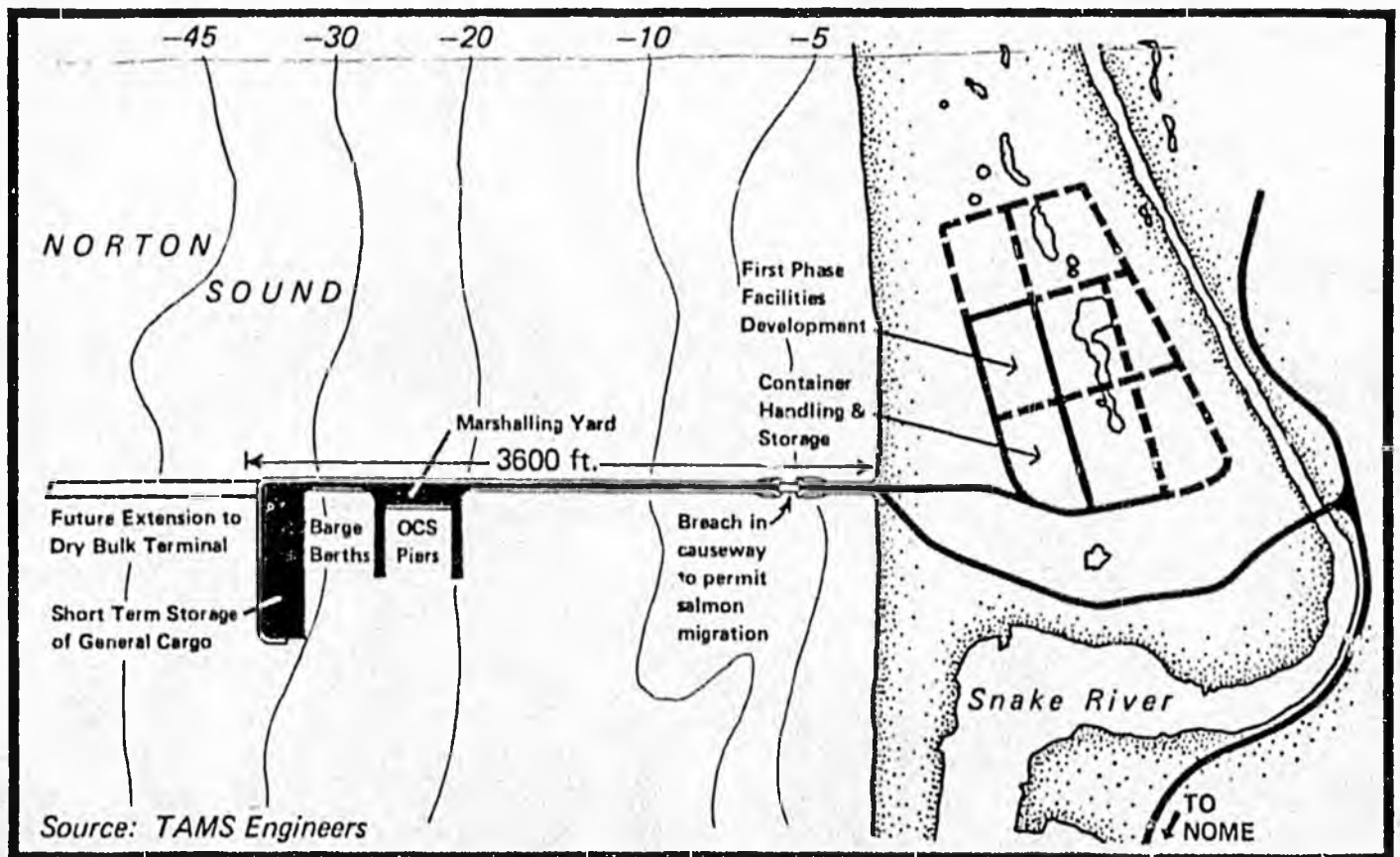


Figure 1

NOME PORT FACILITY - LONG RANGE DEVELOPMENT PLAN

dents of Nome and the surrounding villages, and will also encourage the development of resource-extraction industries to spur the economic growth of the Norton Sound and Seward Peninsula region.

Recognizing that capital funding for the entire project may not be initially available, the City of Nome and DOT/PF have prepared a cut-down version of the project to serve as the initial construction phase. Shown in Figure 2, the proposed Phase I construction will include a 3,000 foot rubble-mound causeway connecting an open onshore storage area to a floating dock moored in 20-25 feet of water. Ocean-going barges up to 400 feet long will berth alongside the floating dock (constructed from a conventional 200 foot barge); while containers and other dry cargo will be transferred to the causeway and be trucked to shore, as shown in Figure 3. A single buried pipeline will be used to offload jet fuel and diesel, which comprise about three-fourths of the bulk petroleum products delivered to Nome.

As planned, the Phase I development will serve the immediate marine transportation needs of the region. Although some operational shortcomings (such as limited draft and berthing space) may need to be corrected in future phases of construction, in the interim the facility represents a vast improvement over the current system of lightering cargoes from barges anchored up to a mile offshore.

Construction Funding

Construction costs for the Phase I facility are projected to be approximately \$19.1 million. Of that total, it is estimated that a maximum of about \$6-8 million can be generated by local funding (through revenue bonds) or by private sector participation in the project. Federal funding sources (such as the U.S. Economic Development Administration) are currently being investigated for funding assistance. However, the City has

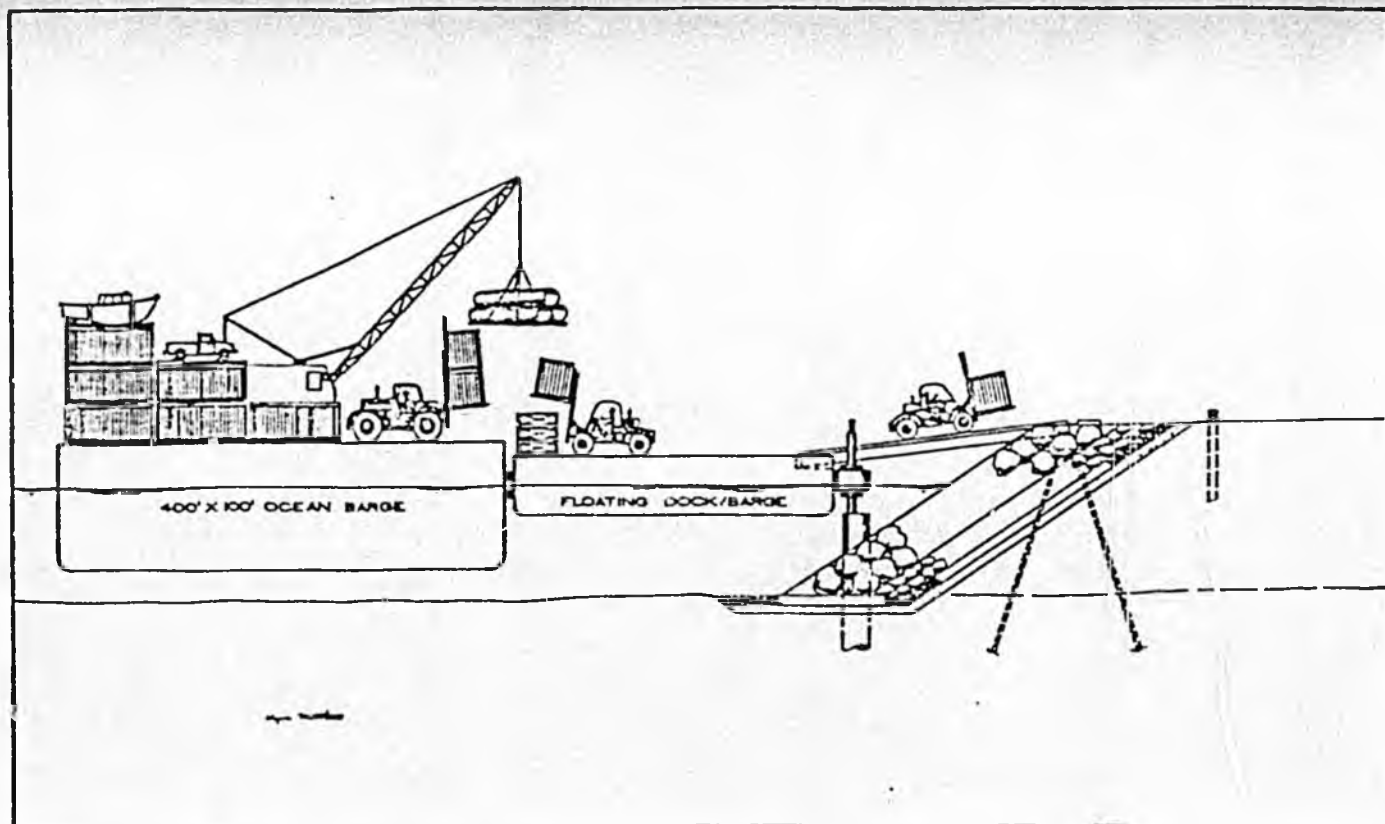


Figure 3

NOME PORT FACILITY - PHASE I BARGE DOCK CARGO UNLOADING/LOADING PROCESS

received little encouragement to date from the agencies contacted that funds would be available in 1984 or 1985. Consequently, grant support by the State of Alaska is therefore requested for approximately \$12 million.

Economic Benefits

Transportation Costs. A major benefit resulting from construction of the port facility will be the elimination of the costly and inefficient lighterage service currently used. At an average charge of about \$76 per ton of cargo lightered into Nome, the cost to the local community and region is on the order of \$3 million annually.

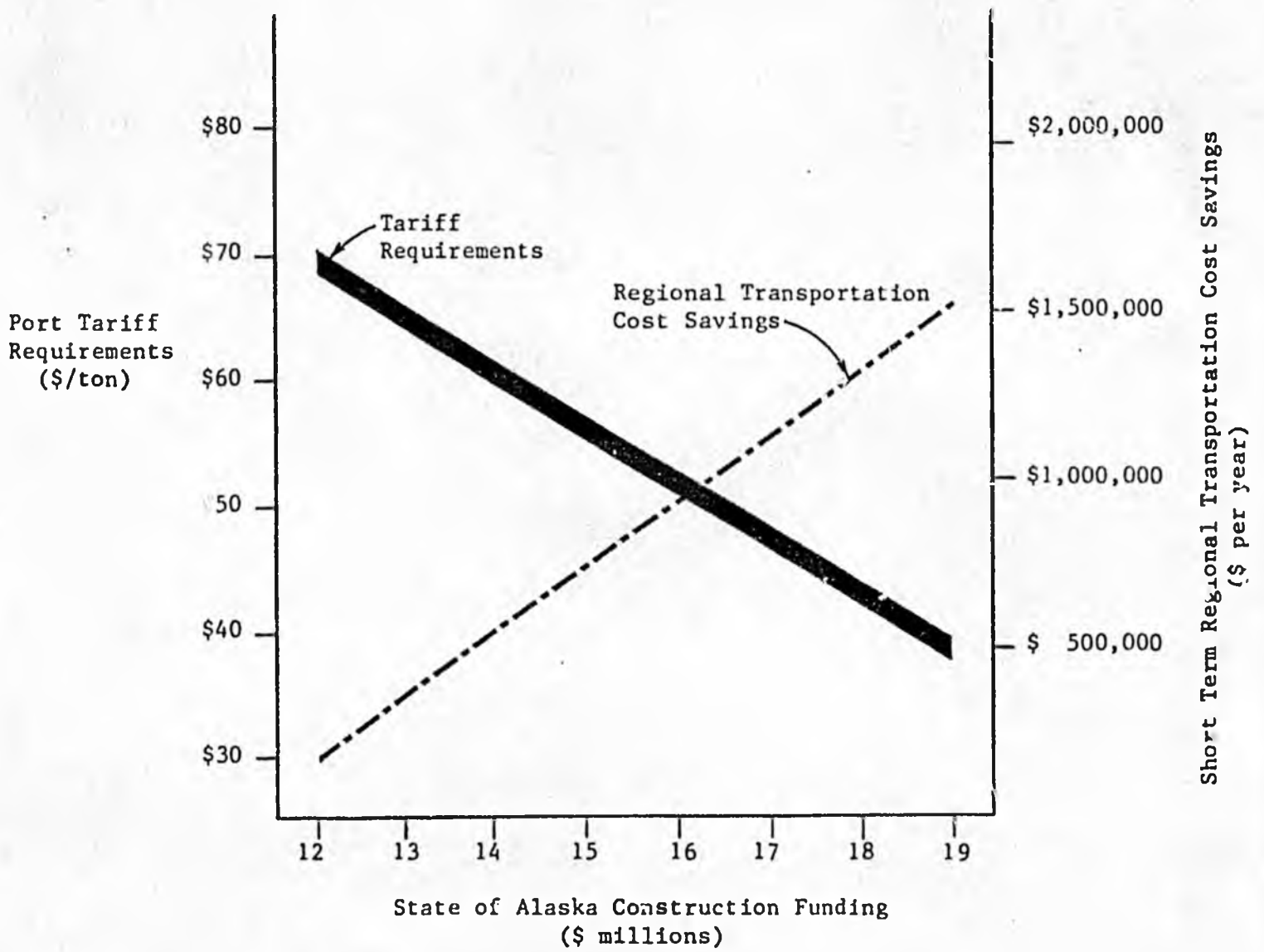
As shown in Figure 4, the transportation cost savings realized by the area residents will depend directly on the level of grant funding contributed by the State of Alaska. With total state funding for the project, port tariffs would need to be

set at approximately \$35-40 per ton, which would result in an annual savings to area residents of up to \$1.6 million. On the other hand, with a state contribution of approximately \$12 million and the remainder of the cost financed privately or by the City of Nome, port tariffs would approximate current lighterage charges and little short-term transportation cost savings would result. (Over the long-term, of course, port tariffs to recover capital investment would remain essentially stable, while lightering costs could be expected to keep pace with inflation. Thus, even with no initial cost advantage the port over the long term would result in lower transportation costs for the residents of the region.)

Regional Economic Development. Phase I of the Nome port will serve as an important first step in providing for the long term economic growth of Northwest Alaska. As described in the Port of Nome Economic Development Analysis, construction of the facility will be a major stimulus for the development and extraction of identified, recoverable tin, fluorite, and other mineral resources. It will function as a service basis for oil exploration (and possibly development) in Norton Sound, and as a corollary benefit will focus the OCS activity in the immediate Nome area, thus relieving fears of unwanted development by many of the coastal villages in the region.

Development of the port facility will play a central role in providing for stable, long-term growth in the region and will provide benefits statewide through job creation and encouraging the creation of a significant mining industry on the Seward Peninsula.

FIGURE 4
 TRANSPORTATION COST SAVINGS COMPARISON



PORT OF NOMESIMPLE RUBBLEMOUND CAUSEWAY DESIGNObjective

Given the prospectus that a 40 million dollar port facility for Nome is not viable economically now or in the short term, a review of the TAMS design was made in order to evaluate which items being proposed by TAMS could be eliminated or changed in such a way as to develop a simple rubblemound causeway design that is economically attractive and allows for the handling of both dry and liquid cargo.

The attached TAMS bid schedule has been annotated where changes have been made to their original design. Also included is the TAMS preliminary layout for a basis of comparison with the simple rubblemound scheme. A savings of redesign time and funds is self-evident since the best concepts of the TAMS design may be employed using this approach.

The Temporary Dock Concept

The scheme, illustrated in the attached drawing, will provide a section of the causeway envisaged in the original design. However a temporary floating dock would be formed from a (say) 200 ft. barge and access bridge, moored in 20-25 ft. of water at the proposed OCS marshalling area. Barges of up to 400 ft. could berth alongside the floating dock which might be ballasted to compensate for differences in freeboard.

Diesel and jet fuel would be piped directly to the federal tanks.

Gasolines and Avgas could be either trucked or lightered to the City tank system.

Winter Removal

On completion of the summer barge season the floating dock would be removed and stored in the inner harbor for deployment the following summer.

