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(1976)

Report written during Nov-Dec 1944  
per Col. Bush.

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NARRATIVE REPORT  
of  
ALASKA CONSTRUCTION  
1941 --- 1944

Prepared by direction of  
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Prepared in accordance with memorandum from Headquarters  
Alaska Defense Command, dated 5 October 1943, subject: "Preparation of Historical Report."

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This report covers the engineering and construction activities of the Corps of Engineers in Alaska during the following periods:

15 January 1941 - 1 May 1942

The Area Engineer at Anchorage, as representative of the United States District Engineer, Seattle, Washington, was in charge of all construction being prosecuted in Alaska for the Alaska Defense Command.

1 May 1942 - 15 June 1943

Effective 1 May 1942 the Area Engineer became known as the Officer in Charge, Alaska Construction, and as such continued his present duties. He then became a member of the Staff, Alaska Defense Command. The Seattle District Engineer Office became a Service Command agency.

15 June 1943 - 15 November 1943

The Officer in Charge, Alaska Construction, became the Executive, Construction Division, Office of the Engineer, Alaska Defense Command; however, duties remained the same. Duties of the Seattle District Engineer office remained the same.

## P R E F A C E

This report is presented in narrative form. It is intended to be informative and factual but at the same time interesting and readable. Minute details are not given.

Three main sections comprise the report. The first is a brief history of each of the thirty-nine major projects, in order according to dates construction commenced. Each Project history gives the reason or reasons for its initiation, location, authority for the work, a description of the work, by whom, how and when it was done and the approximate cost.

The second section is composed of descriptions of the twenty main features of construction. Photographs accompanying each feature bear descriptive titles.

The third section is a brief analysis of outstanding reconnaissances, surveys, special work and investigations. Each is accompanied by a location map.

All cost data, construction estimates, construction programs, maps and other data are as of 15 November 1943, unless otherwise noted.

In this report the names of the Projects remain constant as shown on the Master Map, "Alaska Projects 1941-1944". For instance, Fort Glenn which is sometimes called "Umnak", "Umnak Island", "Otter Point", "Project A", etc. is listed only as Fort Glenn.

For all Projects a statement is made to the effect that "adequate housing was provided". By this statement it is meant that accompanying facilities were also furnished such as messhalls, latrines and baths, administration buildings, bakeries, laundries, dry cleaning, shoe repair shops, recreation buildings, etc.

Substantiating data to that submitted in this report is on file in the office of the Construction Division, Engineer, Alaskan Department.

For the purposes required in this report the thirty-nine Alaska Projects are divided into three Areas: Aleutian, Coastal and Interior. They are divided thus:

ALEUTIAN AREA (12)

Adak	Fort Mears
Adak Depot	Fort Randall
Anchitka	Fort Morrow
Atka	Kiska
Attu	St. Paul
Fort Glenn	Shemya

COASTAL AREA (15)

Annette Island	Juneau (Garrison)
Chilkoot Barracks	Juneau (Sub-Port)
Cordova	Naknek
Excursion Inlet	Seward (Harbor Defenses)
Fort Greely	Valdez
Fort Ray	Whittier
Fort Raymond (Garrison)	Yakutat
Fort Richardson	

INTERIOR AREA (11)

Bethel	Moses Point
Big Delta	Nome
Galena	Northway
Gulkana	Tanacross
Ladd Field	
McGrath	
Mile 26 Satellite	

(Note: Aircraft Warning Stations are combined into one report and are not shown on the Master Map.)

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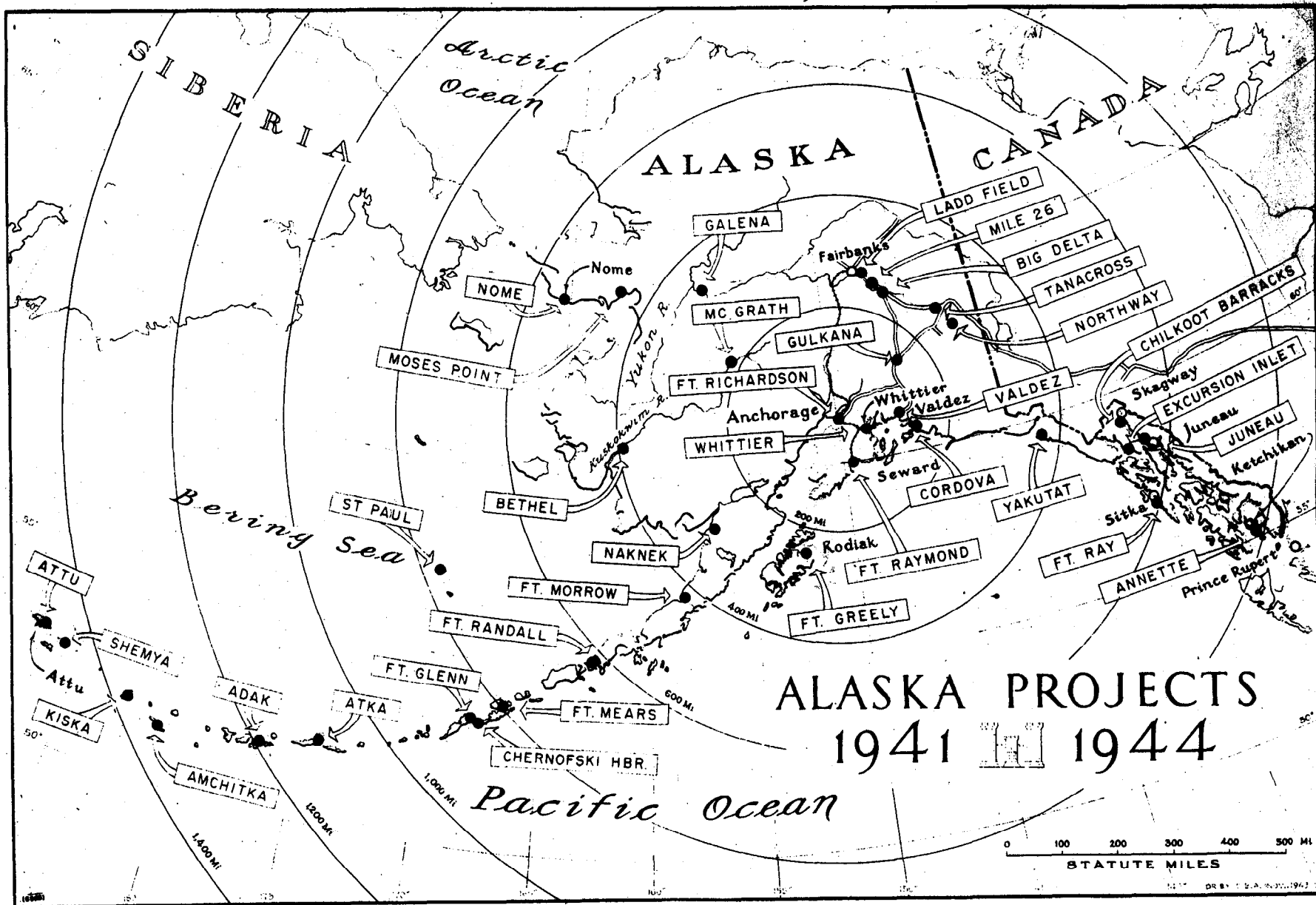
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PART II

INTRODUCTION

A general history of construction in  
ALASKA  
15 January 1941 --- 15 November 1943



I N T R O D U C T I O N

The Territory of Alaska is about one fifth the size of the continental United States and has only the beginnings of modern development of roads, railroads, public utilities and airfields. Centers of population are at a few well-known points such as Juneau, Anchorage, Fairbanks, Nome, Dutch Harbor, Kodiak, Sitka, Cordova and Ketchikan. These towns, except possibly the first three, contain the minimum civic facilities, and none of them can house or care for much more than their existing population. Civilian industrial life in Alaska revolves about the great industries of salmon fishing and gold mining. Other industrial development is meager. The lumber supply from southeastern Alaska fills most civilian needs, but furnishes only a small part of the total requirements for military work. The total population is small -- no more than 75,000 persons in an area totaling 586,400 square miles -- or about 1 person to every 8 square miles.

Basically the war construction plan for Alaska was divided into two phases to date (November, 1943). First, while the nation was still at peace the construction of a system of airfields throughout Alaska was initiated to protect it from enemy advance from any of the various sea approaches. The second construction phase was primarily offensive, following the Japanese landings at Kiska and Attu. Successive American occupation of the Aleutian Islands of Adak, Atka and Amchitka resulted in the recent victories over the enemy at Attu and Kiska.

A description of Alaska from the engineer's viewpoint involves geography, geology, climate and existing social developments. The Territory is divided into three distinct zones: first is the Coastal Area including the panhandle region known as Southeastern Alaska. This area is fringed with many islands, most of them mountainous, and contains no extensive areas of level ground. In Southeastern Alaska is the well-known "Inside Passage", so-called because of the continuous and varied waterways which make it possible for tugs, barges, and oceangoing ships to travel in relatively quiet waters 1,000 miles north from Puget Sound in the United States to Icy Straits in Alaska. The coastal terrain is thickly wooded as the result of heavy precipitation and a moderately narrow temperature range. Principal towns in this area are located to accommodate the fishing and lumber industries, and there are no important military installations near them. The "Inside Passage" is much used as the first stage in the route to more northern points and it is therefore an important part of the Alaska sea-lanes.

From the tip of southeastern Alaska, near Prince Rupert in British Columbia, to the Port of Seward on the southern coast of Alaska there are but three natural gateways leading through the coastal mountain barrier to the Interior. They are the Chilkoot and Chilkat Passes at Skagway, the Keystone Canyon and Thompson Pass at Valdez and Resurrection Pass at Seward. From Juneau in southeastern Alaska to the Prince William Sound area on the coast

of southern Alaska are the Saint Elias Range and the Chugach Mountains, with magnificent peaks and glaciers interrupted in places by flat coastal benches suitable for airfields. The bases at Yakutat and Cordova are located on such tableland. Climatic conditions from Juneau to Whittier and Seward to Kodiak, are somewhat similar to those of southeastern Alaska although considerably colder. Prince William Sound contains the principal ports of entry to the interior of Alaska. Valdez is the ocean terminus of the truck route, the Richardson Highway, which is used primarily to supply interior points between Valdez and Fairbanks.