Utilities

No electricity paving or utilities would be provided. Water might be piped to the dock for OCS exploration needs if the oil companies were prepared to contribute to the cost (of the main and causeway?)

Future Expansion

All of the construction items with the exception of the berthing dolphins could be reused if funding later became available to complete the terminal head and main barge berths. The berthing dolphins will also provide useful data on their ice breaking capabilities at a relatively low cost.

Cargo Storage

Since a storage and working area would be required during construction of the causeway, a gravel pad of 5-10 acres would be provided in the originally proposed container storage area. This could then be used for open storage and distribution containers during the summer season. No buildings would be provided.

Causeway Design Parameters

It is anticipated that the minimal maintenance criteria originally stipulated by the City could be slackened to tolerate some minor causeway damage in a severe (say 30 year) storm. The resultant reduction in crest height to elevation +14 feet and armor stone size to 15 tons represents a useful contribution toward the capital cost of the barge dock.

Limitations of the Temporary Dock

The main limiting factor of the concept is the lack of adequate protection against wave action at the dock structure.

Severe fall storm waves would cause excessive movement at the dock, causing a closedown of unloading operations and possibly necessitating the removal of the ocean going barge to deeper water.

Only one berth is provided and this will be a definite restriction to operations, particularly at the beginning and end of the barge season.

Draft at the dock is shallow for a fully loaded 400 or 450 ft. fuel barge which might draw 25 ft. This is not a severe constraint in the short term but could cause problems in later years as cargo volumes increase.

Gasoline and Avgas fuels would still be unloaded inefficiently. Against this is not a major constraint in the short term.

Finally the 200 x70 ft. barge is the largest that could be navigated through the existing river entrance. It is however rather small in terms of manoeuvring cargo and container vans for transfer to the causeway.

Capital Costs

Construction costs for the facility are \$19 million as shown below. Since approximately 85% of the cost is for rock armor or causeway fill material this is essentially the only area where useful savings might be made. These could include:

- Reduction in design criteria for armor.
- "Contribution" from Alaska Gold towards cost of dredge tailings in the form of a reduced royalty.
- Likewise from Bering Straits for the armor rock.
- Reduction in size of the gravel pad/working area behind the federal oil tanks.

Preliminary Cost Estimate

Item	Quantity	Unit	Unit Price	Amount
1. Onshore Pad & Access Roads				
a) Class F Fill	232,000	CY	9	2,088,000
2. Causeway Armor & Core				
a) Class A - (15 ton)	173,700	CY	32	5,564,800
b) Class A - (8 ton)	42,700	CY	26	1,110,200
c) Class B - (1.5 ton)	117,200	CY	16	1,875,200
d) Class B3 - (1600 lb)	23,400	CY	14	327,600
e) Class C1 - (200 lb.)	34,200	CY	12	410,400
f) Class C2 - (169 lb.)	17,600	CY	12	211,200
g) Class D	58,300	CY	8	466,400
h) Class E	283,700	CY	7	1,985,900
i) Class F	118,800	CY	9	1,069,200
3. Dredging for armor toe	54,300	CY	15	814,500
4. Causeway Bridge		sum		500,000
5. Forklift Ramp		sum		50,000
6. Mooring dolphins	2	ea	100,000	200,000
7. Fenders, buoys		sum		40,000
8. Fuel distribution 8" fuel line, metering, accessories		sum		620,000
Subtotal				\$17,333,400
Contingency (10%)				1,733,300
TOTAL BASE PRICE				\$19,066,700

Operating and Maintenance Costs

Annual costs for personnel, equipment, fuel and supplies, other operating and maintenance requirements, as well as the port operator's overhead and profit, is estimated to be \$1.4 million per year.

As the facility as now envisioned would not provide onshore storage buildings, etc. or a new tank farm, the onshore area originally planned for them would be available for the port operator to lease to private organizations as a means of reducing annual costs.

The temporary facility would be somewhat less efficient than the TAMS port, primarily due to reduced operating area at the dock and an increase in trucking (or alternatively barging) required for aviation gas and motor fuel products.

As a single berth and less efficient offloading would result in barges occasionally waiting to offload their cargoes, allowance should be made for demurrage charges. For the initial years of operation it could be expected that the number of vessel waiting days would not exceed 12 per season. Assuming a daily demurrage charge of \$15,000 for an ocean-going tug and barge, this would result in an additional operating cost of \$180,000 per year.

For baseline tonnage volumes the overall cost of port operations would be approximately \$37.80 per ton.

Revenues

Assuming the port operator collected revenues based on the cargo tonnage moving through the port each year, and to prevent overall transportation costs from increasing, the upper limit on the annual charges would be the literage cost (currently averaging \$76.90 per ton) less the cost of port operations (\$37.80 per ton). Using an average annual cargo volume of about 41,000 tons, revenues to the operator after deducting the operating and maintenance costs would be approximately \$1.6 million per year.

Financing Alternatives

Net revenues to the port operator would allow partial private funding of the capital cost using this approach. The balance of the base construction cost would require State funding. Depending upon the length of time the port is operated in this manner, as much as \$12 million in State funds might be needed.

Additional facilities such as water service or tank farms should be funded as required by anticipated users.

LINE	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	BROUGHT FORWARD				15,482,900
	CAUSEWAY				
15	20 ^E Armor Rock	124,100	cu.yd.	32	3,971,200
16	8 ^E Armor Rock	58,600	cu.yd.	24	1,406,400
17	2 ^E Armor Rock	39,000	cu.yd.	20	780,000
18	1600# Rock	26,800	cu.yd.	18	482,400
19	200# Rock	45,800	cu.yd.	15	687,000
20	80# Rock	33,500	cu.yd.	15	502,500
21	Core Material - Dredge Tailings	205,000	cu.yd.	7	1,435,000
22	Core Material - Quarry Run	83,000	cu.yd.	15	1,245,000
23	Non-frost Sensitive Material	36,000	cu.yd.	9	324,000
24	7" Crushed Rock Base, 5" Asphalt Pavement	11,750	sq.yd.	48	564,000
25	Bridge		sum		500,000
	Total Offshore Facilities Phase I				27,380,400

15' THRU 24"
 SIZE OF ROCK
 SIZE OF CAUSEWAY
 HEIGHT OF PILING
 NO PILING

LINE	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	ONSHORE FACILITIES				
	<u>Land Acquisition</u>				
26	Phase A	19	acre	subject to	--
27	Phase B	41	acre	negotiation	--
	<u>Roads</u>				
28	Dredge Tailings	24,000	cu.yd.	7	168,000
29	Non-frost Susceptible Material	8,600		9	77,400
30	7" Crushed Rock, 5" Asphalt Pavement	5,750	sq. yd.	48	324,000
	STORAGE AREA (50,700 sq. yd.)				
31	Dredge Tailings	62,000	cu.yd.	7	434,000
32	Non-frost Susceptible Material	93,000	cu.yd.	9	837,000
33	8" Crushed Rock, 6" Asphalt Pavement	50,700	sq.yd.	58	2,940,600
	<u>BUILDINGS</u>				
34	Container Freight Station	9,600	sq.ft.	80	768,000
35	Vehicle Maintenance Building	4,000	sq.ft.	110	440,000
36	Lighting		sum		60,000
37	Utilities		sum		120,000
38	Security Fencing	3,600	lin.ft.	40	144,000
	Total Onshore Facilities Phase I (No Land Acquisition)				6,313,000

AS THRU 33
 REDUCED -
 NO PAYING

DELETED

LINE	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	UTILITIES - PHASE I				
39	Water Distribution (See Figure 8.1)		sum		589,400
	Furnish & install 7900 l.f. 2" ϕ , 1000 l.f. 4" ϕ , 800 l.f. 2 1/2" ϕ , 1000 l.f. 6" ϕ , and 1000 l.f. 2" ϕ Ins. PVC Pipe				
	FUEL DISTRIBUTION				
	Alternate I (See Figure 8.1.)				
40	Diesel Fuel		sum		653,600
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe				
41	Jet Fuel		sum		637,400
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe				
42	Unleaded Gasoline		sum		844,900
	Furnish & install 8000 l.f. 6" ϕ bl. steel pipe				
43	Unleaded Gasoline		sum		781,800
	Furnish & install 8000 l.f. 6" ϕ bl. steel pipe				
44	Regular Gasoline		sum		770,400
	Furnish & install 8000 l.f. 6" ϕ bl. steel pipe				
45	Corrosion Protection		sum		100,000
46	Utility Bridge		sum		300,000
	SUBTOTAL				4,088,100
	Alternate II (See Figure 8.1.5)				
47	Diesel Fuel		sum		1,010,100
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe and 1 14,000 bbl tank				
48	Jet Fuel		sum		1,112,300
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe and two (2) 8500 bbl tanks				

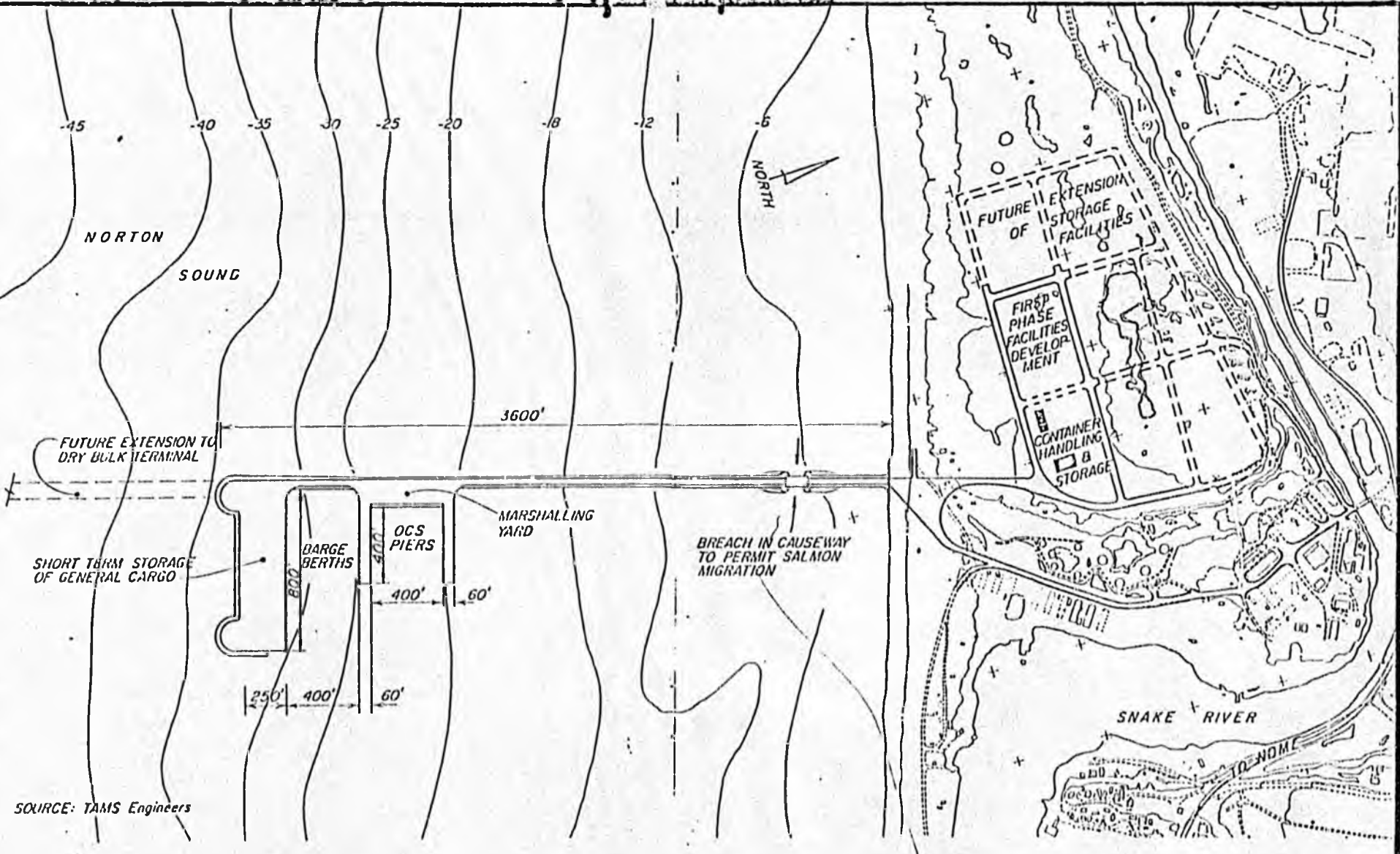
OPTIONAL (BY OTHERS)

**40 THRU 46 WITH
NO INTRU
RE PLACED WITH
ONE 8" LINE**

**47 THRU 54
DELETED**

3600 FEET . \$49,000,000

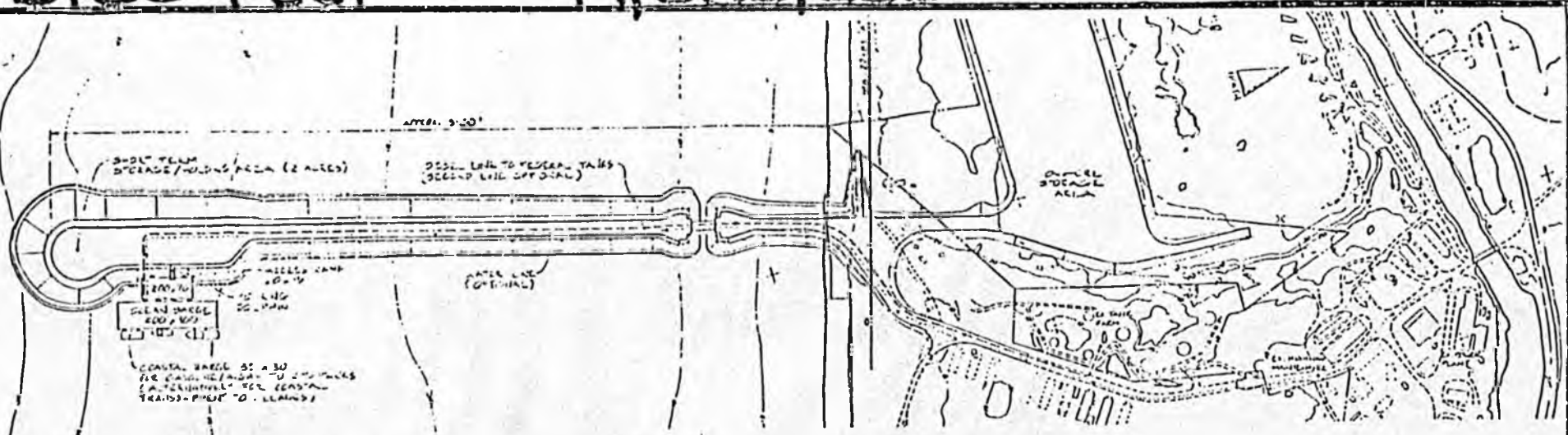
FIXED BERTHING AREA



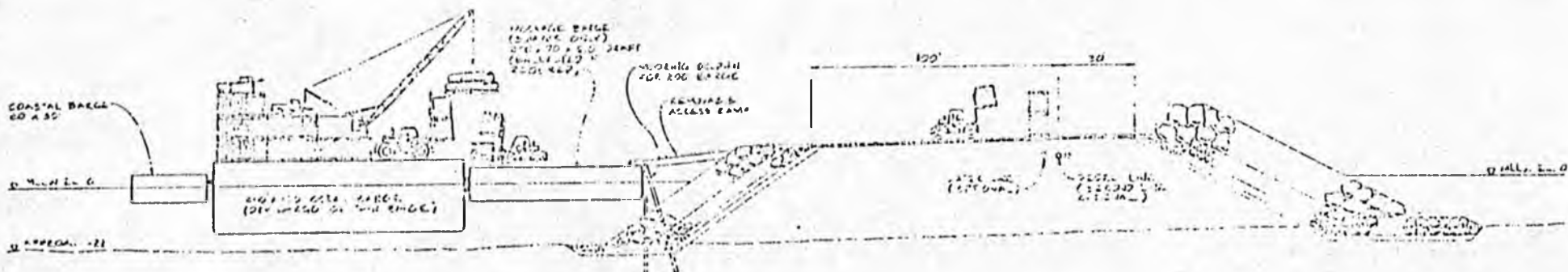
SOURCE: TAMS Engineers

FIGURE 1.2
PORT OF NOME PRELIMINARY LAYOUT

3100 FEET . \$19,000,000



PLAN
SCALE 1" = 200'



SECTION
SCALE 1" = 20'

- UNLOADING - SOLID LUG - CRANE
20' x 20' FOR 2 PERS.
- WALKWAY - 20' - 20' - 20' - 20'
- WELDS - DIESEL - PUMPING FROM BARGE ONBOARD PUMP
- SAFETY LIFELINES - LUGS AND/OR TIE-UP LIFELINE
- TRANSFERMENT - BARGE AND/OR DIESEL BARGE
- DIESEL TANKS AND/OR PUMP FOR TRANSFER TO COASTAL BARGE

NOTE: ALL DRAWINGS
TEMPORARY BARGE DOCK

PORT OF NOME
TEMPORARY BARGE DOCK BONDING ANALYSIS

I. Comparison of Trucking Fuel vs Barging

Fuel unloading costs using tractor with twin tanks to deliver to in-city tanks:

Round-trip mileage double trailer
tractor combination
car haul @ 10,000 gal.
(conversation w/Chevron
Seattle, 20 September)

One-way $\begin{array}{r} 3600' \\ 1100' \\ 2000' \\ \hline 6700' \end{array} \times 2 = 13,400' = 2.5 \text{ miles round trip}$

Baseline Fuel Quantities

	<u>%</u>	<u>Tonnage</u>	<u>Volume*</u> (gallons)
Unleaded Gas	6.5	1,900	540,000
Regular Gas	8.6	2,600	740,000
Avgas - 80/97	0.7	200	60,000
Avgas - 100/130	8.6	2,600	740,000
Jet A-50	32.6	9,800	2,800,000
Diesel	43.0	12,900	3,690,000
		30,000	8,570,000

* @ 7 lbs/gal.