The chief port in Prince William Sound is now Whittier at the head of Passage Canal. The recently completed railroad out-off, constructed by the Army Engineers, terminates at Whittier and lessens the distance, grades and curvature of the Alaska Railroad by eliminating the 50 mile mountainous section between Seward and Portage.

Anchorage is located at the head of Cook Inlet, approximately 114 rail miles from Seward, but it does not have the damp coastal climate of Whittier and Seward; precipitation is much less, totaling about 25" per year, and the winters are considerably colder. Anchorage is the site of the most northerly of the Coastal Area airfields or garrisons.

Northward and westward from Anchorage is the second zone, or area, known as the Interior Area. Here typical sub-Arctic charac-

teristics rapidly develop -- cold, dry winters, light precipitation in summer, and permanently frozen ground in some areas. West of Anchorage to the Bering Sea, and north to Nome, is a vast area of huge mountain ranges and expansive tundra plains along the Bering Coast, overlying permanently frozen ground. In this area also, the great valleys of the Yukon and Kuskokwim Rivers open to the Bering Sea. Here transportation facilities, except by river or air, are almost completely lacking, and of necessity airfield sites were chosen near waterways. Mention of permanently frozen ground should not be considered as applying to all localities for its occurrence is not uniform and its study is complex. Military installations within this Interior Area have partial areas of frozen soil, but as yet a complete runway has not been constructed on true tundra or on an entirely frozen base.

The Aleutian Islands, commonly known as "The Chain", is different from all other parts of Alaska. Lying in a coastal region with the same or lower latitudes as Southeastern Alaska, similar atmospheric conditions might be expected. However, this is only partially true; rainfall is abundant, the temperature range is comparable but winds are constant and frequently violent. The sun seldom shines for more than a few hours at a time being obscured by heavy fogs and mists. The terrain is completely devoid of tree growth. Grasses, low bushes and wild flowers, never getting more than a few feet high, form a thick vegetal mat. At all military projects in the Aleutians complete harbor and access road installations had to be built.

Work on the Alaska Peninsula and Aleutian Islands is the most spectacular and difficult undertaken by the Army Engineers. Aleutian distances from Anchorage by air and Seward by boat exceed 1,600 miles in some cases, and transportation is only by sea or air. Each project was designed to be self sufficient, depending entirely on the cargoes sent from the United States.

The problem of constructing airfields, garrisons, housing, operating facilities, and all allied work in Alaska has involved many uncommon and difficult types of construction. In addition, the newness of the country, the great distances of project sites from sources of supply, the lack of adequate transportation facilities, and extreme cold and stormy weather have all combined to make the task a major undertaking. Further, the isolation of the stations, the shortage of skilled personnel and the lack of adequate construction equipment, all played a part in construction progress. Of necessity, many innovations, contraptions and "special job combinations" of equipment were improvised on the site to further construction progress. The maintenance of morale among civilians, as well as troops was a difficult problem at isolated camps and stations where no recreational facilities were available.

Military construction on projects in Alaska has been continuous since the summer of 1940 when the Constructing Quartermaster, under the Quartermaster General, first began building Ladd Field at Fairbanks and Fort Richardson at Anchorage. At approximately the same time the Seattle District Engineer of the United States

Engineer Department, started the airfields and garrisons at Yakutat and Annette Island, both in southeastern Alaska. Also at this time, a fine start on interior airfields had been made by the Civil Aeronautics Administration, which undertook by civilian contract runway construction at a number of sites. When the military situation became acute prior to the declaration of war, the Army Engineers commenced building garrison housing at these same airfields and supplemented the Civil Aeronautics Administration runways with greater length, revetments, additional parking areas and taxiways. New runway projects were not started by the Civil Aeronautics Administration after the summer of 1942, by which time all construction was under the jurisdiction of the Army Engineers.

On 16 January 1941, the United States District Engineer at Seattle, Washington, assumed responsibility for all War Department construction work in Alaska and simultaneously established an Area Engineer office at Anchorage. The District Engineer was charged with construction activities such as design, procurement, and preparation for shipment. Preliminary planning for general location and strengths of garrisons was determined by the Western Defense Command and the Alaska Defense Command, and all preliminary technical work was done by the Area Engineer office.

The Area office, now known as the Construction Division office in Anchorage, has served as the contact between field projects and Seattle as well as with the Engineer, Alaska Defense Command. A major portion of the design and all procurement and arrangements for shipping have been done in Seattle by the District Engineer.

During the peak of construction approximately 70,000 tons of supplies and materials were shipped monthly to Alaska. Considering the distances between Seattle and the project sites it is realized that much of the success of Alaska construction was due to the expeditious manner in which all kinds of materials continuously flowed to the projects. The average turn-around time of freighters from Seattle to ports in Alaska is 30 days, calculated from the time loading in Seattle commenced, through the trip to Alaska, discharge of cargo and return to Seattle empty.

Colonel Beverly C. Dunn, CE, was the Seattle District Engineer until April 1942, with Colonel Peter P. Goerz, CE, succeeding him until October 1942. Colonel Richard Park, CE, was the Division Engineer of the North Pacific Division which included Alaska, until October 1942 when the new Pacific Division was organized, after which he was assigned as the Seattle District Engineer. Military Corps of Engineer assistants in the District Office who were directly concerned with Alaska activities include Lt. Colonel Donald P. Booth, Lt. Colonel James D. Lang, Major Ernest J. Riley, Major George F. Tait, Major Emil H. Rausch and Captain Elmer H. Elwin. Engineering designs to fit the peculiar conditions of Alaska was initiated and carried out by the Seattle Office. A notable example of utilizing available materials and applying them to Alaska use is the Pacific Hut, designed and manufactured with the cooperation of the District Engineer and using mainly forest products from the Pacific Northwest.

To simplify the line of command, in May 1942 the Area Office in Anchorage was placed directly under the jurisdiction of the Engineer,

Alaska Defense Command, and Colonel B. B. Talley, CE, became the Officer in Charge, Alaska Construction, with Lt. Colonel D. O. Givens, CE, his Executive Officer. In June 1943, this office was reorganized as the Construction Division under the Engineer, Alaska Defense Command. At that time, Colonel Talley was transferred to another theater and Colonel Chas. F. Baish, CE, became the Executive Officer of the Construction Division. The District Engineer, Seattle, however, has continued to design, procure and ship according to the requests from the Engineer, Alaskan Department.

Several Corps of Engineer officers have been identified with Engineer construction work in Alaska since its beginning. Major (now Brigadier General) Nold, CE, was the first Resident Engineer at Annette Island. General Nold is now the Engineer on the staff of the Commanding General, Alaskan Department. In that capacity he directs the general construction policy and Engineer operations. Captain (now Colonel) B. B. Talley, CE, was the first Resident Engineer at Yakutat, and when the Area office was established in Anchorage, during January 1941, he was made Area Engineer, the direct representative of the District Engineer, Seattle. As such, he supervised construction activities and the work of Resident Engineers at the various airfields in Alaska. Major (now Colonel) Fisher S. Blinn, CE, relieved General Nold as Resident Engineer in the early days at Annette and has since been, in turn, Resident Engineer at Cold Bay and Amchitka. Captain (now Lt. Colonel) A. A. Dessler, CE, was assistant Resident Engineer at Annette and

later Resident Engineer at Fort Glenn. Captain (now Lt. Colonel) Carlin H. Whitesell, Jr., CE, was assistant Resident Engineer at Annette and later Resident Engineer at Fort Glenn and at Adak. First Lieutenant (now Lt. Colonel) James D. Bush, Jr., CE, was the first Resident Engineer at Ladd Field when the Corps of Engineers assumed the responsibilities of the Constructing Quartermaster, and is now Chief of Operations, Construction Division, Engineer, Alaska Defense Command.

Special recognition has been awarded to several of the officers active in the construction program in Alaska. Colonel B. B. Talley was awarded the Distinguished Service Medal for his construction activities in Alaska, and particularly for construction of the airfield on Umnak Island. The timely completion of runways at this field prevented success of the Japanese raid on Dutch Harbor, 4-5-6 June 1942. General George J. Nold, Lt. Colonel Carlin H. Whitesell, Lt. Colonel Virgil L. Womeldorf, Major F. J. Loomis, and Captain John W. Baum have received the Legion of Merit. Lt. Colonel James D. Bush, Jr., was awarded the Silver Star for gallantry in action during the battle of Attu.

Most military construction was done by hired or troop labor; however, several contractors have given outstanding performance on specific jobs. The West Construction Company, Boston, Massachusetts, had done tunnel, dock and breakwater work, and was awarded the Army and Navy "E" for its rapid completion of the tunnel of the Alaska Railroad cut-off. The Guy F. Atkinson Company, San Francisco, California, constructed the dock and storage facilities at Excursion

Inlet. The Morrison and Knudsen Company, Boise, Idaho, was the primary contractor for the Civil Aeronautics Administration on airfield construction, and later continued special jobs for both the Army and Navy. Field supervisors for the contractors include Mr. A. M. Coker for West Construction Company, Mr. Edward Skeels for Guy F. Atkinson Company and Mr. Leon B. DeLong (now Lt. Colonel, CE) for Morrison and Knudsen Company.

P A R T   III

In the following section, thirty-nine (39) Projects are narratively described, in chronological order with respect to dates construction started. Each is accompanied by a panoramic view or plot plan or both.

## LADD FIELD PROJECT

Ladd Field was originally authorized as the Alaskan Experimental Air Base. However, this project has subsequently developed into three categories: a cold weather test station, an air sub-depot for repair and testing of airplanes, and most recently the central Alaskan station of the Alaskan Wing of the Air Transport Command system for transportation of air freight in Alaska and ferrying Alsib planes. Ladd Field is located in the Tanana River Valley approximately 4 miles east of the city of Fairbanks, Alaska,

The Ladd Field Project was authorized by The Adjutant General's office by letter of 27 February 1940, to the Office of the Quartermaster General, subject: "Construction of Buildings and Facilities, Ladd Field." By 1st indorsement, dated 13 January 1941, The Adjutant General authorized the transfer of Ladd Field construction to the Chief of Engineers. The Air Depot (911 men) was authorized by the Western Defense Command in a 1st indorsement, dated 27 January 1943, to basic letter from the Alaska Defense Command to the Western Defense Command, dated 8 January 1943, subject: "Air Depot Housing, Ladd Field." The Air Transport Command Expansion program was authorized by the War Department, Army Air Force Headquarters, under plan "B" dated 2 April 1943, subject: "Plan 'B' Program for construction Alaskan Wing of ATC in Alaska," and plan "C" dated 17 June 1943, subject: "Construction Program for Expansion of Alaskan Wing of ATC." (Plan "C" was modified 1 June 1943)

The Construction as originally authorized consisted of one concrete runway 5,000' by 150', 9 buildings for administration and housing of 561 officers and enlisted men, 6 buildings for technical use, a Medical Corps building, tactical gasoline and oil storage, necessary utilities, roads, drainage, parking apron and a railroad spur from Fairbanks.

To this authorization was added a ground garrison camp for 230 officers and enlisted men, motor repair shop and utilities, a gasoline operations reserve storage consisting of thirty-seven 50,000 gallon tanks, an air depot group for 911 officers and enlisted men with necessary technical facilities and utilities, a Ferry Command housing project for 500 transients, a Quartermaster Truck Company for 110 officers and enlisted men, an additional runway 7,200' long with 500,000 square yards of parking area and 12,000 lineal feet of taxiway, 4,400' extensions on the original 5,000' concrete runway, four Birchwood hangars, two TBA hangars, two Kodiak hangars and housing for 2,036 Air Transport Command personnel, complete with necessary technical facilities and utilities systems.

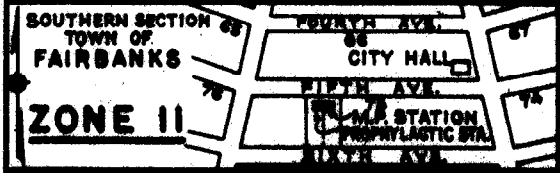
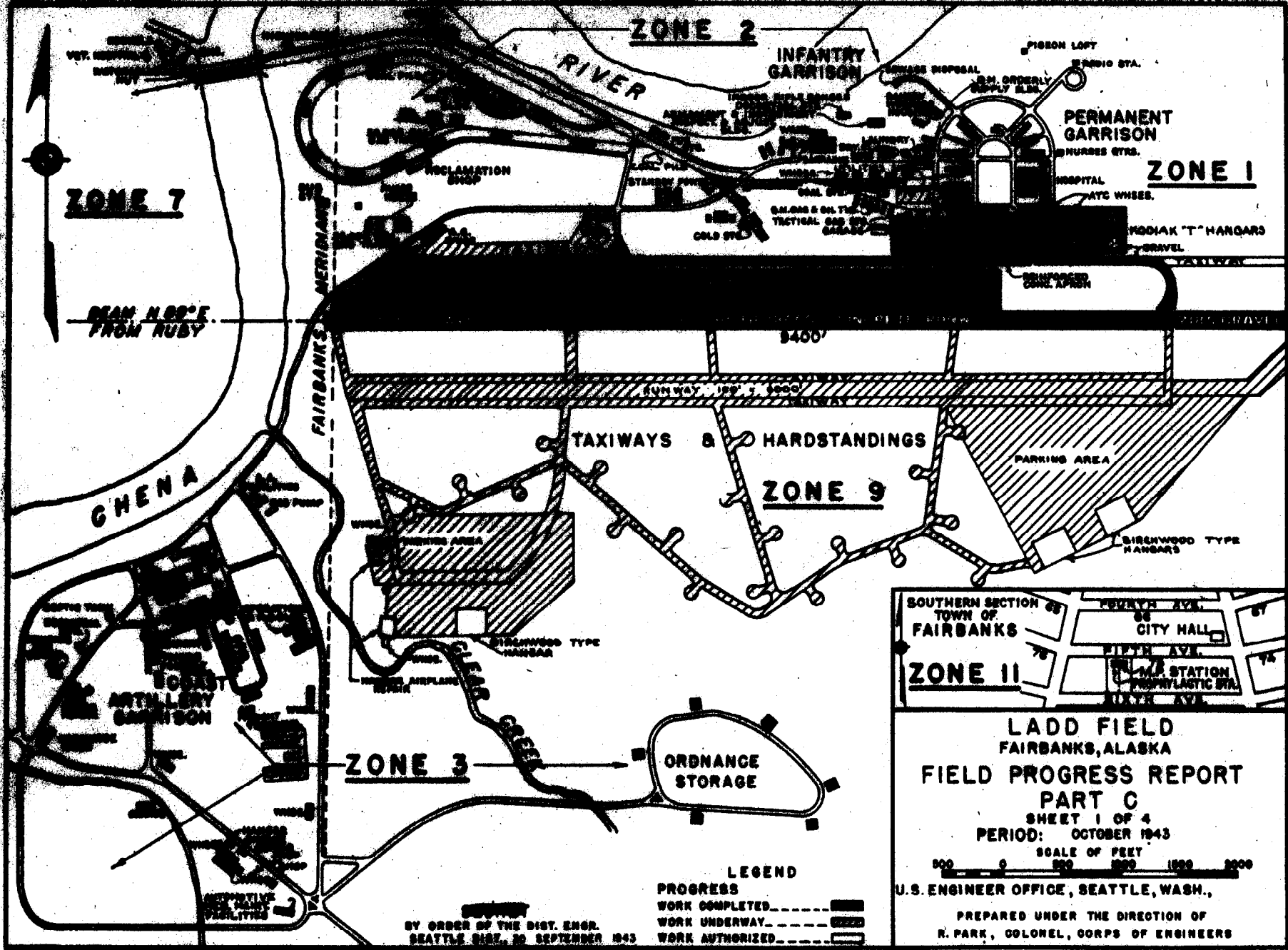
With the exception of a contract to Cory and Joslyn Company of San Francisco for the installation of heating and power plant equipment, approximately eighty percent of the original program was completed by the Quartermaster division before transfer of the project construction to the Chief of Engineers on 16 January 1941. The remainder of the construction has been accomplished by civilian forces under Resident Engineers of the Corps of Engineers.

Lt. Colonel James D. Bush, Jr., was the first Resident Engineer at Ladd Field and was succeeded, in turn, by Colonel V. L. Womeldorff, and Captain E. D. Tracy.

In view of the extreme cold weather and the frozen ground conditions encountered at this project, many construction difficulties have arisen. The erection of buildings during cold weather is difficult. The ice and snow must be scraped from lumber to permit a close fit. Work is planned so that when temperatures reach 30° below zero the workers can be kept busy on inside construction because of the danger of freezing fingers, ears, or other exposed features.