Truck Trips Required

Number of Trips Required/year

Unleaded Gas	54
Regular Gas	74
Avgas 80/87	6
Avgas 100/130	<u>74</u>
Total	208 trips/year

Loading time per trip (@ 500 gpm) $\frac{10,000}{500} \times 1.5 = 30 \text{ min}$

Round trip travel time 2.5 mi @ 15 mph 10 min

Unloading time (@ 250 gpm) $\frac{1000}{250} \times 1.5$ 60 min

Total 100 min round trip

Typical barge load - 8,000 tons = 2,300,000 gallons

Worst case all gas, aviation gas on one barge:

One truck could make 12 trips/day (at 80% operating time).

Using 3 trucks: $36 \times 10,000 = 360,000$ gal/day

$\frac{2,300,000}{360,000} = 6.4$ days per barge (worst case)
total

Operating Costs

A. Trucking Fuel

Labor - @ 350 hrs x \$50/hr = \$17,500

Truck operating costs/mile

208 trips x 2.5 miles = 520 miles = 1,600
x \$3.00/mile

3 (\$100,000/truck) with
accelerated depreciation (4 yr) = 75,000
Total = \$94,100

Plus demurrage charges

tug and barge (\$15,000/day x 6 days) \$ 90,000
Subtotal \$184,100

plus OH & Profit (30%) 55,230
Total \$239,330

2.3×10^6 gal = \$0.10/gal = \$1.20/100 wt

B. Lightering

Lightering - using two barges can lighter = 1,850 tpd
(WAATS p. 4-137)

for 7,300 tons requires $\frac{7300}{1850} = 4$ days

Arctic lighterage tariff @ 3.30/100 wt = \$0.28/gal

Conclusion - use trucking (\$0.10/gal vs \$0.28/gal)

II. O&M Costs

For estimate of O&M costs for revised harbor use basis of Table 3.1 - Economic Development Analysis.

Personnel (from Table 3.1)	280,000	
+ fuel hauling labor	12,500	
+ additional driving to town (see below)	<u>5,000</u>	297,500
Equipment, utilities & misc.	376,000	
+ truck operating costs for fuel	51,600	
+ 3 additional trucks for haul to town	<u>40,000</u>	467,600
Maintenance - assume \$300,000 for dolphin maintenance/replacement, grading, etc		300,000
Docking barge rental/purchase, plus annual installation/removal - annual cost		<u>75,000</u>
Total		\$1,140,100
Annual demurrage - up to 12 days @ 15,000/day		180,000

Driving to town - additional 1.5 mile round trip at 10,000 tons/year dry cargo, average load @ 8-10 tons require additional 1000-1250 trips

for average 20 mph driving time @

4.5 minutes additional time/trip
x 1250

5625 minutes = 93.75 hrs at 70% efficiency - use
140 hrs

140 hrs x $\frac{\$50,000}{2000 \text{ hrs}}$ = 3,500 use \$5,000 therefore negligible

III. Summary - Bonding Capacity

For bonding capacity - assuming leasehold operation

total annual operating costs	\$1,140,000
leaseholder O&M & profit (20%)	<u>228,000</u>
	\$1,368,000
revenues available @ 75.90/ton x 41,000	\$3,111,900
less potential dumurrage	< <u>180,000</u> >
Subtotal	\$2,931,900
less leaseholder O&M & profit	< <u>1,368,000</u> >
Net Revenues*	\$1,563,900

Bonding Capacity (1.5:1 bond coverage, 10% @ 20 yrs) \$8.9 million ←
for city operation - (no profit) = \$10 million

*Chargeable on a per ton basis to leaseholder.

TABLE 3.1
OPERATION AND MAINTENANCE COSTS — 1935
(1962 dollars)

OPERATION		ESTIMATED COST (1962 dollars)
Personnel	Salary ¹	
1 Harbormaster	55,000	55,000
2 Longshoremen Full time	50,000	100,000
10 Longshoremen Quarter time	50,000	<u>125,000</u>
		Subtotal 280,000
Equipment	Unit Cost ²	
2 Cranes	100,000	200,000
3 Truck-Tractors	20,000	60,000
10 Trailers	1,000	10,000
2 26-Ton Forklifts	30,000	60,000
2 5-Ton Forklifts	8,000	<u>16,000</u>
		Subtotal 346,000
Utilities		10,000
Miscellaneous ³		20,000
 MAINTENANCE		
Buildings		40,000
Storage Yards		10,000
Docks/Fenders (replace 5 years)		100,000
Causeway Surfacing		200,000
Utilities		<u>30,000</u>
		Subtotal <u>380,000</u>
 TOTAL OPERATION AND MAINTENANCE COSTS		 1,036,000

¹Includes benefits.

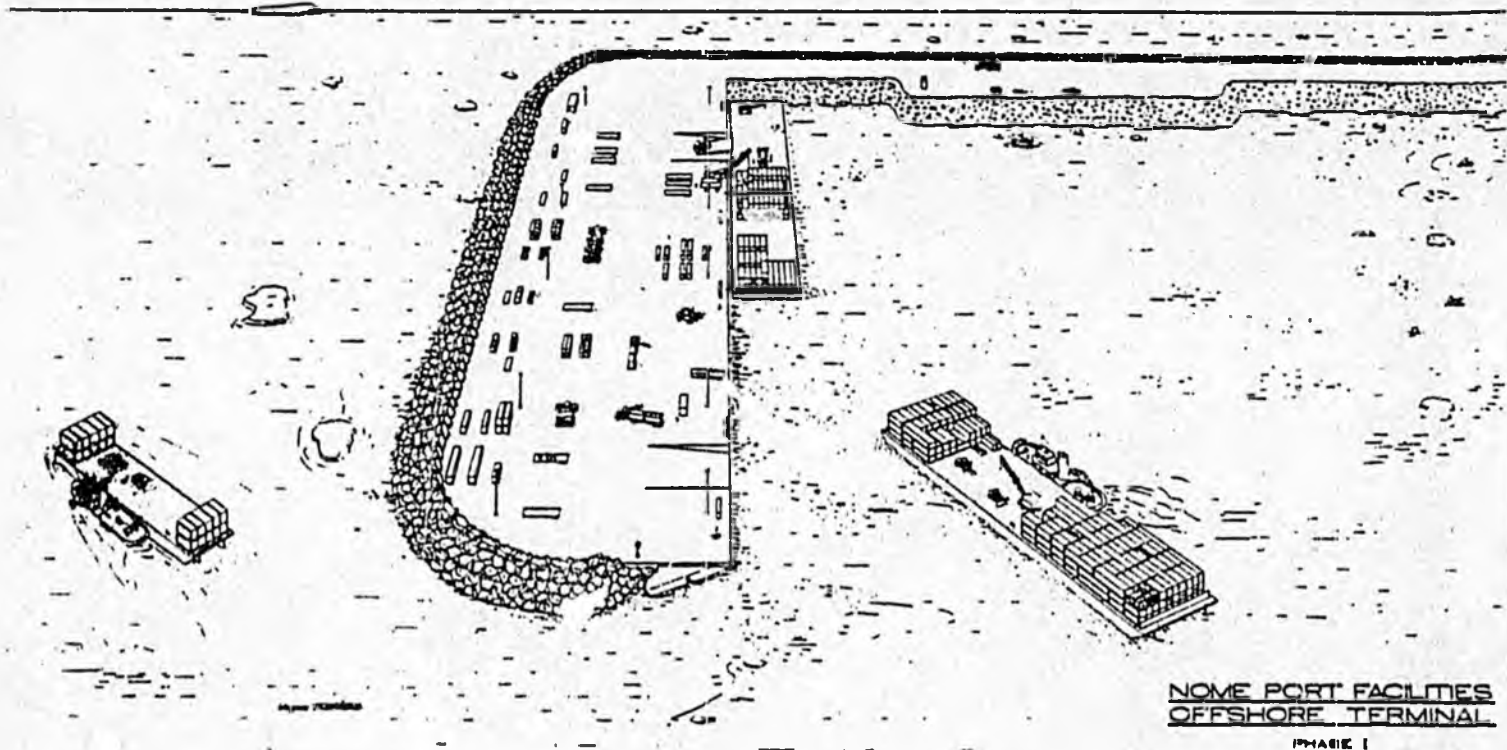
²Includes equipment operating and replacement costs.

³Includes administrative overhead, miscellaneous supplies, etc.

Source: TAMS Engineers

NOME PORT FACILITIES

PHASE I



NOME PORT FACILITIES
OFFSHORE TERMINAL

PHASE I

TECHNICAL INFORMATION BULLETIN

TAMS

TIPPETTS-ABBETT-McCARTHY-STRATTON ENGINEERS
A PROFESSIONAL CORPORATION

ALASKA

PROJECT: Port of Nome Causeway and Onshore Facilities

OWNER: The City of Nome, Alaska

FUNDING State of Alaska (DOT/PF)

DESIGN ENGINEERS: Tippetts-Abbett-McCarthy-Stratton (TAMS)

DESIGN COMPLETION: Estimated for February 1983.

CONSTRUCTION BID DATE: Unknown, depends on the City of Nome obtaining funding from the State of Alaska Legislature. Possibly in mid-summer 1983.

AVAILABILITY OF PLANS: Plans will not be made available until the City is prepared to go ahead with construction. Incomplete preliminary plans and study materials may be viewed at TAMS offices by arrangement.

PROJECT DESCRIPTION: The City of Nome, situated on the north shore of Norton Sound (Figure 1) has a shallow harbor which precludes the docking of vessels drawing more than 6 feet of water. Consequently all cargo is lightered from barges anchored up to 1 mile offshore.



Fig. 1 Location Plan

The City proposes to build the new port in three phases. The first level of development, shown in Figure 2 will provide two 400 foot barge berths at an offshore terminal connected to the shore by a 3500 foot causeway. Later phases of development will include two additional piers for oil rig service vessels and a bulk ore load out facility.

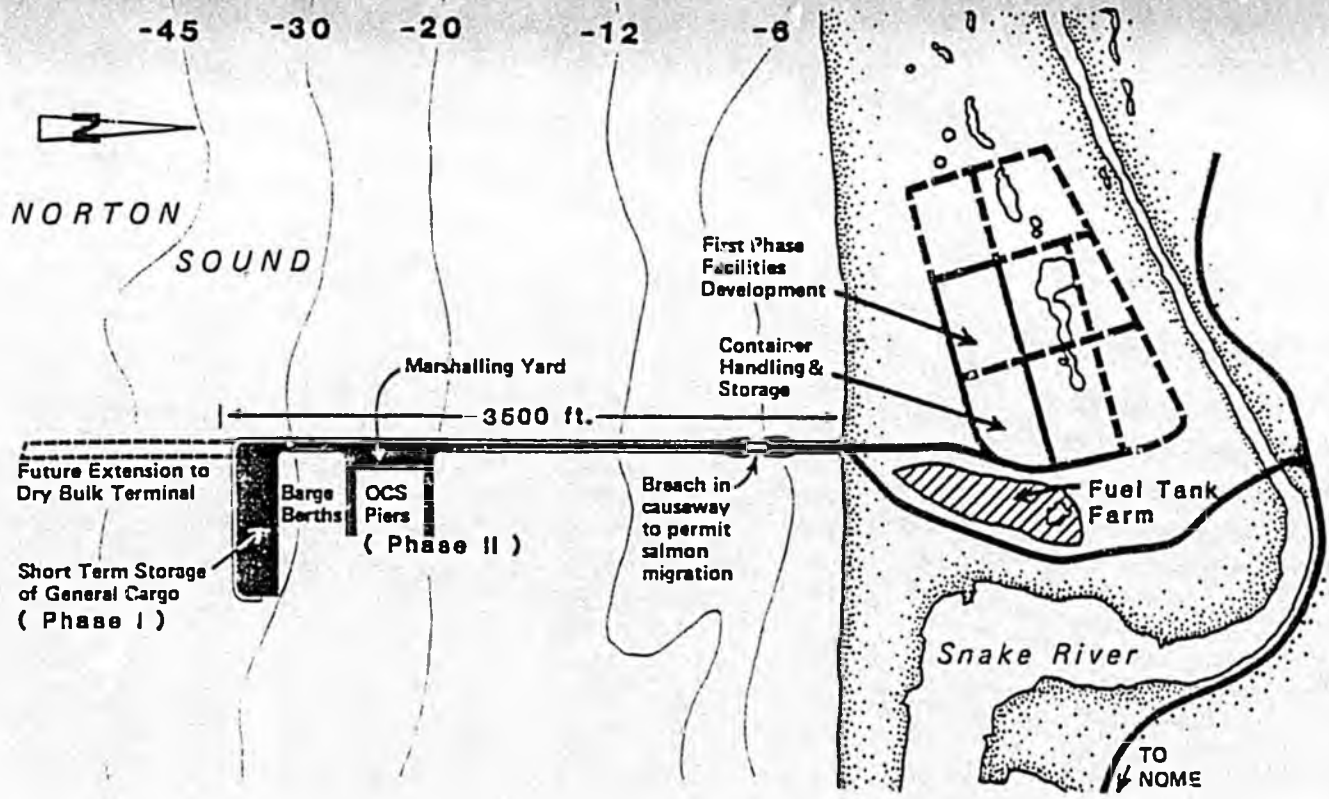


Fig. 2 Layout of Port

STRUCTURAL DETAILS:

Causeway

The causeway, shown in Figures 3 and 4, will be a rubble mound structure with 15-20 ton armor protection to the south and west faces and 8-12 ton armor on the east face. Utility lines will be direct buried in two utility corridors. The causeway roadway and offshore terminal area will be paved with asphalt; axle loads on the facility are expected to be 120,000 pounds.

Causeway Breach

Approximately 400 feet from shore the causeway will be breached and the opening crossed with a 98 foot bridge of prestressed concrete girders.

Offshore Terminal

The offshore terminal will provide 4.6 acres of short term open storage area (no buildings).