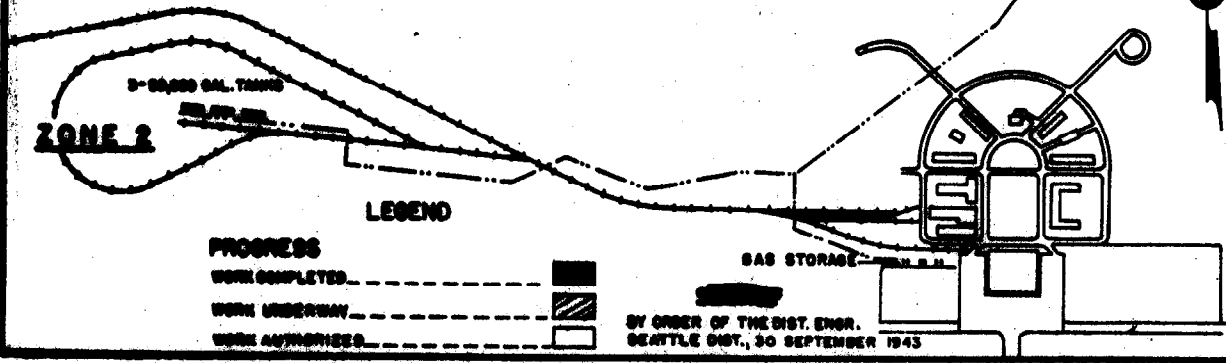
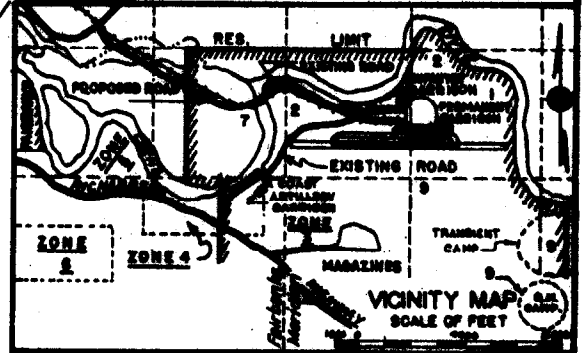
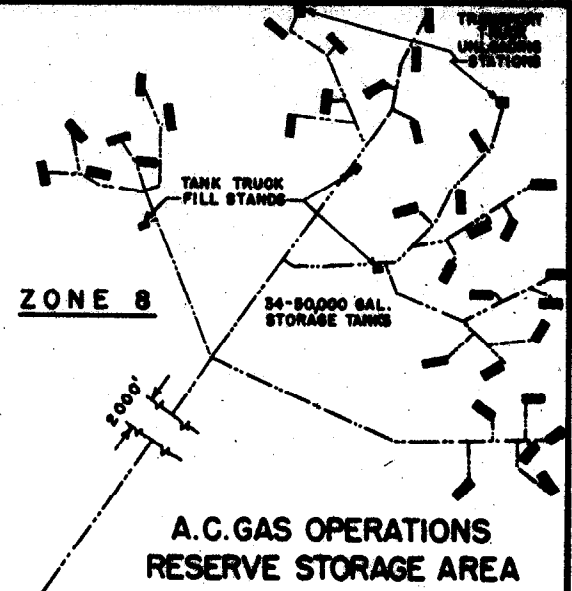
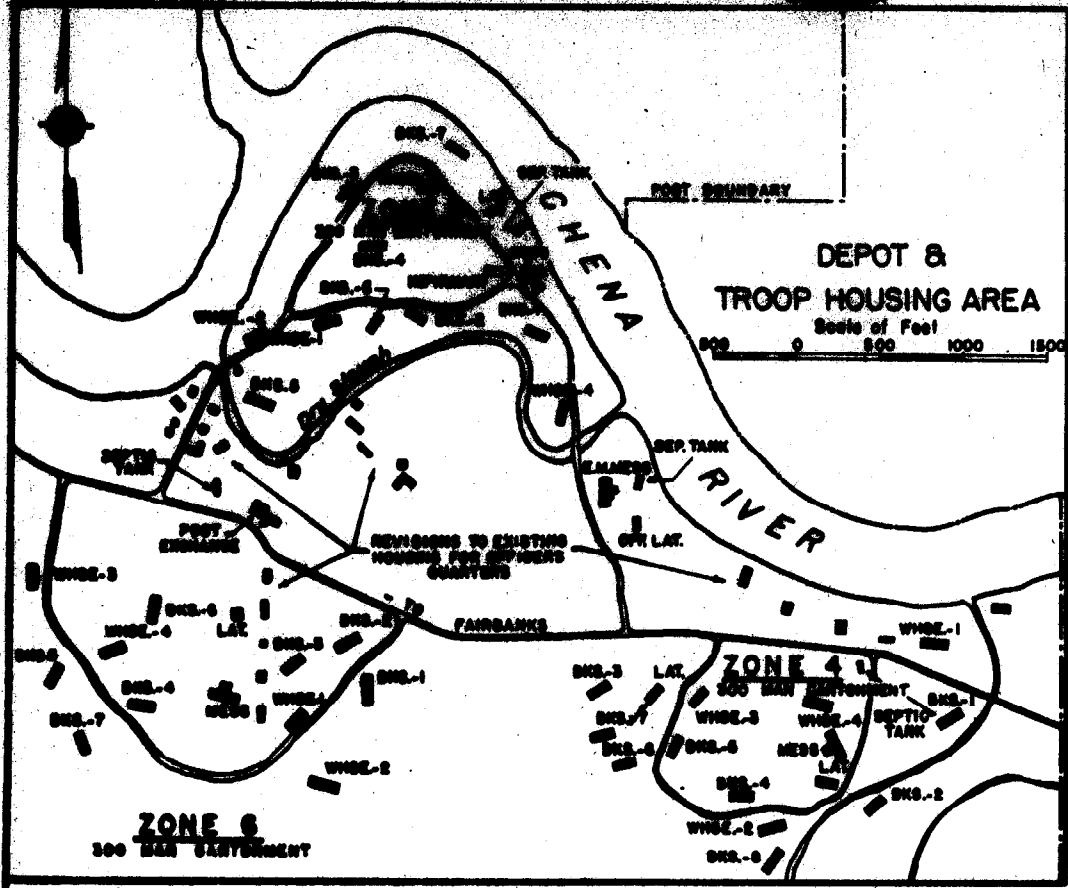
The permanently frozen ground condition at Ladd Field always caused difficulty. Stripping and excavating for runways and building sites was slow, and in winter the ground first had to be thawed by steam before excavations could be made. Cases of "permanently" frozen ground becoming thawed after structures were erected over it have occurred. This was exemplified by the concrete runway failure wherein an 80' square section of the concrete surface collapsed. This required removal of the concrete surface and the complete removal of the semifrozen sand-silt strata to a depth of 15'. This area was once an old slough bed. Evidently subterranean changes of the nearby Chena River caused the thawing action. Such conditions often necessitated changes in building sites.

In view of the extensive bituminous paving program as permanently authorized for Ladd Field, it is anticipated that this project will be completed prior to 1 October 1944. The estimated cost of the Ladd Field project is approximately \$20,000,000.



**LADD FIELD**  
**FAIRBANKS, ALASKA**  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 1 OF 4  
 PERIOD: OCTOBER 1943  
 SCALE OF FEET  
 0 500 1000 2000  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.  
 SEATTLE DIST. 20 SEPTEMBER 1943



**LADD FIELD  
FAIRBANKS, ALASKA  
FIELD PROGRESS REPORT  
PART C**

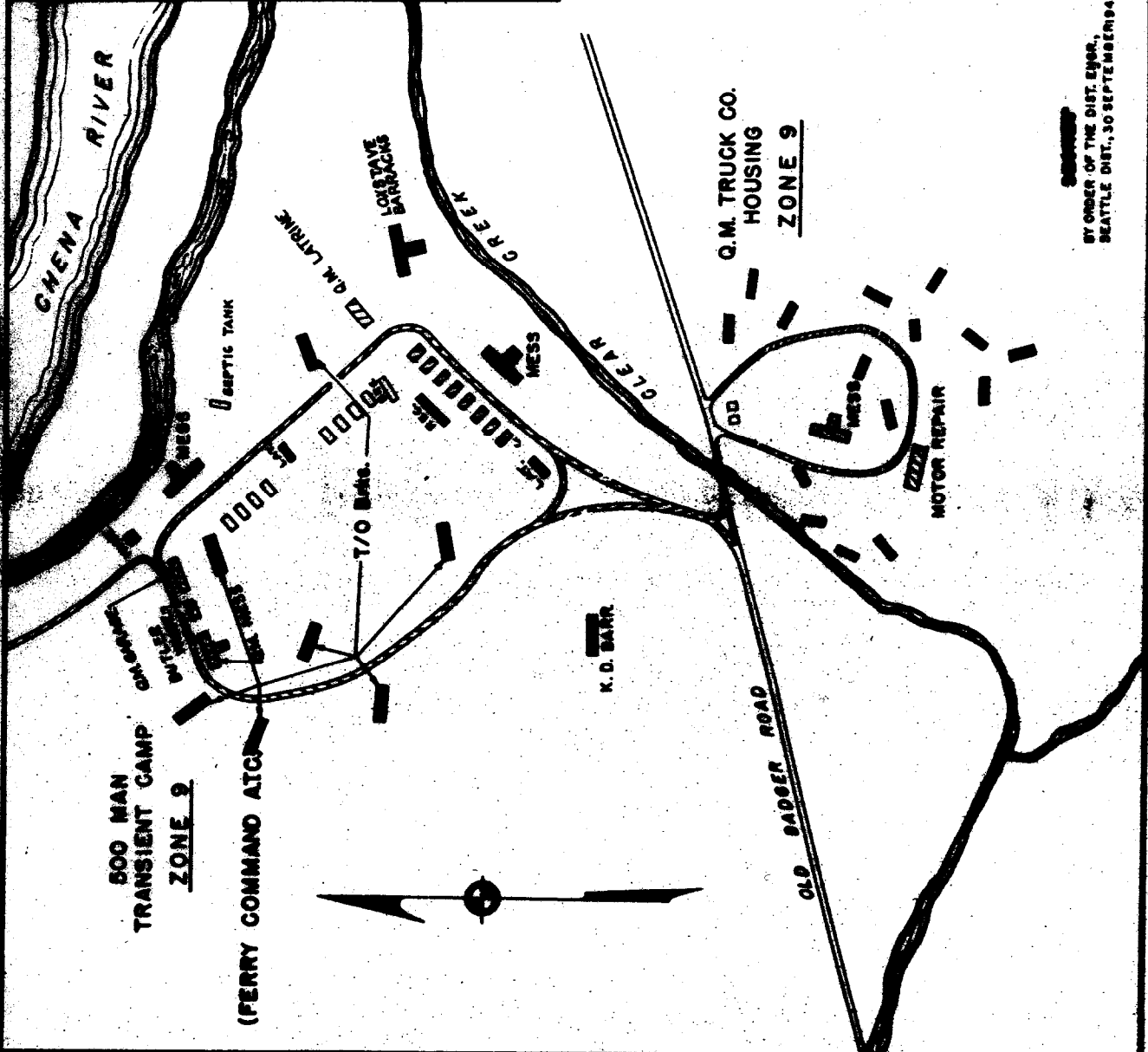
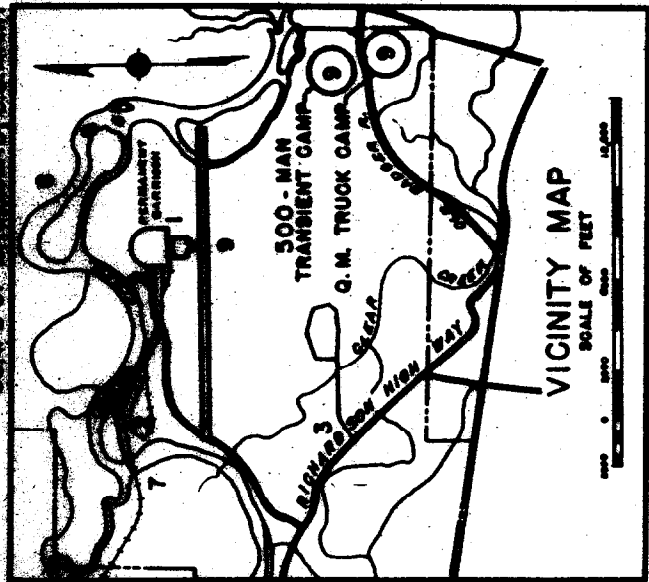
SHEET 2 OF 4  
PERIOD: OCTOBER 1943

Scale of Feet  
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U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT

CORPS OF ENGINEERS U.S. ARMY



**LEGEND**

- PROGRESS**
- WORK COMPLETED [Solid black rectangle]
  - WORK UNDERWAY [Dashed line]
  - WORK AUTHORIZED [Dotted line]