Dock Structure

The main dock structure to the offshore terminal will be constructed from 30 foot diameter by 33 foot high circular concrete caissons, as shown in Figure 5. Wall thickness is 12 inches with an 18 inch base giving a weight of 315 tons per

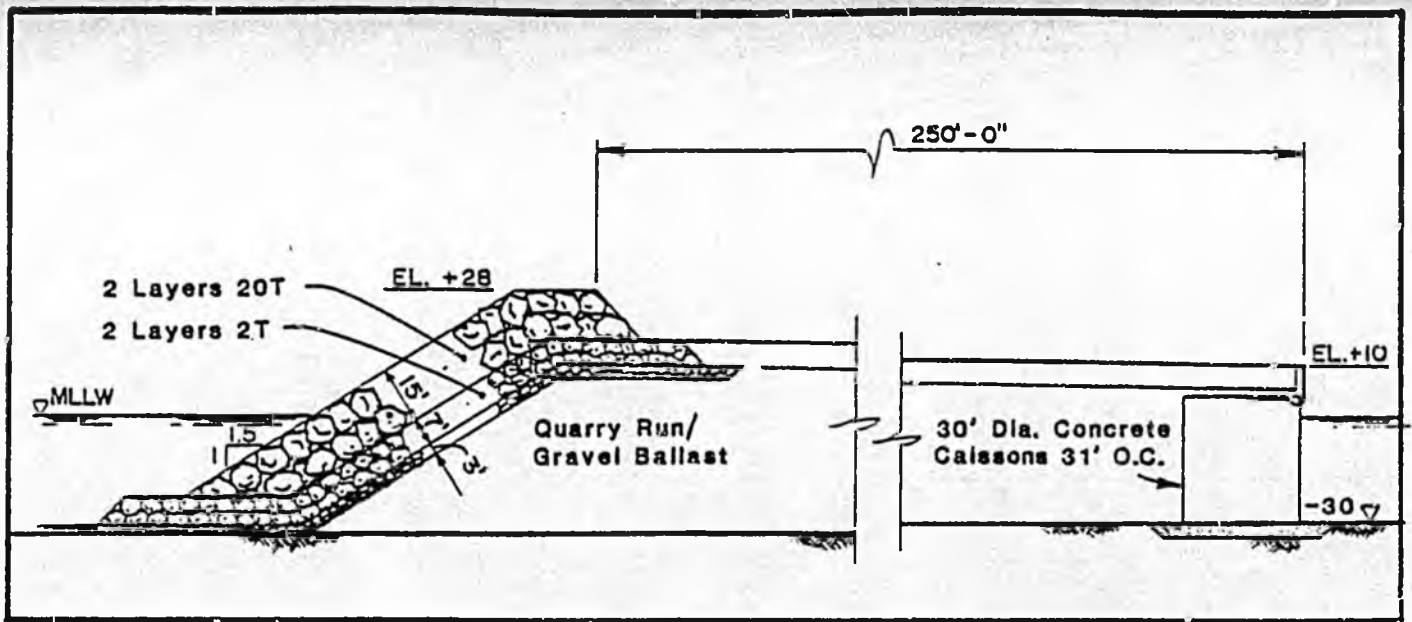


Fig. 3 Typical Section - Offshore Terminal

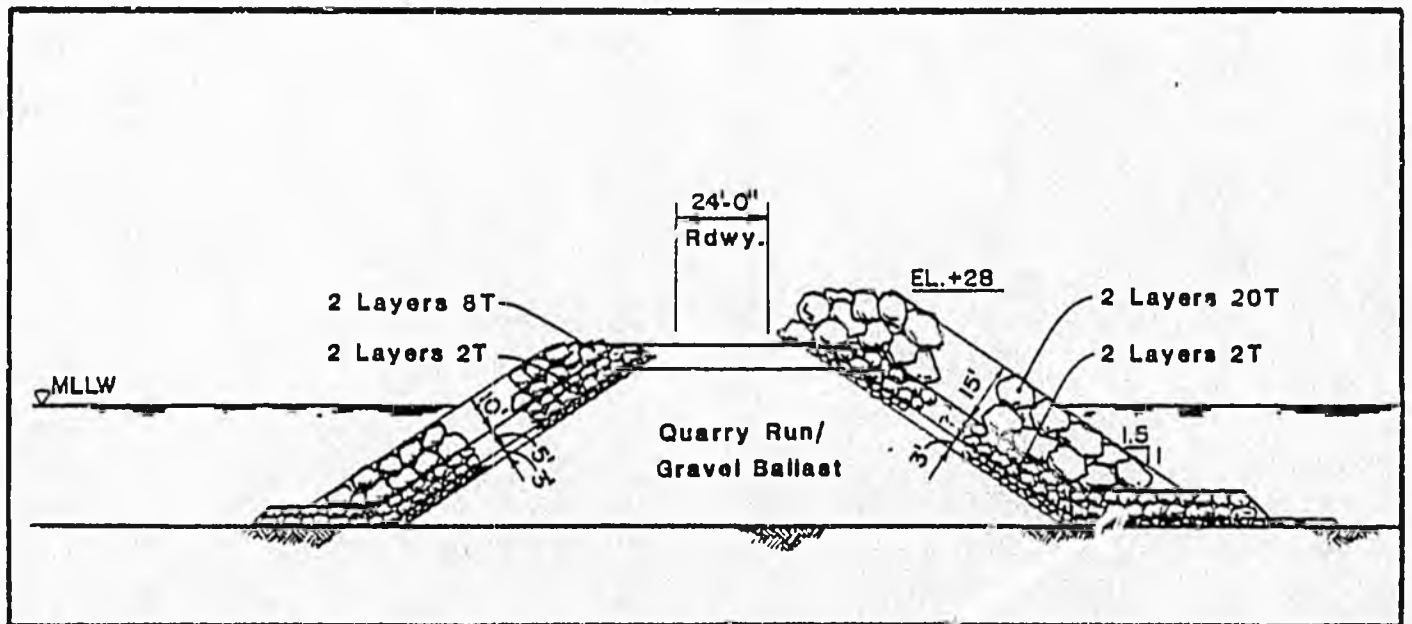


Fig. 4 Typical Section - Causeway

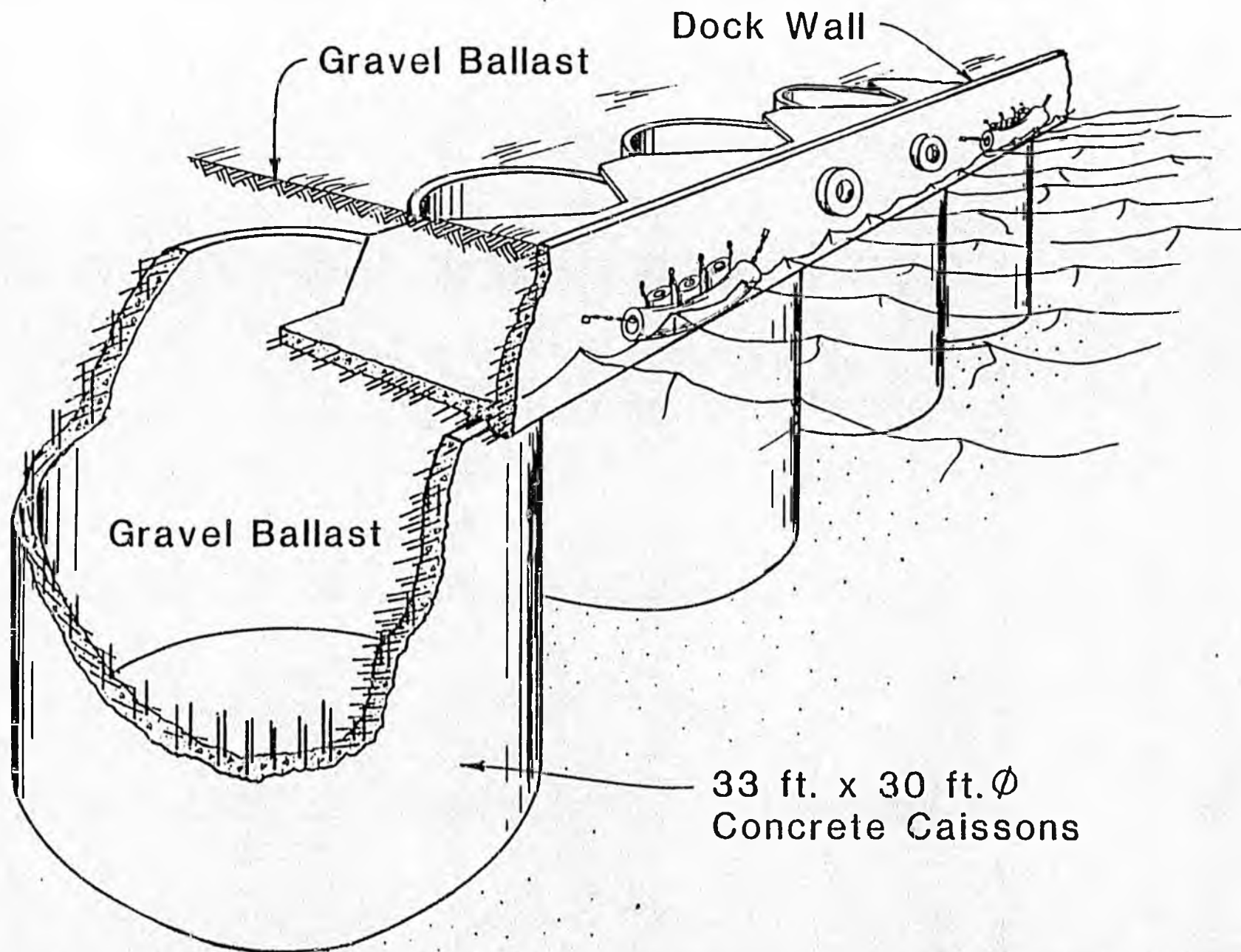


Fig. 5 Dock Structure and Caissons

caisson. Epoxy coated reinforcement is expected and an epoxy outer coating may be required over the area of the caisson likely to be subjected to ice abrasion.

Onshore Facilities

1. 10 acres of open storage on a 9 foot thick gravel pad.
2. Container Freight Station: 8000 square feet of container handling area plus 1600 square feet of office space using pre-engineered metal buildings.
3. Vehicle Maintenance Shop: 3200 square feet of work area with a 5 ton crane.

Fuel System

Since 75% of all cargoes imported to the region are bulk petroleum products, a comprehensive fuel unloading, distribution and storage system is required. The main offloading point will comprise 4 product unloading arms and pipework to the tank farm area shown in Figure 6. New tanks will be constructed within the existing fuel storage area.

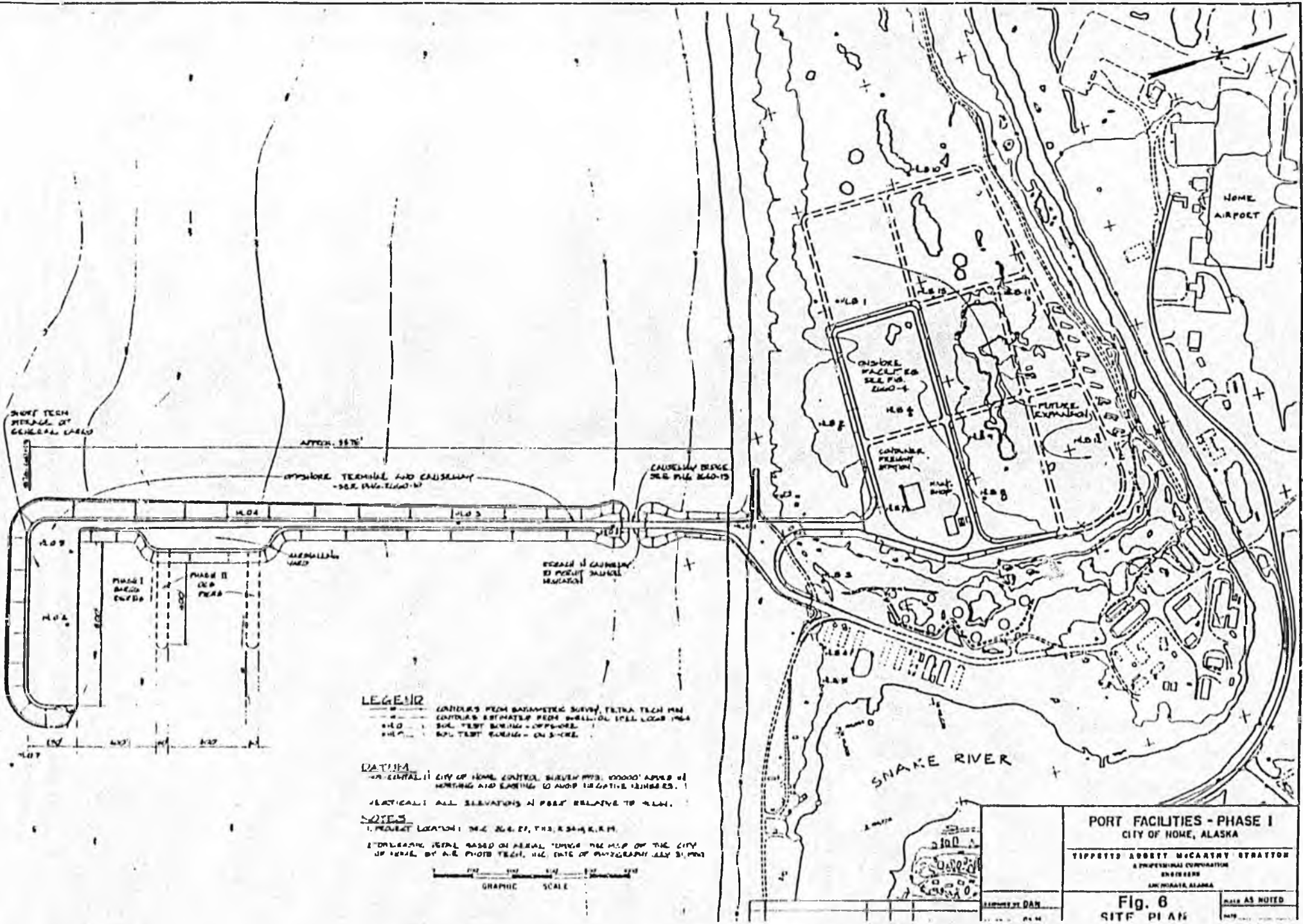
Mechanical and Electrical

The utilities corridor along the causeway will carry high and low voltage electrical service, telephone, lines for a variety of types of fuel, and water lines for fire fighting. At the terminals and berths there will be navigation lighting and illumination for work areas.

CLIMATE:

Norton Sound is open to navigation from mid or late June to late October or mid-November when sea ice from the Bering Sea collects along the shoreline. Shorefast and floating ice cover is normally established by January and remains to a distance of approximately 1 mile from the shoreline until break up (Figure 7). Winter temperature minimum averages -10° F and rarely falls below -40° F. Summer temperatures rarely exceed 55° F.

The predominant storm direction is from the southwest. A 100 year significant wave height of 16.5 feet is projected for the offshore terminal area, accompanied by a storm tide which in 1974 caused a 10 foot set up at the City dock in the Snake River.



SHORE TECH
DETAILS OF
GENERAL LAYOUT

APPROX. 3575'

OFFSHORE TERMINAL AND CAUSEWAY
- SEE FIG. 260-10

CAUSEWAY BRIDGE
SEE FIG. 260-10

HOME
AIRPORT

ONDORE
FACILITY
SEE FIG.
260-4

FUTURE
EXPANSION

CAUSEWAY
PRESENT
SECTION

HAIR
SHOP

LEGEND

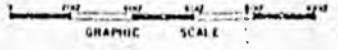
- CONTOURS FROM BATHYMETRIC SURVEY, TETRA TECH INC.
- CONTOURS ESTIMATED FROM SWELLION 1964 LOGS 1964
- SHIP TEST BURNING - OFFSHORE
- SHIP TEST BURNING - ON SHORE

DATUM

SEA LEVEL: CITY OF NOME CONTROL SURVEY PINS 10000' APART OF
MONTANA AND EASTING TO AVOID NEGATIVE NUMBERS.

NOTES

1. PROJECT LOCATION: 1/4 SEC. 27, T33, R34, S16, E.M.
2. DRAINAGE DETAIL BASED ON AERIAL PHOTOGRAPHY AND MAP OF THE CITY
OF NOME, BY A.I.C. PHOTO TECH, INC. DATE OF PHOTOGRAPHY JULY 31, 1964



SNAKE RIVER

**PORT FACILITIES - PHASE I
CITY OF NOME, ALASKA**

TIPPETT ABBOTT MC CARTHY STRATTON
& PROFESSIONAL CORPORATION
ENGINEERS
ANCHORAGE, ALASKA

**Fig. 6
SITE PLAN**

SCALE AS NOTED
DATE

DESIGNED BY DAN
DATE

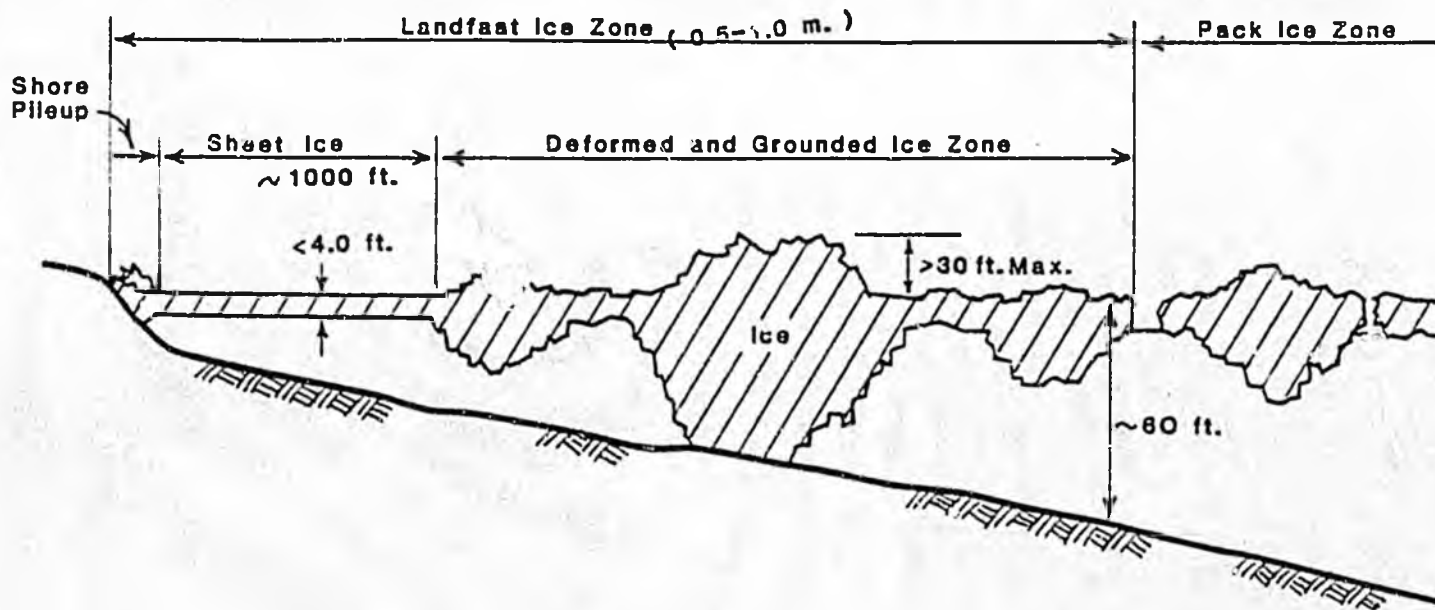


Fig. 7 Shorefast Ice Cover

MATERIALS:

The primary source of core material for the causeway and offshore terminal is expected to be one of a number of gold dredge tailing dumps located at 2-5 mile radii from the project site.

Rock armor for protection against wave and ice attack is expected to be obtained from the Cape Nome quarry, approximately 13 miles east of the project site as shown in Figure 8. Highway access to the quarry site is maintained in the summer months only.

GROUND CONDITIONS:

All onshore facilities are located in a permafrost area which must be protected by a gravel blanket. The permafrost is patchy towards the shoreline and the sand spit to the east of the causeway which has been worked for gold extraction exhibits very low bearing capacity.

SITE INVESTIGATIONS:

During a borehole program carried out in February 1982, 7 offshore and 13 onshore holes were drilled. Bedrock was encountered under the causeway location at depths varying from 40-60 feet below the seabed. Overlying materials sampled comprised glacial silts, tills and sands.

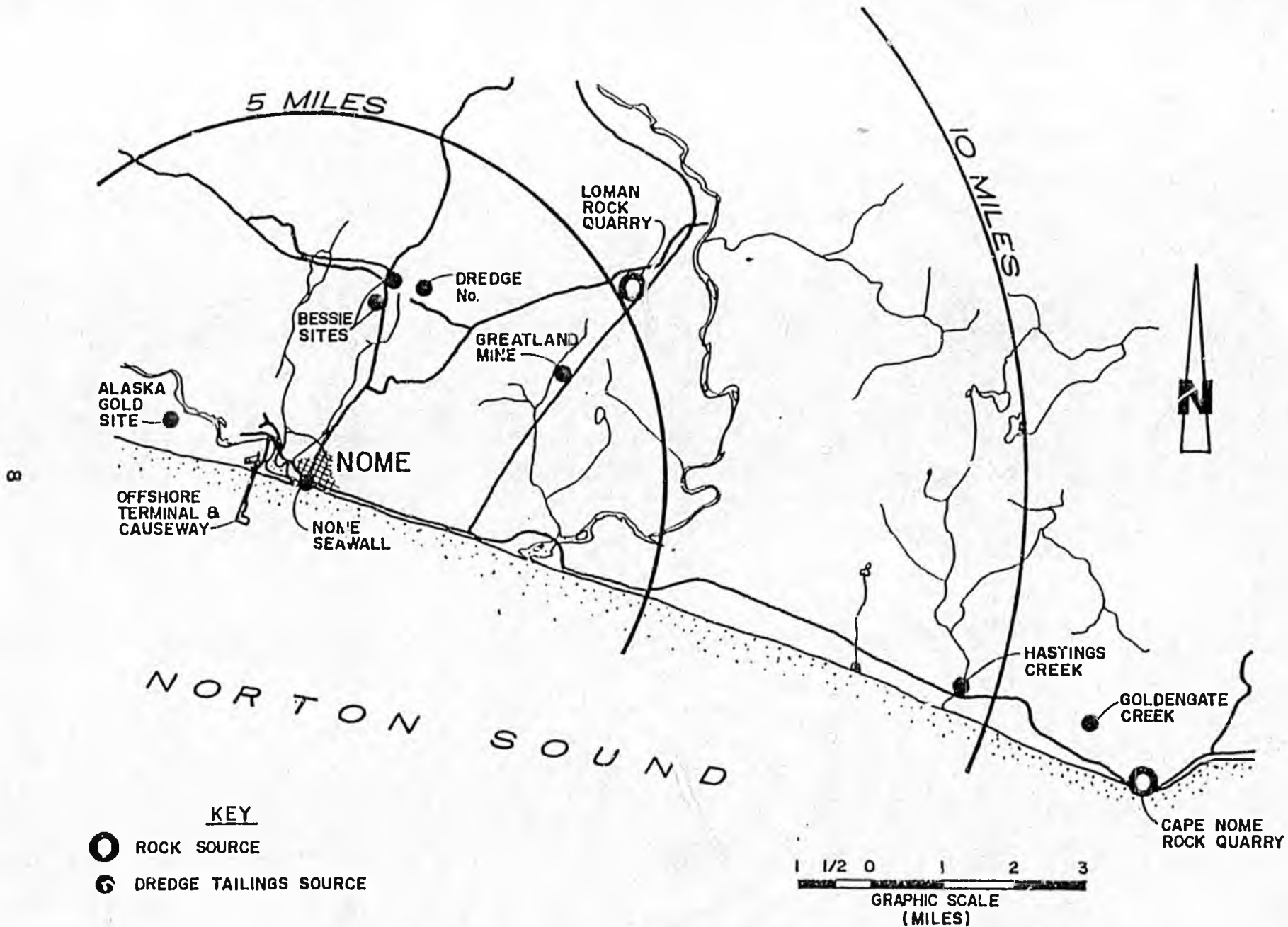


Fig. 8
LOCATION MAP - SOIL AND ROCK BORROW SITES

Materials source investigations carried out in June 1982 were followed by a test blast at the Cape Nome quarry. The results of these and all other site investigations will be made available to contractors at bid time and may be reviewed by arrangement with TAMS.

PERMIT STATUS:

An application for a Corps of Engineers construction permit was submitted in August 1982. Prior to the application extensive discussions with interested state and federal agencies were carried out to resolve concerns and incorporate mitigation measures where necessary.

MATERIALS QUANTITIES:

A preliminary, abbreviated list of materials quantities for the Phase I construction contract is attached.

Further information on the project may be obtained from the following:

TAMS
4791 Business Park Boulevard
Anchorage, AK 99507
Phone (907) 276-6565

After February 5, 1983 - (907) 562-2282

TAMS

TIPPETTS-ABBETT-McCARTHY-STRATTON □ ENGINEERS
A PROFESSIONAL CORPORATION

ALASKA

LINE	DESCRIPTION	QUANTITY	UNIT
	UTILITIES - PHASE I		
39	Water Distribution		sum
	Furnish & install 7200 l.f. 8" ϕ , 1000 l.f. 4" ϕ , 8600 l.f. 2½" ϕ , 1000 l.f. 6" ϕ , and 1000 l.f. 2" ϕ Ins. PVC Pipe		
	FUEL DISTRIBUTION		
	<u>Alternate I</u>		
40	Diesel Fuel		sum
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe		
41	Jet Fuel		sum
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe		
42	AVGAS 100/130		sum
	Furnish & install 8000 l.f. 6" ϕ bl. steel pipe		
43	Unleaded Gasoline		sum
	Furnish & install 8100 l.f. 6" ϕ bl. steel pipe		
44	Regular Gasoline		sum
	Furnish & install 8000 l.f. 6" ϕ bl. steel pipe		
45	Corrosion Protection		sum
46	Utility Bridge		sum
	SUBTOTAL		
	<u>Alternate II</u>		
47	Diesel Fuel		sum
	Furnish & install 5800 l.f. 8" ϕ bl. steel pipe and 1 14,000 bbl tank		
48	Jet Fuel		sum
	Furnish & install 5800 l.f. 8" ϕ l. steel pipe and two (2) 8500 bbl tanks		

JOINT MEETING - KAWERAK/AVCP

NOME, ALASKA - JANUARY 22, 1983

RESOLUTION 83- 7

WHEREAS, the City of Bethel has requested funds for the construction of Sea wall in the City of Bethel; and

WHEREAS, the City of Nome has requested funds for the construction of a Deep Sea Port Facility in the City of Nome; and

WHEREAS, these facilities will benefit the villages and people of each Region;

NOW THEREFORE BE IT RESOLVED by the Joint Convention of AVCP and Kawerak, Inc.

that these facilities be funded as requested, by the Legislature, during this legislative session for construction this year.

Ivan M. Ivan

Ivan M. Ivan, President, AVCP

Caleb Pungowiyi

Caleb Pungowiyi, President, Kawerak

Willie Kasayulie

Willie Kasayulie, Chairman

Weaver Ivanoff

Weaver Ivanoff, Chairman

Sitnasuak Native Corporation

JAN 23 1983

Post Office Box 905 • Nome, Alaska 99762 • (907) 443-5296

February 18, 1983

Rep. John G. Fuller
State Capitol
Pouch V
Juneau, Alaska 99811

Dear Rep. Fuller:

Enclosed is a copy of Sitnasuak Native Corporation Board of Directors Resolution No. 83-03 in support of the Nome port project, which was passed by a unanimous vote of the Directors at a January 26, 1983, Board meeting.

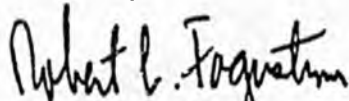
The port project will give the City of Nome and the region a vehicle to diversify our economic dependency on the federal and state budgets.

With the port we can begin to develop the mineral potential in the region as well as offshore oil, which will create employment for the people.

Your support for this project is needed.

If you have any questions, please feel free to contact me.

Sincerely,



Robert L. Fagerstrom
President

Enclosure

SITNASUAK NATIVE CORPORATION

RESOLUTION NO. 83-03

WHEREAS, the Village Corporations Board of Directors from the Bering Straits Native Corporation region have endorsed the Nome Port Project at their meeting in Nome on January 19, 1983; and

WHEREAS, the IRA Councils of the twenty (20) villages in the Nome area have endorsed the Nome Port Project at their meeting in Nome on January 23, 1983; and

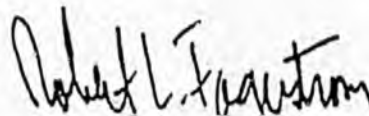
WHEREAS, the construction of the port in Nome greatly benefits the people of this region in lowering the freight costs throughout the region; and

WHEREAS, construction of the Nome Port Project greatly enhances the economic mineral potential of the Seward Peninsula whereby increasing the economic development of this area and providing jobs and a better standard of living for the people of this area;

NOW THEREFORE BE IT HEREBY RESOLVED by the Board of Directors of Sitnasuak Native Corporation that we support the Nome Port Project; and

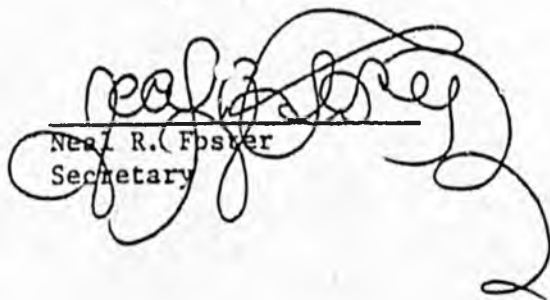
BE IT FURTHER RESOLVED that the State of Alaska support the port facility for the City of Nome and that the legislature appropriate funds for the capital project.

DATED this 26th day of January, 1983.



Robert L. Fagerstrom
Board of Directors President
Sitnasuak Native Corporation

ATTEST:



Neal R. Foster
Secretary

Port design to hold off shifting ice

For five months of the year, it's open water; give or take a few pieces of floating ice. But for seven months, it's one of the most awesome sights in Alaska — the frozen, moving Bering Sea.

Engineering innovations, made possible in part by research at universities in Iowa and Florida, are going into the design of a new medium-depth water port at Nome.

These features should give the facility the potential for year-round use, according to the design engineers, Tippetts-Abbett-McCarthy-Stratton (TAMS).

Sea ice has long been respected as a formidable foe for engineers trying to build something in or around it. The massive forces that a sheet of ice and the tide carrying it can develop are a primary concern of everybody concerned with offshore oil development in the arctic, or marine transportation in the spring and fall.

The port will consist of a 3,600-foot causeway extending from the shore, near the mouth of Nome's Snake River, leading to the offshore terminal.

The causeway has been designed with ice resistance in mind. Design studies were

conducted by the Institute of Hydraulics Research at the University of Iowa.

A model of the causeway was placed in a 60-by-20-foot tank, and sheets of ice were pushed up against it. It was discovered during the tests that ice would ride up over the causeway, despite special sloping sides.

Because of the problem of ice override, the design was changed so that one side of the causeway is higher than the other, allowing built-up ice to be bulldozed off.

"The cost savings of this system over an elaborate ice prevention scheme are substantial," said Michael Horton, TAMS project manager.

Ice isn't the only problem confronting the ports planners. Erosion of the material due to sea action is another primary concern.

Large boulders, some weighing up to 20 tons, will be placed on the slopes to act as breakwater barriers.

Boulders and gravel needed for the construction are available from a quarry and gold mining tailings in the Nome area.

News-Miner 12/9/82

Jan, 1989

CITY OF NOME
PORT FACILITY PROJECT - PHASE I BARGE DOCK

PROJECT FINANCING AND TRANSPORTATION COST IMPACTS

SUMMARY OF QUESTIONS FREQUENTLY ASKED AND THEIR RESPONSES

How are Cargoes Currently Delivered to Nome?