AREAS NOS. 506

**LADD FIELD**  
**FAIRBANKS, ALASKA**  
**FIELD PROGRESS REPORT**  
**PART C**

SHEET 3 OF 4

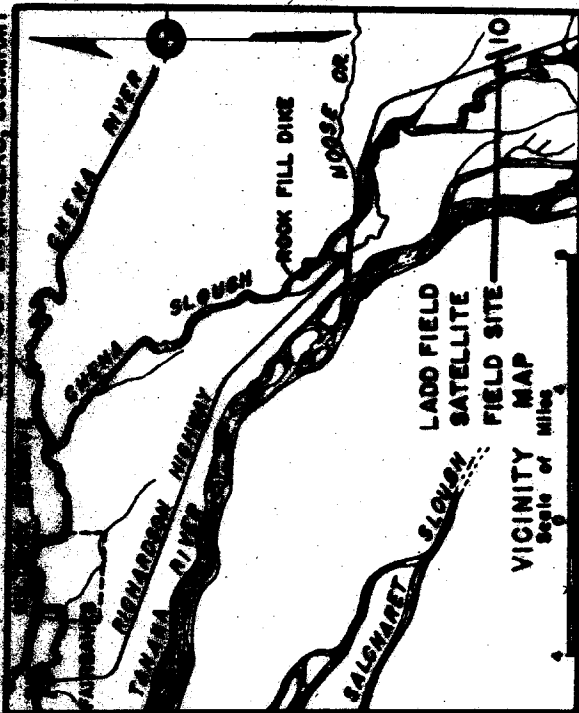
PERIOD: OCTOBER 1943

Scale of Feet: 0 500 1000 1500 2000

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.,  
 SEATTLE DIST., 30 SEPTEMBER 1943

CORPS OF ENGINEERS, U.S. ARMY



LEGEND

PROGRESS:

WORK COMPLETED

WORK UNDERWAY

WORK AUTHORIZED

LADD FIELD  
FAIRBANKS, ALASKA  
FIELD PROGRESS REPORT  
PART C

SHEET 4 OF 4

PERIOD: OCTOBER 1943

Scale of Feet



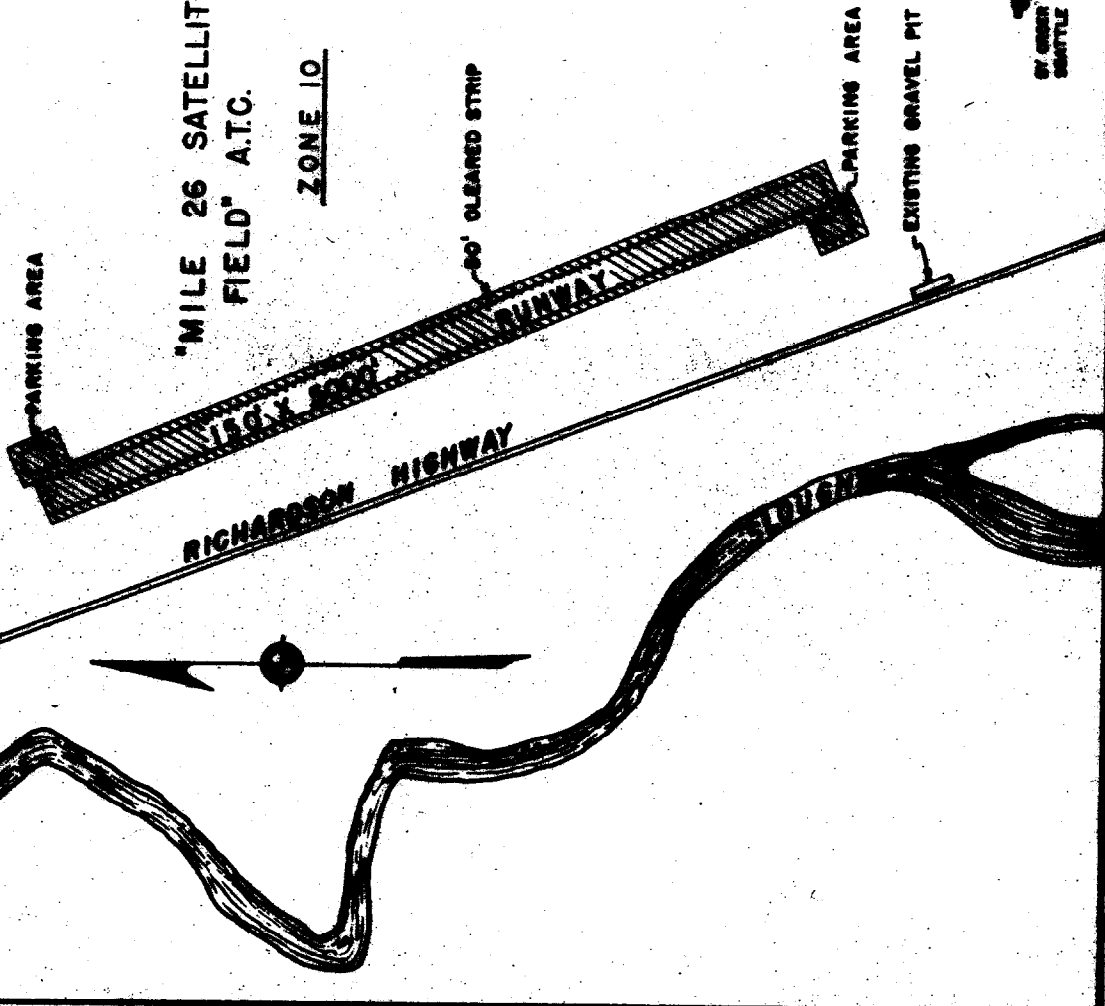
U.S. ENGINEER OFFICE, SEATTLE, WASH.

PREPARED UNDER THE DIRECTION OF

S. BAKER, COLONEL, CORPS OF ENGINEERS

U.S. DEPARTMENT

"MILE 26 SATELLITE  
FIELD" A.T.C.  
ZONE 10



BY ORDER OF THE DIST ENGR  
SEATTLE DIST. 10 SEPTEMBER 1943



(C483-B)

NGAW147-6-8000-6-20-43-11A-3-390-PP-6 AIRPORT, LADD FIELD, ALA.

VERTICAL

## FORT RICHARDSON PROJECT

Fort Richardson was authorized to fulfill the need for a permanent main air base, supply depot and ground garrison for the defense of southern Alaska. The site was selected because of favorable topography and weather conditions, accessibility to the Alaska Railroad, and its close proximity to Cook Inlet which is navigable to oceangoing vessels during approximately six months of the year. The Post is located approximately four miles north-east of Anchorage, Alaska, on the Anchorage-Palmer highway and the Alaska Railroad.

Authority for the project is contained in letter from the Quartermaster General to the Constructing Quartermaster, dated 13 June 1940, subject: "Permanent and Temporary Construction." Construction was initiated by the Constructing Quartermaster on 8 June 1940. The project was transferred from the Constructing Quartermaster to the Corps of Engineers on 16 January 1941, in accordance with The Adjutant General's directive dated 30 November 1940. Many subsequent authorities increased the size of this project both as to personnel and facilities.

The original project plan included all permanent and temporary construction listed in the original directive of the Quartermaster General. This project provided for 2 concrete runways (N/S 5,000' long and E/W 7,500' long) and aprons, one temporary and 3 permanent hangars, Air Corps gasoline facilities consisting of a 600,000 gallon tactical storage and fueling system, a 1,550,000 gallon

operations reserve storage system, concrete igloos for both Air Corps and ground troop bomb and ammunition storage, and other essential technical facilities. Also included in the construction were administration units and housing for a garrison of approximately 7,000 men and a 294 bed hospital. The major utilities include a water-borne sewage system, outfall sewer and mains, a 7,000,000 gallon per day gravity water system with reservoir and chlorinator, a 6,000 KW central heating and power plant and bomb-proof radio transmitter building. Harbor facilities provide for the rehabilitation and extension of the ocean dock which was leased from the Alaska Railroad.

In December 1941, the "Program of Additional Construction" authorized additional housing and facilities for approximately 250 officers and 7,500 enlisted men, and a 417 bed hospital. Additional warehouses and technical facilities were also provided. The above mentioned increase in housing, warehouses and technical facilities were dispersed in the expansion area extending approximately six miles east and four miles north of the main Post area. The war reserve gasoline storage system consisting of four 24,000 barrel tanks and four 5,000' satellite airfields with revetments and taxiways were authorized in 1942. Authorizations during the spring of 1943 provide for a 400 unit Alaska air depot consisting of hangars, warehouses, technical facilities and administration, and a civilian housing project providing housing and facilities for 664 male and 208 female employees. The peak of construction was reached in August 1941, when a total of 3,415 contractor workers

and civilian Government workers were employed.

All construction was accomplished by the purchase and hire method, with the exception of the central heating and power plant, water tower, and tactical gasoline storage and fueling system which was performed by contract. Construction during 1940 and 1941 was performed entirely by civilian labor. During 1942 and 1943 civilian labor was augmented by soldier labor. Captain A. C. Welling, C.E., was the first Resident Engineer and was succeeded in turn by Colonel Craig Smyser and Colonel Maybin H. Wilson.

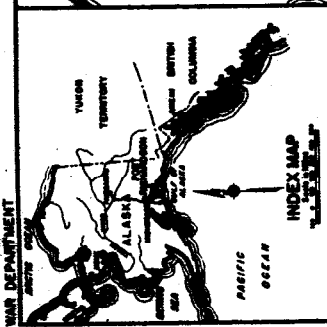
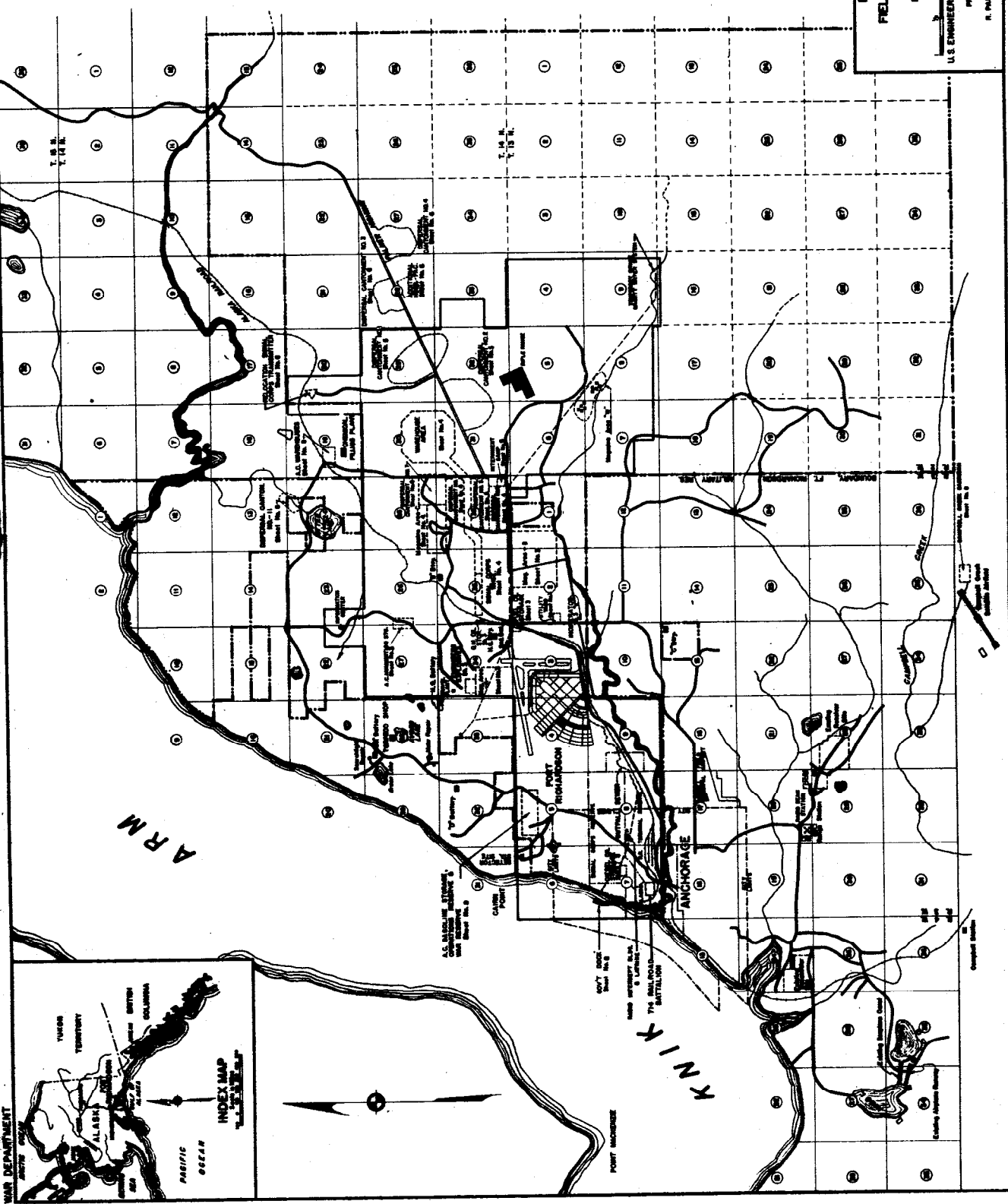
Except for frozen ground and low temperatures no major construction problems were encountered. Fort Richardson was built upon a glacial moraine consisting of gravel varying in size from sand up to 3" rocks with occasional 8" to 12" diameter boulders. Top soil overlying the gravel varied from 6" to 12" in depth and was covered by about 8" of moss. The ground water table on the Post stands from 20' to 25' below the surface. The gravel formation has good bearing capacity. The porosity of the gravel and the low water table provide adequate surface drainage so that no difficulty from frost heaving has occurred. Frost penetrates deeply into the gravel, thus necessitating water and sewer mains being buried to a depth of 7' to 9' below the surface. Difficulty in securing materials, equipment and labor when needed were the major items retarding rapid completion.

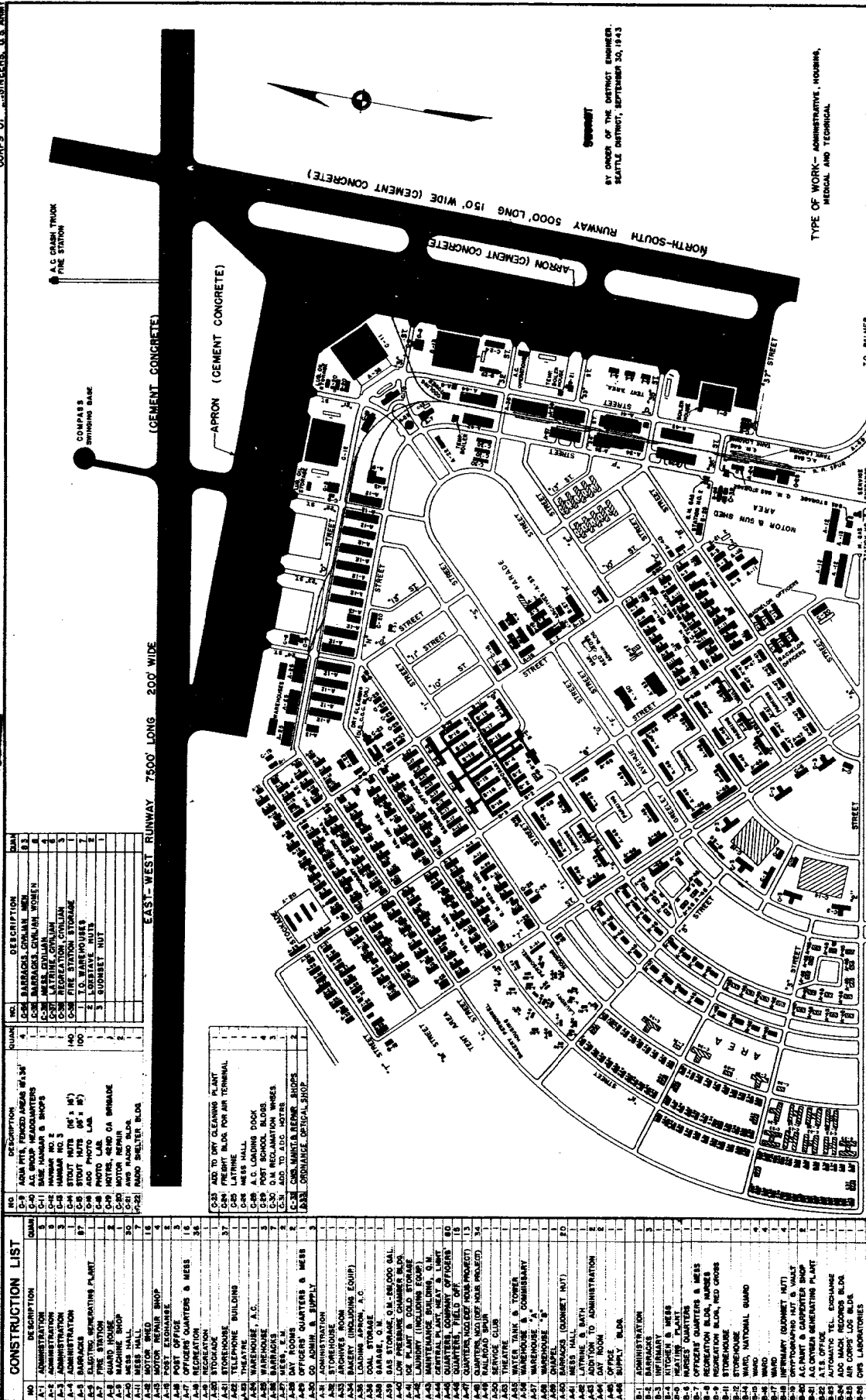
All authorized construction, with the exception of the air depot, was scheduled for substantial completion by January 1944. The air depot is scheduled for completion by 31 March 1944. The cost of construction at Fort Richardson is estimated at \$45,000,000.

U.S. ARMY  
CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPT. 1943

**FORT RICHARDSON  
ALASKA  
FIELD PROGRESS REPORT**  
PART I  
PERIOD: Oct 1942 - 1943  
MADE BY SALES  
PREPARED UNDER THE DIRECTION OF  
H. PAUL, COLONEL, CHIEF OF ENGINEERS  
U.S. ENGINEER OFFICE, SEATTLE, WASH.





**FORT RICHARDSON**  
**ALASKA**  
**FIELD PROGRESS REPORT**  
**PART C**  
 PERIOD: OCTOBER 1943  
 SCALE OF FEET  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