The City of Nome serves as a transportation and distribution center for the Norton Sound and Seward Peninsula region. Approximately 12,000 people live within the Nome service area, with a population of over 3,400 in Nome.

The existing port facility is located at the mouth of the Snake River within the Nome city limits. Due to shallow draft and limited width the existing port can only accommodate small barges and tugs. Ocean-going vessels currently anchor one-half to one mile from shore, and cargo is transferred to smaller, shallow draft barges (lightered) for delivery to the sheet pile revetments along the river that serve as a dock.

The lightering operation is an inefficient and costly means of offloading cargoes. Lighterage tariffs add an average of \$75.90 to the cost of each ton delivered, equivalent to approximately 25% of the total cost of shipping cargo from Seattle to Nome.

To eliminate the need for lightering and to provide the transportation infrastructure needed for long term economic growth in the region, the City of Nome and Alaska DOT/PF have prepared a design for a modern port. The first phase development of the facility will include a 3100 foot rubble mound causeway extending to a floating dock in about 20-25 feet of water, and an open onshore storage area for cargo handling.

How Much Will Construction of the Port Cost?

The facility as currently planned is estimated to cost about \$19-20 million.

Statewide Oil Revenues Have Been Declining in the Last Few Years, and a State Grant for the Total Cost of Constructing the Port Appears Unlikely to Occur. Can a Portion of the Construction Cost be Financed Locally?

Some local construction money can be provided through financing based on port revenues. Port operations and maintenance are projected to cost the equivalent of \$35-40 per ton. If tariffs are set higher than that amount, the facility will generate additional revenues that could be used to pay back municipal revenue bonds or other types of construction financing.

How Much Could Be Locally Financed?

Potential revenues from port tariffs are limited. It would clearly not be in the best interests of the local residents to set tariffs at a level higher than the current lighterage costs. Consequently, the maximum revenues that could be derived would be based on a system of tariffs equivalent to an average of about \$75.90 per ton (the current lighterage rate). If that tariff level is adopted, up to about \$8 million could be financed by port revenues.

If \$8 Million Can Be Financed Locally, How Much Will the State Have to Provide?

Assuming a total project cost of \$20 million, the state will need to provide \$12 million in grant funds.

Will Transportation Costs Immediately Decrease After the Port is Built?

As initially planned two years ago, construction of the Nome port was to be funded entirely through a state grant. User charges (tariffs) for the port would then need only to recover all operating and maintenance costs, which as described above

are estimated to be on the order of \$35 to \$40 per ton or about half of current lighterage charges. Consequently a significant and immediate reduction in transportation costs was foreseen.

However, with the current emphasis on local participation in construction funding port tariffs may need to be set at a level comparable to current lighterage rates. Thus, there may be no initial cost savings to area residents.

With Potentially No Initial Cost Savings, How Can It Make Sense to Spend \$20 Million for a Port?

The project will provide major benefits to the community and region even without an initial reduction in transportation costs. Such benefits will include:

- Port tariffs will be relatively stable, as a large component of the revenues required will be for a fixed payment, long term debt. On the other hand, if lightering is continued then it is highly probable that the lightering costs will continue to escalate with the cost of living. Thus for each year that passes the port tariff will be increasingly less costly than lightering.
- Steady growth in population is forecast for the region. With the increasing population will come larger demands for cargo shipped to Nome. Thus, even with no other economic development in the region (an unlikely prospect) port revenues will increase and it may be possible to retire the debt early or reduce tariffs.
- The port will provide for more efficient, faster cargo offloading and loading, which will help keep costs down and encourage additional cargoes to be shipped through Nome as a regional center.

- After the construction debt is repaid (typically 20 years) port tariffs can be adjusted downward to reflect the decreased revenue requirements.
- Perhaps the most important reason for constructing the port is that it will serve as a major step in providing the transportation facilities needed for the long term economic growth of the region. The Seward Peninsula is one of the most highly mineralized areas in the country. Nome sits at the hub of a regional road network that extends near to many of the major identified ore deposits. With a port in Nome equipment and supplies can be brought in to explore and develop the deposits, and the expansion of the port to accommodate ore shipments can be readily implemented as development nears. The resulting direct and indirect employment will foster growth in the local and regional economies, and will provide benefits statewide.

COMMITTEE REPORT
SENATE

FURTHER:

FINANCE

2/10/84

Date March 20, 1984

Mr. President

The Committee on TRANSPORTATION considered HB 452

special appropriation to the Department of Transportation and Public Facilities for Phase I of the Nome Port Facility, etid.

and (a majority of the committee) (the committee) reports it back with the following recommendations:

- do pass
- do pass with attached amendment(s)
- replace with/or adopt CS for _____
- new title
- same title and recommends _____
- and attached a "LETTER OF INTENT" NEW FISCAL NOTE
- reports it back without recommendation
- recommends referral to _____ Committee

MEMBERS SIGNING
DO PASS

J. Korman

MEMBERS HAVING
OTHER RECOMMENDATIONS

John Taylor ^{11/6/84}

Perry Moss

Chairman

P. Moss

Chairman recommendation

PORT
OF
NOME

****PLEASE NOTE****

THE ORIGINAL FILE CONTAINS AN OVERSIZED DOCUMENT THAT IS UNSUITABLE FOR FILMING. PLEASE REFER TO THE ALASKA STATE ARCHIVES TO VIEW THE ORIGINAL.

A partner in development

Fairbanks' ties with Western Alaska—specifically, Nome—will become even more important if plans proceed to upgrade port facilities there.

Tuesday, Nome City Manager Ivan Widom treated the Fairbanks Chamber of Commerce to a look at plans for construction of a medium-draft port there.

Gov. Bill Sheffield's current capital budget for fiscal year 1984 includes \$12 million for the initial phase of construction of the port.

Supporters of the Nome port project believe it would stimulate economic development in the Seward Peninsula area. According to a press release from the city of Nome, half to two-thirds of the state's mineral reserves lie within 250 miles of Nome. Oil and gas development in the Norton Sound is another source of potential economic activity.

Nome has been isolated from the rest of Alaska for too long, as Fairbanksans know who have tried to make air connections.

Until Harold's Air Service began operating scheduled service to Nome under contract with Wien Air Alaska—and, since gave up the route at year's end, under its own certificate—air service was sporadic and unreliable.

"Those people have been short-changed in having to deal with Anchorage when their ties are with Fairbanks," Harold's Vice President Bill Fisher says in explaining his company's interest in providing air service to Nome and Kotzebue.

Harold's offers round-trip flights to Western Alaska five days a week, Monday through Friday. Planes leave Fairbanks at 7 a.m., arrive in Kotzebue at 8:30 a.m. Bering time, leave Kotzebue at 9 a.m., arrive in Nome at 10 a.m., leave Nome at 10:20 a.m. and arrive back in Fairbanks about 2 p.m. Alaska time.

Though jet service is available between Nome and Fairbanks, you have to fly to Anchorage first. Fisher said since Harold's began flying the Nome route under its own certificate in January, "We're getting more and more interest and more and more people. We intend to continue if we can, in the foreseeable future, decide it can be viable economically."

Will the construction of a modern port at Nome help strengthen that community's ties with Fairbanks? According to Widom, "With the services of a modern port, Nome should be in a position to become the region's center for economic development." Widom expects lower costs of doing business to help create jobs in industries such as petroleum development, mining and commercial fishing.

Phase one of the Nome port project will include construction of a 3,600-foot rubble mound causeway with a "fish breach"—a small bridge near the shoreline to allow passage for fish.

The port design includes berthing and loading facilities at the causeway's seaward end. Container and general cargo storage will be located onshore. The total project is estimated to cost \$40 million.

As Widom says, the project "holds a key for regional development with benefits reaching across the state."

We think Fairbanks will be the loser if we don't work hard to maintain and strengthen our ties with Nome. If this increased business activity turns to Anchorage for services and supplies, Fairbanks will lose a promising new partner in development.

Nome manager pushing plan for \$40 million port

With the services of a proposed new \$40 million port, Nome should be in a position to become the region's center for economic development, Nome City Manager Ian Widom told the Fairbanks Chamber of Commerce Tuesday.

Widom said funding for the port's construction is one of the best investments lawmakers could make with a small portion of Alaska's oil revenues, considering the statewide benefits he said would flow from development of the region's resources.

Gov. Bill Sheffield's current capital budget recommendation for FY 1984 includes \$12 million for the initial phase of construction of a modern port at Nome. As a backup measure, Rep. Jack Fuller (D-Nome) has sponsored

a bill calling for \$12 million to be appropriated from the state's general fund to the Department of Transportation and Public Facilities. The measure is currently under consideration by the House Finance Committee.

If initial funding is approved, the project will go to bid late this summer.

Phase one of the Nome port project includes construction of a rubble mound causeway three-fifths of a mile out into Norton Sound. In later phases, berthing and loading facilities at the causeway's seaward end and container and general cargo storage on shore will be added. This total project, designed by the engineering firm Tippetts-Abbett-McCarthy-



IAN WIDOM
Good investment

Stratton (TAMS) is estimated to cost \$40 million.

Widom said an estimated one-half to two-thirds of the state's mineral reserves lie within 250 miles of Nome. Along with anticipated oil and gas development in Norton Sound, he said the untapped mineral wealth of the Seward Peninsula will provide a broad base for economic development when a transportation link is established.

Nome port seen a boon to state

By MARGARET NELSON
Staff Writer

A modern port at Nome could mean total economic benefits in 1990 of more than \$115 million statewide, says an economist studying the feasibility of such a port.

A new port could stimulate petroleum, mining and commercial fishing in the area, says Jay Lyman, economist for Tippetts-Abbett-McCarthy-Stratton Engineers, who performed an economic analysis for the city of Nome.

High transportation costs and the lack of adequate facilities have hindered development of Alaska's northwest region. A port at Nome could eliminate these hurdles, according to Nome City Manager Ivan Widom. The port could eventually pave the way for economic activity benefitting the entire state, he said.

Phase one of the Nome port project includes construction of a rubble mound causeway three-fifths of a mile out into Norton Sound. In later phases, berthing and loading facilities at the causeway's seaward end and container and general cargo storage on shore will be added.

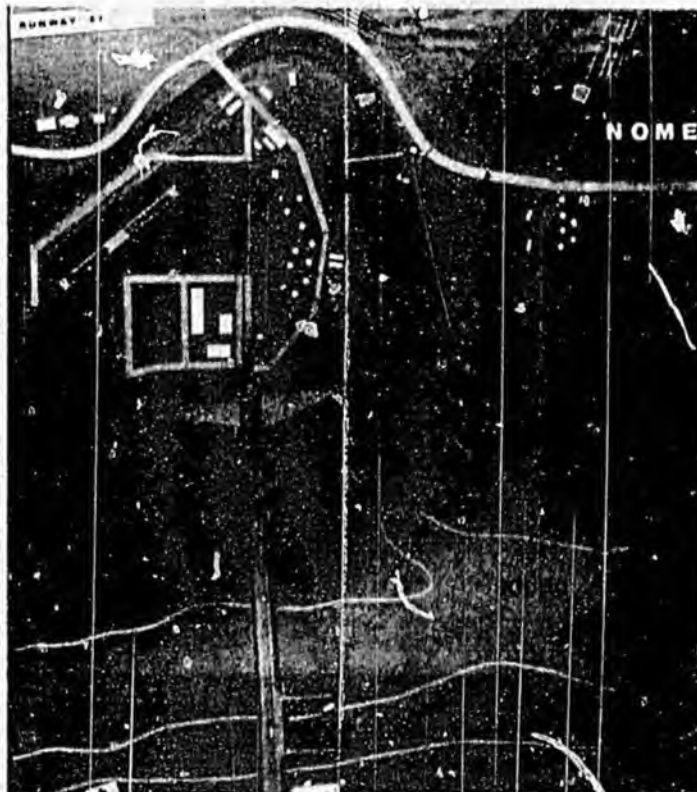
The total project, designed by TAMS, is estimated to cost \$40 million.

Gov. Bill Sheffield's current capital budget recommendation for FY '84 includes \$12 million for the initial phase of construction for the port.

A similar measure filed by Rep. Jack Fuller, D-Nome, calls for \$12 million to be appropriated from the state's general fund to the Department of Transportation and Public Facilities. The measure is under consideration by the House Finance Committee. If initial funding is approved, the project will go to bid late this summer.

First, a medium draft port could do away with the need for costly loading and unloading. The cost of shipping goods from sea barges to coastal vessels today is about 25 percent of the freight cost from Seattle, according to TAMS. With state funds to build the port, the average cost for cargo passing through Nome will be about \$9.50 per ton, a net savings over the current cost of about \$67 per ton of cargo.

"The lower cost of doing business will stimulate development of our area's vast natural resources," said Widom, "creating new jobs in industries such as petroleum development, mining and commercial fishing."



NEW NOME LOOK—The city of Nome is proposing construction of a modern port near the mouth of the Snake River to serve the northwest region of Alaska.

As for petroleum, the port will serve as a shipping center for materials and equipment needed in offshore development and will be designed to offer storage areas and a base for oil rig supply boats, TAMS economists said. If minimum estimates of oil and gas are discovered, direct and indirect employer levels for offshore development are estimated to be as high as 1,376 persons for 1990.

Northwest Alaska is one of the most highly mineralized areas in the United States. A port at Nome will serve as the transportation hub for commercial mining and operations, offering an export point for processed ores and concentrates and a staging area for incoming construction materials.

Nome port paves way for economic development

Historically, high transportation costs and the lack of adequate facilities have hindered development of Alaska's northwest region. A modern port at Nome will help eliminate these hurdles and pave the way for economic activity benefitting the entire state.

First, a medium draft port will do away with the need for costly lighterage. The cost of transshipping goods from sea barges to coastal vessels to lay is about 25 per cent of the freight cost from Seattle. With state funds to build the port, the average cost for cargo passing through Nome will be about \$9.50 per ton, a net savings over the current cost of about \$67 per ton of cargo.

Lower shipping costs will save about \$4.5 million to over \$13 million annually. These estimates are based on an economic analysis of the port project prepared for the City of Nome by TAMS Engineers.

"The lower cost of doing business will stimulate development of our area's vast natural resources," said Nome City



Many northwest Alaskan villages receive needed supplies from the outside world via Nome. Large shipments from Seattle, Portland, Anchorage and other ports are broken down at Nome and shipped on to the villages by boat, barge or airplane.

Manager Ivan Widom, "creating new jobs in industries such as petroleum development, mining and commercial fishing."

PETROLEUM

Currently the petroleum industry is assessing the potential for oil and gas development in Norton Sound. The Interior Department recently announced that a deep test well drilled last summer yielded "significant shows" of natural gas.

Although the development

potential offshore is not yet known, any level of exploration, development and production will bring more activity to the Nome port because of its nearby location.

The port will serve as a transshipment center for materials and equipment needed in offshore development and will be designed to offer storage areas and a base for oil rig supply boats. If minimum estimates of recoverable oil and gas are discovered, direct and indirect employment levels of offshore development are estimated to be 575 for 1985 and as high as

1,376 for 1990, according to TAMS economist Jay Lyman. The direct income from this activity will be between \$21 million and \$50 million, he estimates.

MINING

Northwest Alaska is one of the most highly mineralized areas in the U.S., with reserves considered essential to this country's industries and defense, according to the Alaska Miners Association.

A port at Nome will serve as the transportation hub for commercial mining operations, of-

fering an export point for processed ores and concentrates and a staging area for incoming construction materials, equipment, fuel and supplies needed in the mining camps, said Ron Sheardown, president of Greatland Exploration, a mining firm with holdings on the Seward Peninsula.

Several small to medium size placer gold mines in the region are expected to generate about 75 new jobs through the next two decades, TAMS economist Lyman said. By the mid 1990s, at least some of the large hard rock mines are expected to be developed, bringing an additional 200 jobs to the area, he predicted. When full scale mining operations are underway, a total of about 400 new full time jobs will be created.

Lyman's studies indicate that as the port at Nome makes commercial mining more economically feasible, incomes generated by the industry in this region could reach \$14 million statewide by the turn of the century.

COMMERCIAL FISHING

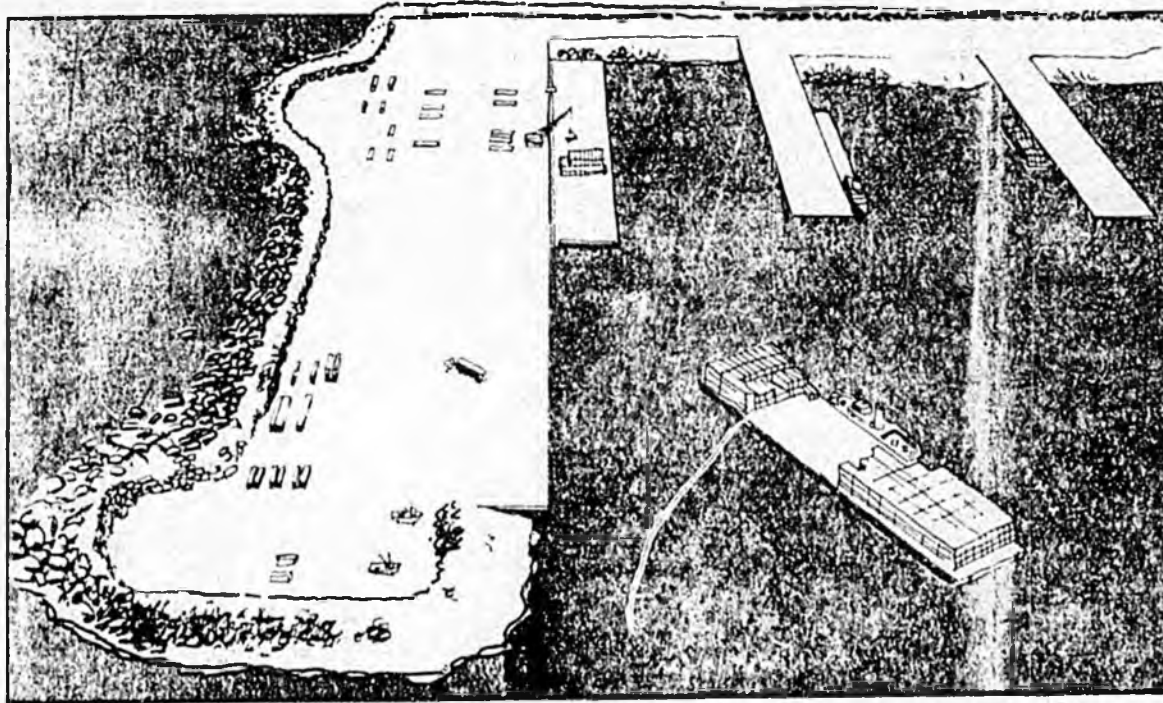
A modern port at Nome will enhance opportunities for commercial fish processing and transshipment. Lyman predicts there is a good chance the Nome port will see one or more salmon tenders that will purchase salmon throughout Norton Sound and deliver them to Nome, either for air shipment in the round or for local processing. The TAMS study assumes that about one-third of the Sound's salmon harvest would be tendered into Nome and about one-third of the fro-

zen product produced from all species barged out in vans from the port.

Development of this regional fishery could bring an additional \$150,000 in wages annually to the region, Lyman estimates, primarily in seasonal employment for local residents.

Considering both the savings in transportation costs and the incomes generated by new industrial activity, the proposed Nome port will mean total statewide economic benefits in 1990 of more than \$115 million, according to the TAMS analysis. With these figures in mind, using state dollars to build a modern port at Nome makes economic sense for the entire state of Alaska, Widom concluded.

Anchorage Daily News
December 5, 1982



Plans for the Nome port expansion call for an extended causeway, expanded storage area and offshore terminal.

Expanded Nome port called vital to region

By ANN CONY
Daily News business reporter

Come late summer, the city of Nome hopes to be putting out to bid the construction of an ambitious port project that proponents say will help spur development of some of northwest Alaska's rich natural resources.

But first the city will be asking the state legislature to appropriate \$28.5 million for the new port.

"We feel there's a pretty good chance of getting enough money to at least get the project started," Ivan Widom, Nome city manager, said Friday, pegging "enough money" at \$20 million to \$25 million.

Nome, no doubt, will be competing for state funding with a host of other planned capital projects.

But, according to a Department of Transportation (DOT) official in Fairbanks, the Nome port is DOT's top priority among half a dozen or so marine developments proposed

for the northern half of the state. And it is difficult to find people who oppose the port at Nome.

The state already has invested roughly \$7 million in economic analyses and design work for the port, which would include a 3,600-foot causeway, an offshore terminal and 60 acres of onshore container and general cargo storage.

Port proponents say the project holds something for everyone — local and regional residents, businesses and industry — in that if their annual shipping costs could fall by as much as \$13 million.

The port, proponents say, will help make economically feasible the development of large-scale mining operations to extract some of the abundant deposits of tin, copper, tungsten, uranium, gold and other minerals found on the Seward Peninsula and in the western Brooks Range. The new port would simultaneously allow bulk

See Page E-4, NORTHWEST



CITY OF NOME

P.O. BOX 281 - NOME, ALASKA 99762
TELEPHONE (907) 443-5242

FROM: Ivan Widom *I W*
City Manager

SUBJECT: Nome Port Project Update

DATE: June 1, 1983

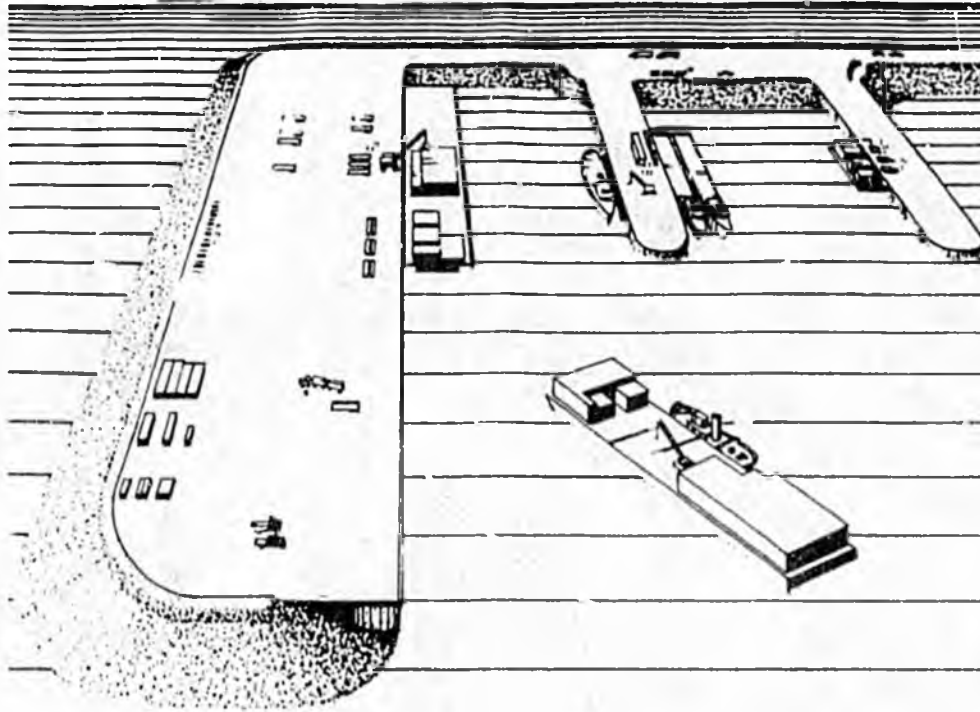
This information on the Nome port is being distributed to key state government decision-makers, community leaders and executives in industries which will be most affected by our project. The intention, as the state legislature and Governor Sheffield enter the final phases of the capital budget process for FY 84, is to give everyone the most complete, accurate and up-to-date information available on this very significant project.

The governor's capital budget recommendation includes \$12 million for the initial phase of constructing a modern, medium-draft port facility at Nome. Governor Sheffield has said that "the potential for oil and gas exploration in Norton Sound and hardrock mineral development on the Seward Peninsula put the Nome port high on the list of our capital budget priorities. In addition, the port will help reduce the cost of living for residents of Northwest Alaska."

HB 203, filed in mid-February by Representative Jack Fuller (D-Nome), also calls for a \$12 million first phase appropriation for Nome's port. This bill has passed both the transportation and finance committees.

The port project is crucial for the city of Nome, and it holds a key for regional development, with benefits that will reach statewide for many years to come. I hope you will take the time to review this material, because we've "done our homework" and I think you will find that building a port at Nome is one of the best investments Alaska could make with a small portion of our oil revenues. Please contact me for any further information you may need. Thank you.

IW:k



PROPOSED PORT OF NOME, ALASKA

Proposed port would cut cost of shipping to Nome and create new jobs in northwest Alaska

Nome shipping port plan promises revenue, jobs

by Carl Giddard
Times Writer

Nome city officials have unveiled plans for a \$38.5 million port that would, they say, lessen the cost of shipping freight from Seattle to northwest Alaska by 25 percent, add millions to the economy and generate hundreds of new jobs.

According to Nome City Manager Ivan Widom, a state construction appropriation for the port would be "one of the best investments we could possibly make with a small portion of Alaska's oil revenues.

"The lower cost of doing business will stimulate development of our area's vast natural resources, creating new jobs in industries such as petroleum development, mining and commercial fishing," he said.

Widom claims that "lightering" — using small boats to ferry cargo ashore from large vessels anchored offshore — adds about

\$9.50 per ton to the cost of shipping freight from the lower 48 to the Seward Peninsula city. Annual savings would range from \$4.5 million to \$13 million, depending on tonnage, he said.

The port design, prepared by the Tippetts-Abbett-McCarthy-Stratton engineering firm of Anchorage, calls for a 3,800-foot causeway into Norton Sound with berthing and loading facilities at the seaward end and a 10-acre onshore storage area.

Warehouses for container freight and maintenance equipment would be built on that site which could be expanded to 50 acres as traffic increases.

The rubble-constructed causeway could be extended an additional 1,000 to 1,500 feet to provide berths for deeper draft vessels such as bulk ore carriers, according to design specifications.

Nome is the onshore base for a current offshore petroleum exploration operation, the drilling

of a Norton Sound test well by Arco Alaska in a cooperative effort with 18 other companies that have an interest in the area.

That interest is high because, according to Interior Department estimates, about 480 million barrels of oil and 2.01 trillion cubic feet of natural gas are trapped in the Norton Sound seabed.

Esther Wunnick who manages the federal offshore leasing program, said Nome probably will continue to function as the support base for subsequent Norton Basin operations. Her office, the Minerals Management Service, has scheduled three lease sales there during the next four years.

"There's also a possibility that companies drilling the Navarin Basin might choose to operate from Nome," she said.

The MMS intends to lease that Bering Sea acreage in two sales, slated for 1984 and 1986.

An economist for the port

See Port, page D-2

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PORT OF NOME, ALASKA
ECONOMIC DEVELOPMENT ANALYSIS

TAMS

TIPPETTS-ABBETT-McCARTHY-STRATTON □ ENGINEERS
A PROFESSIONAL CORPORATION

A L A S K A



Alaska Construction & Oil

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Founded in 1958

FEATURES

12 TECHNOLOGICAL ADVANCES IN OFFSHORE DRILLING STRUCTURES: Two American firms, Global Marine Development Inc. (page 14), and Brian Watt Associates (page 25), and one Canadian firm, Swan Wooster Engineering Co. Ltd. (page 20), are designing innovative mobile and reusable drilling structures for Alaska's Beaufort Sea. Despite their high cost — from \$60 million to \$200 million — these steel and concrete rigs may be less expensive than gravel islands in the deeper and more remote areas of Harrison Bay.

32 USING STATE-OF-THE-ART DESIGN, TAMS engineers have devised a port plan for the City of Nome that will withstand the severe ice and wave conditions of Norton Sound. When complete, it will be the largest American port that far north and one of the first of its kind in the world.

35 A NEW PUBLIC CARGO DOCK has been completed for the City of Unalaska in the Aleutian Chain. It can fender ships to 19,000 dwt and in the future will be fitted with a 40-ton capacity gantry crane. A major design consideration was to reduce onsite labor costs, which averaged \$1 per minute per man.

DEPARTMENTS

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COVER



MARCH 1983 VOLUME 24, NUMBER 3

The Unalaska Dock, designed by Tryck, Nyman & Hayes (TNH) and built by Jensen & Reynolds, nears completion (looking at the sound end). Article on page 35. Photo courtesy TNH.

Port of Nome: An Engineering Challenge

Using state of the art design, engineers at Tippetts-Abbett-McCarthy-Stratton (TAMS) have devised a port facility plan for the City of Nome that will withstand the severe ice and wave conditions of Norton Sound. When complete, it will be the largest American port this far north and one of the first of its kind in the world.

The proposed medium-draft port features a 3,600-ft. rubble mound cause-

way leading to an offshore terminal. Short-term storage and marshalling areas will be available at the seaward end, with about 60 acres onshore for container and general cargo storage. Additional piers and service areas can be added as needed for offshore oil company activities year-round. The causeway can also be extended another 1,000 to 1,500 ft. to provide berths for bulk ore carriers.

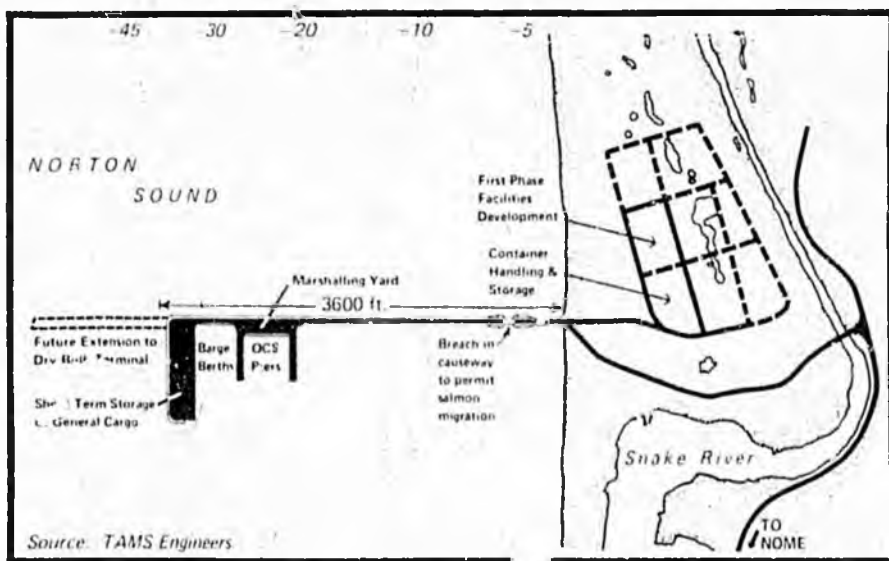
With potential year-round use in mind, along with the need to keep maintenance and construction costs at a minimum, engineers have designed an ice-resistant causeway that will also withstand the strong erosive forces of high winds and waves during the late summer and autumn storms. This was accomplished after an extensive program of ice engineering and physical ice modeling conducted by the Institute of Hydraulics Research of the University of Iowa. The tests use a model of the proposed Nome causeway placed in a 60-ft. by 20-ft. tank with urea ice.

TAMS project manager Michael Horton explained that a number of papers previously published on the subject suggest sharp differences in slope, benches or vertical walls in a revetment would cause the ice to rubble, preventing it from moving up over the causeway. The Iowa model results tended to disprove these theories, he said.