**SUMMARY**  
 BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DISTRICT, SEPTEMBER 30, 1943

TYPE OF WORK - ADMINISTRATIVE, HOUSING,  
 MEDICAL AND TECHNICAL

NO.	DESCRIPTION	NO.	DESCRIPTION	QUANT.	NO.	DESCRIPTION	QUANT.
1-1	ADMIN. BLDG.	1	ADMIN. BLDG.	1	1-1	ADMIN. BLDG.	1
1-2	ADMIN. BLDG.	2	ADMIN. BLDG.	2	1-2	ADMIN. BLDG.	2
1-3	ADMIN. BLDG.	3	ADMIN. BLDG.	3	1-3	ADMIN. BLDG.	3
1-4	ADMIN. BLDG.	4	ADMIN. BLDG.	4	1-4	ADMIN. BLDG.	4
1-5	ADMIN. BLDG.	5	ADMIN. BLDG.	5	1-5	ADMIN. BLDG.	5
1-6	ADMIN. BLDG.	6	ADMIN. BLDG.	6	1-6	ADMIN. BLDG.	6
1-7	ADMIN. BLDG.	7	ADMIN. BLDG.	7	1-7	ADMIN. BLDG.	7
1-8	ADMIN. BLDG.	8	ADMIN. BLDG.	8	1-8	ADMIN. BLDG.	8
1-9	ADMIN. BLDG.	9	ADMIN. BLDG.	9	1-9	ADMIN. BLDG.	9
1-10	ADMIN. BLDG.	10	ADMIN. BLDG.	10	1-10	ADMIN. BLDG.	10
1-11	ADMIN. BLDG.	11	ADMIN. BLDG.	11	1-11	ADMIN. BLDG.	11
1-12	ADMIN. BLDG.	12	ADMIN. BLDG.	12	1-12	ADMIN. BLDG.	12
1-13	ADMIN. BLDG.	13	ADMIN. BLDG.	13	1-13	ADMIN. BLDG.	13
1-14	ADMIN. BLDG.	14	ADMIN. BLDG.	14	1-14	ADMIN. BLDG.	14
1-15	ADMIN. BLDG.	15	ADMIN. BLDG.	15	1-15	ADMIN. BLDG.	15
1-16	ADMIN. BLDG.	16	ADMIN. BLDG.	16	1-16	ADMIN. BLDG.	16
1-17	ADMIN. BLDG.	17	ADMIN. BLDG.	17	1-17	ADMIN. BLDG.	17
1-18	ADMIN. BLDG.	18	ADMIN. BLDG.	18	1-18	ADMIN. BLDG.	18
1-19	ADMIN. BLDG.	19	ADMIN. BLDG.	19	1-19	ADMIN. BLDG.	19
1-20	ADMIN. BLDG.	20	ADMIN. BLDG.	20	1-20	ADMIN. BLDG.	20
1-21	ADMIN. BLDG.	21	ADMIN. BLDG.	21	1-21	ADMIN. BLDG.	21
1-22	ADMIN. BLDG.	22	ADMIN. BLDG.	22	1-22	ADMIN. BLDG.	22
1-23	ADMIN. BLDG.	23	ADMIN. BLDG.	23	1-23	ADMIN. BLDG.	23
1-24	ADMIN. BLDG.	24	ADMIN. BLDG.	24	1-24	ADMIN. BLDG.	24
1-25	ADMIN. BLDG.	25	ADMIN. BLDG.	25	1-25	ADMIN. BLDG.	25
1-26	ADMIN. BLDG.	26	ADMIN. BLDG.	26	1-26	ADMIN. BLDG.	26
1-27	ADMIN. BLDG.	27	ADMIN. BLDG.	27	1-27	ADMIN. BLDG.	27
1-28	ADMIN. BLDG.	28	ADMIN. BLDG.	28	1-28	ADMIN. BLDG.	28
1-29	ADMIN. BLDG.	29	ADMIN. BLDG.	29	1-29	ADMIN. BLDG.	29
1-30	ADMIN. BLDG.	30	ADMIN. BLDG.	30	1-30	ADMIN. BLDG.	30
1-31	ADMIN. BLDG.	31	ADMIN. BLDG.	31	1-31	ADMIN. BLDG.	31
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1-34	ADMIN. BLDG.	34	ADMIN. BLDG.	34	1-34	ADMIN. BLDG.	34
1-35	ADMIN. BLDG.	35	ADMIN. BLDG.	35	1-35	ADMIN. BLDG.	35
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1-42	ADMIN. BLDG.	42	ADMIN. BLDG.	42	1-42	ADMIN. BLDG.	42
1-43	ADMIN. BLDG.	43	ADMIN. BLDG.	43	1-43	ADMIN. BLDG.	43
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1-47	ADMIN. BLDG.	47	ADMIN. BLDG.	47	1-47	ADMIN. BLDG.	47
1-48	ADMIN. BLDG.	48	ADMIN. BLDG.	48	1-48	ADMIN. BLDG.	48
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1-60	ADMIN. BLDG.	60	ADMIN. BLDG.	60	1-60	ADMIN. BLDG.	60
1-61	ADMIN. BLDG.	61	ADMIN. BLDG.	61	1-61	ADMIN. BLDG.	61
1-62	ADMIN. BLDG.	62	ADMIN. BLDG.	62	1-62	ADMIN. BLDG.	62
1-63	ADMIN. BLDG.	63	ADMIN. BLDG.	63	1-63	ADMIN. BLDG.	63
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1-72	ADMIN. BLDG.	72	ADMIN. BLDG.	72	1-72	ADMIN. BLDG.	72
1-73	ADMIN. BLDG.	73	ADMIN. BLDG.	73	1-73	ADMIN. BLDG.	73
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1-75	ADMIN. BLDG.	75	ADMIN. BLDG.	75	1-75	ADMIN. BLDG.	75
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1-78	ADMIN. BLDG.	78	ADMIN. BLDG.	78	1-78	ADMIN. BLDG.	78
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1-81	ADMIN. BLDG.	81	ADMIN. BLDG.	81	1-81	ADMIN. BLDG.	81
1-82	ADMIN. BLDG.	82	ADMIN. BLDG.	82	1-82	ADMIN. BLDG.	82
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1-96	ADMIN. BLDG.	96	ADMIN. BLDG.	96	1-96	ADMIN. BLDG.	96
1-97	ADMIN. BLDG.	97	ADMIN. BLDG.	97	1-97	ADMIN. BLDG.	97
1-98	ADMIN. BLDG.	98	ADMIN. BLDG.	98	1-98	ADMIN. BLDG.	98
1-99	ADMIN. BLDG.	99	ADMIN. BLDG.	99	1-99	ADMIN. BLDG.	99
1-100	ADMIN. BLDG.	100	ADMIN. BLDG.	100	1-100	ADMIN. BLDG.	100

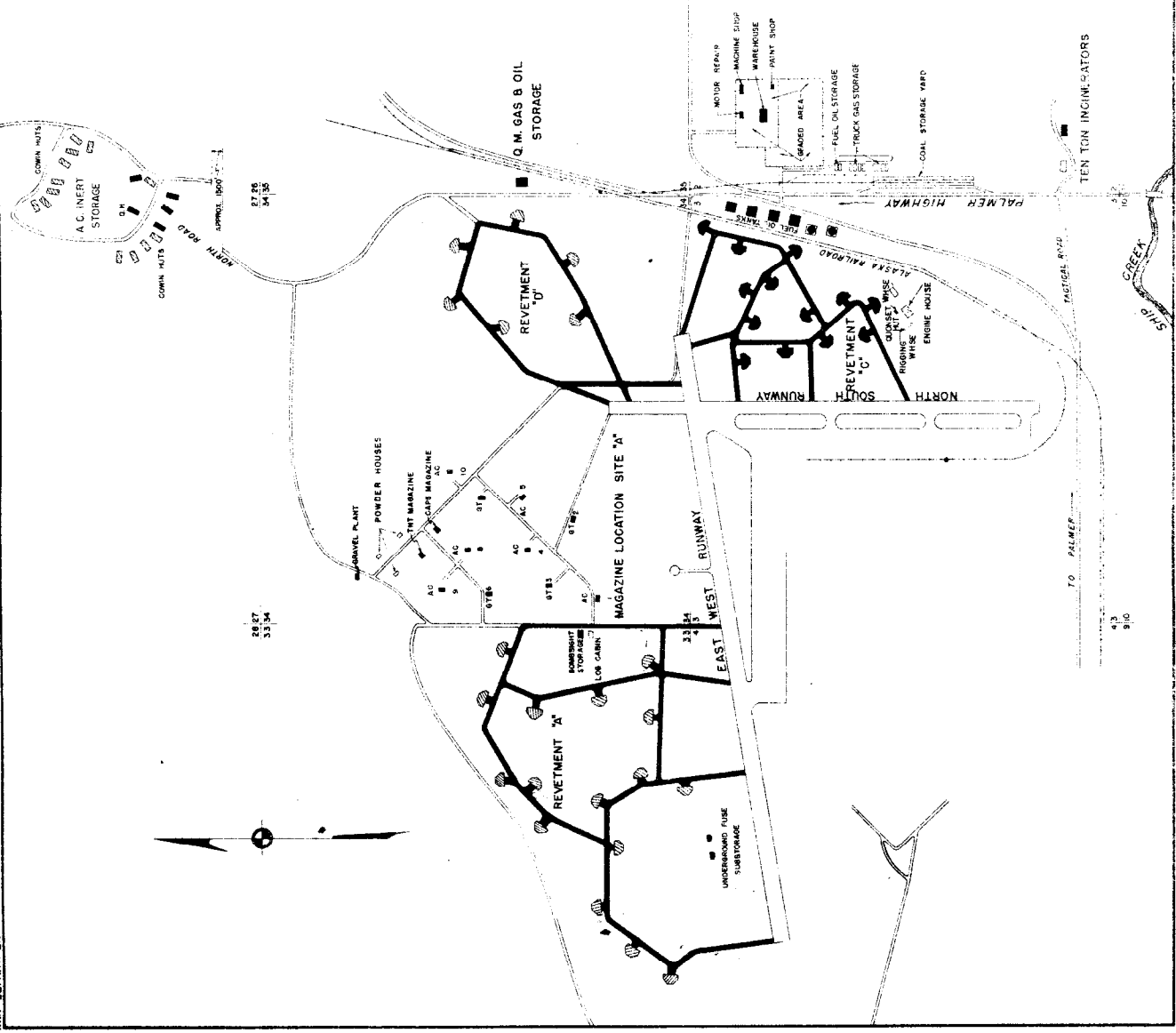
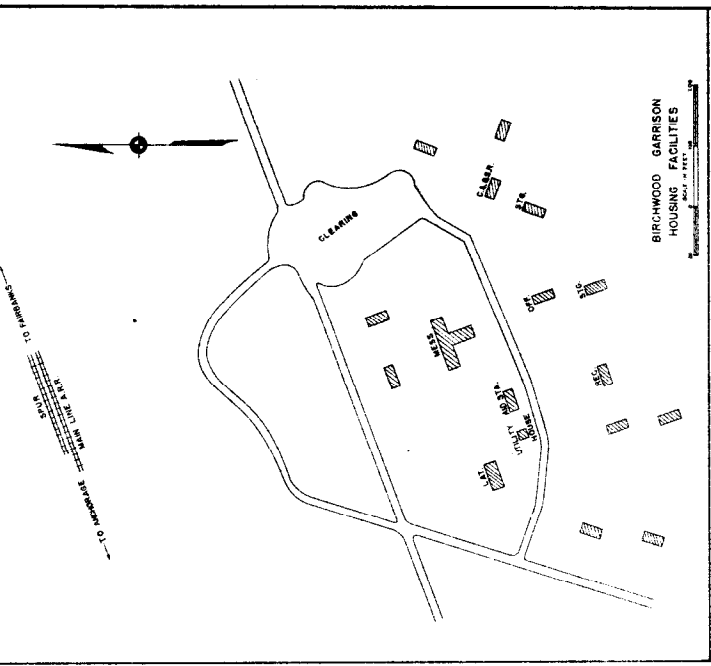
C-33 ADD TO DRY CLEANING PLANT  
 C-34 PREPARE BLDG. FOR AIR TERMINAL  
 C-35 LATHING  
 C-36 MESS HALL  
 C-37 ROTARY BLDG.  
 C-38 ROT. SCHOOL BLDG.  
 C-39 O.N. RECLAMATION WHARVES  
 C-40 ADD TO ADD. MOTHS  
 C-41 CAR. MOUNT. REPAIR BLDG.  
 C-42 ORDNANCE DETAIL SHOP