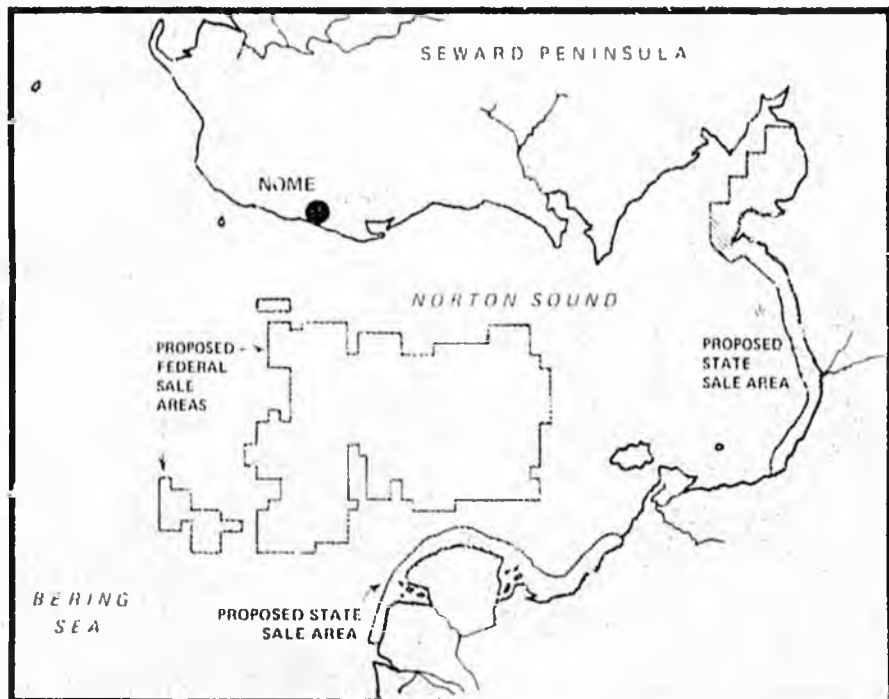
"In nature, any open-faced slope will fill with snow and ice due to normal precipitation, providing a much reduced frictional coefficient for the ice/rock interface," Horton explained. "Secondly, ice movements are not steady and frequently a ridge will build up at the toe of the structure, with subsequent ride-up tending to fill in any artificial slope changes. The net result was that slope modifications would probably work for a first event, but override could easily occur later."

Ice breaker shapes set away from the causeway were also tested with the Iowa model. Although these break up the ice sheet, spacing is critical. This, added to the cost of placing and maintaining the ice breakers, led TAMS designers to change their approach.

"The philosophy is now management rather than prevention," Horton said. "The tests have shown that minimal dislodgement of armor in excess of 12 tons may be expected from movement of the ice, so it is designed to accommodate ice override as an occasional event." The east face of the causeway will have a lower crest to enable ice rubble to be bulldozed off the structure, thus providing additional resistance to subsequent movements of the ice sheet. "The cost



PRELIMINARY LAYOUT OF PROPOSED FACILITY



OFFSHORE OIL AND GAS RESOURCE AREAS

savings of this system over an elaborate ice prevention scheme is substantial," Horton said.

The Nome causeway will also be subject to strong waves and high winds. To help prevent erosion, the causeway's core of gold dredge tailings will be overlaid with three layers of gravel armor.

The most probable source of larger rock for the causeway is at Cape Nome, about 13 miles east of the project. The quarry will be conveyed to the Bering Straits Native Corp. from the Bureau of Land Management in the very near future, Horton said. The Native corporation has gone on record as supporting the Nome port project.

Interest in rock from the Cape Nome area has also been expressed by firms from as far away as the North Slope.

The dock wall for the 300-ft. by 250-ft. offshore terminal area will be built from circular concrete caissons measuring 33 ft. by 30 ft. The caissons may be cast in Nome, Horton said, or they may be poured in the Lower 48 and barged to the construction site where they will be sunk into place at the seaward end of the causeway. The circular caissons are expected to stand up better than the traditional box-shaped forms under the direct stress of the ice, Horton said. The circular shape also requires less concrete to do the same work as a rectangular caisson, thus minimizing costs. The advantage of using concrete instead of steel sheeting for the dock face is its longer life — more than 50 years — and its reduced maintenance requirements.

Another feature of the causeway design is the inclusion of a fish breach, a small bridge near the shoreline to permit salmon and other species of fish to migrate freely. The 100-ft. bridge section in the causeway was requested by the Department of Fish and Game and was carefully chosen to be beyond the littoral beach profile, balanced with a shallow water depth required for the salmon fry.

"As one of the very few major waterfront developments in cold regions, the Port of Nome is likely to attract considerable attention," Horton said. "The data to be derived from its behavior under ice attack will provide significant information for the development of structures in this hostile environment."

The City of Nome is asking the Alaska Legislature to appropriate \$38.5 million for construction of the medium draft facility. The state Department of Transportation and Public Facilities has tagged it the number one priority for marine construction in northern Alaska.

With this port facility eliminating the need to lighter goods from ocean-going vessels the resulting lower shipping costs could contribute to development of the area's natural resources such as offshore oil and gas, strategic minerals and fisheries.

The U.S. Department of Interior estimates there are probably about 480 million barrels of oil and 2.01 trillion cu. ft. of natural gas in Norton Sound. The Nome port is expected to serve as a service base for oil and gas exploration, and could become the marine center for service production islands or platforms.

The area to be served by the port also

contains some of the state's richest mineral deposits. Ron Sheardown, president of Greatland Exploration, estimated that one-half to two-thirds of the state's mineral reserves lie within 250 miles of Nome. A recent study by the Alaska Miners Association predicts that mines in the northwest region of the state will be exporting 1.6 million tons of ore annually by 1990. Mining operations in the region will be importing about 325,000 tons of equipment and fuel each year. There is a strong likelihood these tonnages will increase by the year 2000, according to the study (AC&O, September 1982).



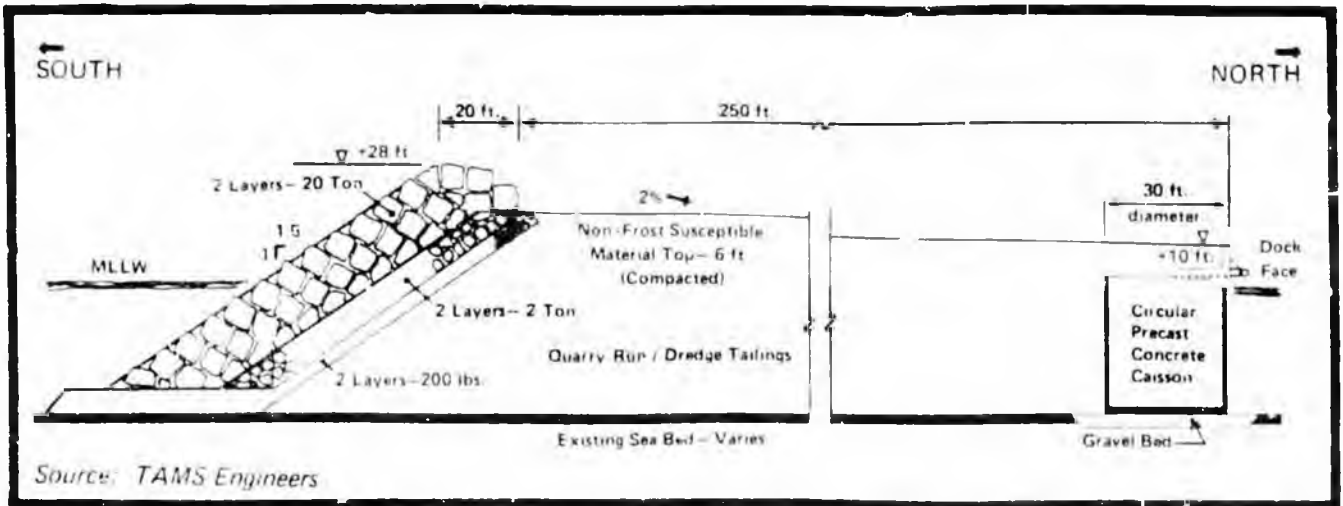
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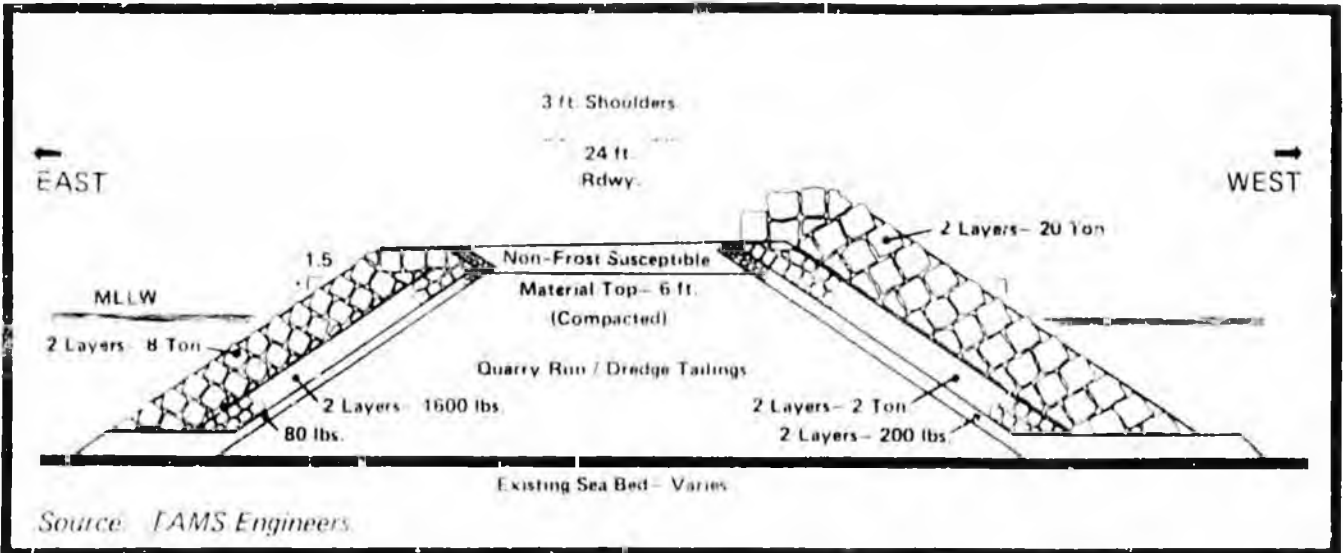
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OFFSHORE TERMINAL- SECTION



TYPICAL CAUSEWAY CROSS-SECTION

Construction of the Nome port will be a major step in the development of these mineral reserves, Horton said. Serving as the hub of an areawide transportation network, the port could become the export point for processed ores and concentrates, and facilitate the import of fuel and equipment needs for mining operations. With its capability to be extended another 1,000 to 1,500 ft., the port's causeway could ultimately offer docking facilities for the deeper draft bulk ore carriers.

Development of these two industries, and the enhanced opportunities for commercial fishing operations, would create up to 1,400 jobs. It would mean direct, indirect and induced incomes of more than \$100 million statewide in 1990, according to an economic analysis by TAMS engineers. TAMS has submitted preliminary studies and final design work to Nome city officials. If the Legislature approves the requested \$38.5 million construction grant this session, the port project could go to bid during late summer, 1983, according to



(From left) Nome City Manager Ivan Widom, TAMS Project Manager Mike Horton and Jonathan Widdis, assistant planning manager, Division of Planning and Programming, Interior Region, the Alaska Department of Transportation and Public Facilities, study a model of the proposed medium draft port facility.

Nome City Manager Ivan Widom

"Considering the vast statewide benefits which will flow from the development of our region's resources," Widom said, "Nome's port is one of the best in-

vestments we could possibly make with a small portion of Alaska's oil revenues. This is exactly the kind of infrastructure we should be building now to secure our state's future." □



NEWS RELEASE

FOR IMMEDIATE RELEASE, PLEASE

June 1, 1983

CONTACT: Jack Lloyd (907) 274-9011

SUPPORT FOR NOME PORT PROJECT GROWING THROUGHOUT STATE

(Nome, Alaska) The proposal to build a modern, medium-draft port at Nome enjoys a broad base of support throughout Alaska.

Governor Sheffield's capital budget recommendation for FY1984 includes \$12 million for the initial phase of Nome port construction. HB 203, filed in the Alaska State House during February by Representative Jack Fuller (D-Nome), also calls for a \$12 million appropriation to begin port construction. The bill has passed both the Transportation and Finance Committees.

Senator Frank Ferguson, (D-Kotzebue), is counted among the port's strong backers. "I support the port because it will help to rejuvenate the Bering Straits Native Corporation," Ferguson says.

The Bering Straits Native Corporation and all 20 of its village corporations passed a resolution in support of the project. The native corporation's president, Charlie Johnson, says a modern port at Nome will go a long way toward providing a sound economic base for the

(more)

Support for Nome Port
add 1

Bering Straits region. "The native corporation needs a modern port facility at Nome to make development of its extensive mineral holdings economically feasible," he says.

Another indication of support for the project was a joint resolution passed by the Association of Village Council Presidents and Kawerak, urging construction of both the Nome port and a sea wall at Bethel.

The Nome port project is the State Department of Transportation and Public Facilities' number one funding priority among all proposed marine projects in the northern half of Alaska.

According to recent surveys, Nome residents list upgraded port facilities as one of the most needed civic improvements in their town. More than 80 percent of the residents polled said they support the project.

Business people in Nome, through the endorsement of the city's Chamber of Commerce, wholeheartedly support the plan.

An estimated one-half to two-thirds of the state's mineral reserves lie within 250 miles of Nome. Along with anticipated oil and gas development in Norton Sound, the untapped mineral wealth of the Seward Peninsula will provide a broad base for economic development when a transportation link is established.

Ron Sheardown, president of Greatland Exploration, believes the proposed Nome port will provide that link. "A port at Nome will help stimulate the development of those mineral resources," he says. As a businessman with mineral holdings on the Seward

(more)

Support for Nome Port
add 2

Peninsula, Sheardown says the port must be constructed before mineral development can occur.

The state, with citizen approval in two separate statewide bond votes, has already appropriated money for feasibility studies, design and preliminary construction work on the project. Nome city manager Ivan Widom says the project will be ready to go to bid in late summer, 1983. "We have a viable project with important statewide benefits and broad-based support," he says. "I think these factors bring our project closer to reality than any other."



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NOME PORT FACT SHEET

Nome Port Costs

Approximately \$7 million appropriated by the State for studies, design and preliminary construction

Governor Sheffield's capital budget recommendation for FY 84 includes \$12 million for the first phase of construction

HB 203, calling for a \$12 million appropriation for phase one construction, has been passed by both the Finance and Transportation Committees of the State House

Later construction phases, adding berthing and loading facilities and container and general cargo storage, bring the project's total estimated cost to \$40 million

Self-supporting from the first year of operation (1985)

Operation and maintenance - \$1,036,000

Revenues from port fees - \$1,644,400 (based on fee structure comparable to other Alaskan ports)

Net revenues - \$608,400

Statewide Economic Benefits

Employment from resource development spurred by port:
about 1,400 jobs in 1990

Offshore petroleum activities - 1,375 jobs in 1990

Full scale mining by the year 2000 - 400 jobs

Fish processing and handling - 10 seasonal jobs

Nome Port Fact Sheet

add 1

Estimated income generated by increased employment ranges from \$41.4 million in 1985 to a high of \$101.5 million in 1990

Offshore petroleum activity - \$49.5 million in 1990

Mining - over \$1 million in 1990, as high as \$14.4 million by 2000

Fisheries - about \$150,000 annually

Reduced transportation costs will lower cost of living
Lighterage eliminated - approximately 25 percent of shipping cost to Nome

Annual transportation cost savings - \$4.5 million to \$13 million annually

National Benefits

Opens development of mineral resources needed for national defense and industry, reducing reliance on foreign sources

Causeway Design

Rubble mound, sloped to resist wave and ice attack

Extensive ice research conducted at University of Iowa

Wave modelling done at the University of Florida

Extends 3,600 feet into water 30 feet deep

Breach near shore for migration of salmon and other fish species

Seaward end includes 800-foot long storage area

Barge berths 400 ft. wide

Piers can be added as needed for offshore oil company activities

Capable of later extension up to 1,500 ft. for dry bulk terminal

Onshore Facilities

Initial development on 10 acres, with 50 additional acres for expansion

Two main buildings -

Maintenance facility for forklifts, tractors, etc.

Container freight building 80 ft. by 100 ft.