**LEGEND**  
 PROGRESS:  
 WORK COMPLETED (Solid line)  
 WORK UNDERWAY (Dashed line)  
 WORK AUTHORIZED (Dotted line)

BASED ON ANC. B 54 B. ANC. B 5/5

WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY

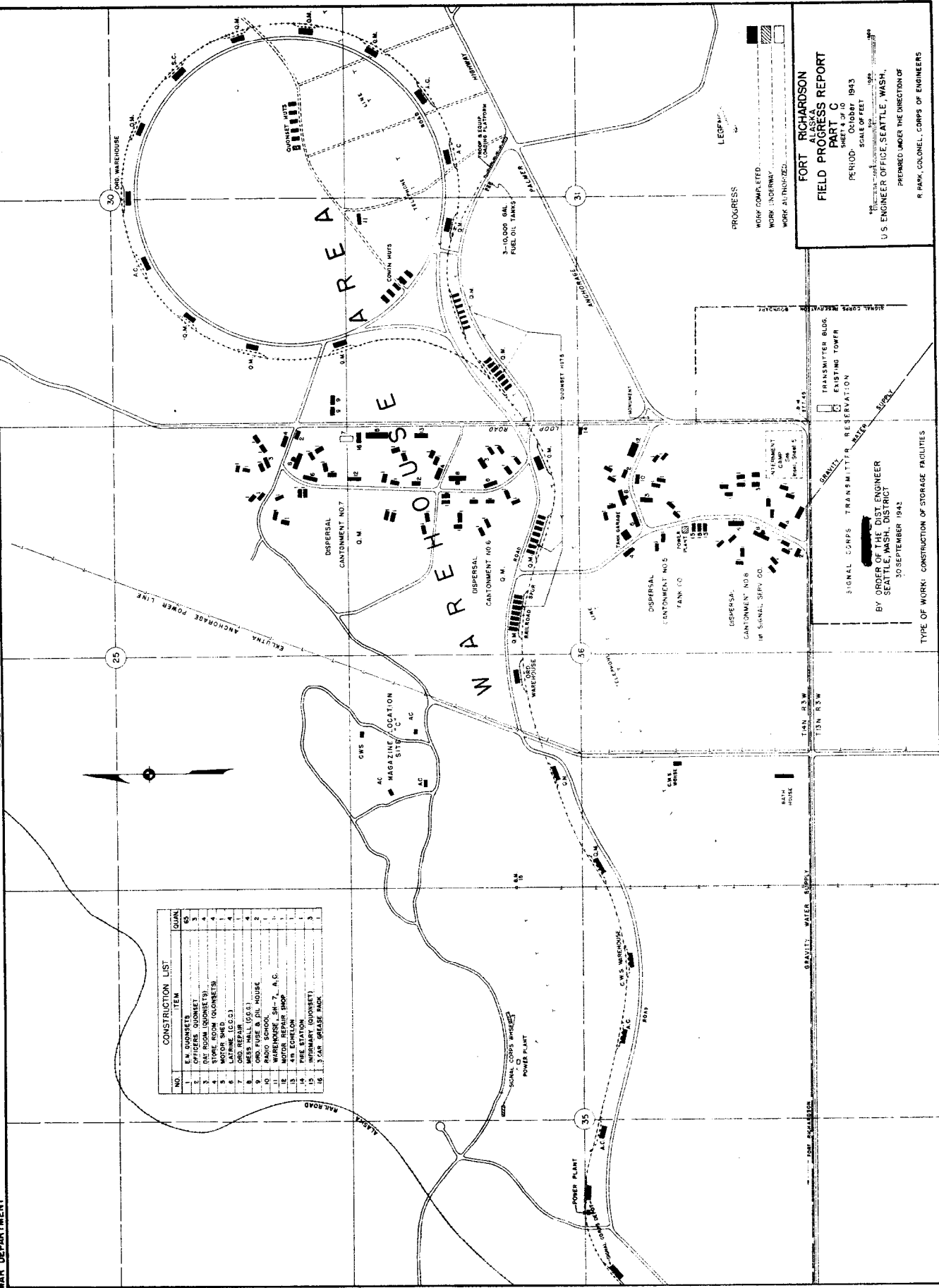


**FORT RICHARDSON**  
**FIELD PROGRESS REPORT**  
**PART C**  
 PERIOD: October, 1943  
 DATE OF PREP: 10/30/43  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 P. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**  
 PROGRESS: WORK COMPLETED, WORK UNDERWAY, WORK AUTHORIZED

WAR DEPARTMENT

CONSTRUCTION LIST		
NO.	ITEM	QUAN.
1	E.M. QUONSETS	65
2	OFFICERS QUONSET	3
3	ONE ROOM QUONSETS	4
4	WOOD SHEDS	1
5	MOTOR SHED	1
6	LATRINE (C.C.C.)	4
7	ORNS REPAIR	1
8	MEN'S WAREHOUSE	1
9	WOOD SHED	2
10	RADIO SCHOOL	1
11	WAREHOUSE SH-7, A.C.	1
12	MOTOR REPAIR SHOP	1
13	TRUCK GARAGE	1
14	INFIRMARY (QUONSET)	1
15	3 CAR GREASE JACK	3



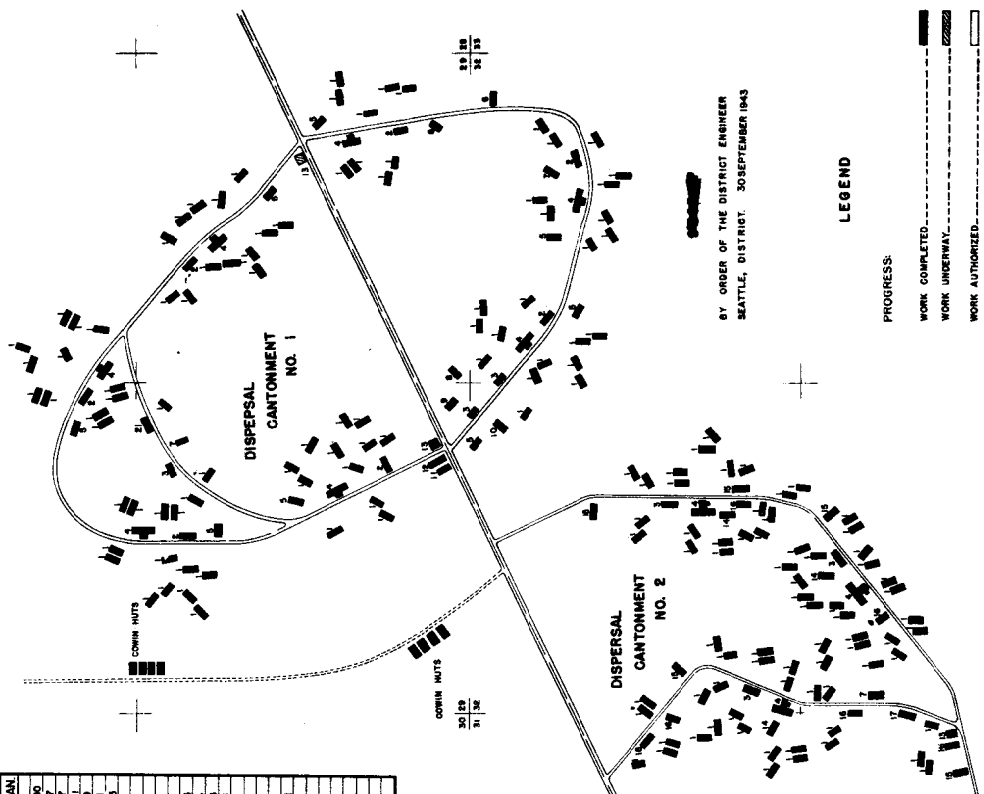
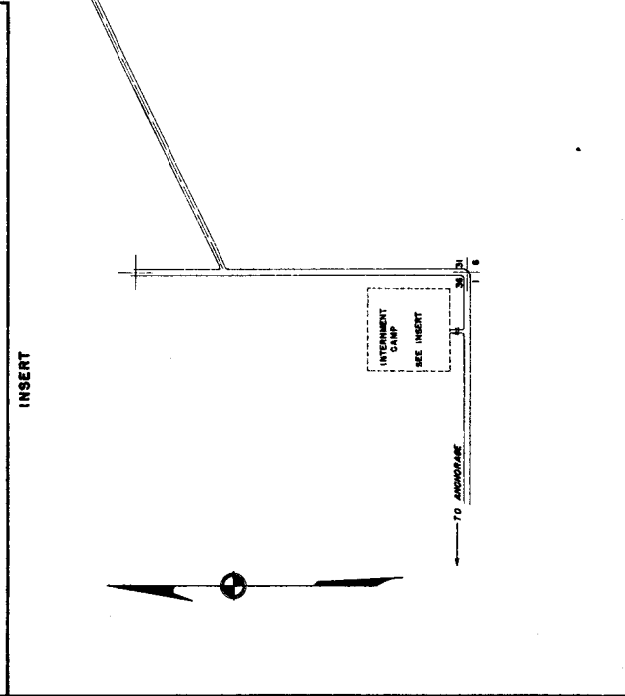
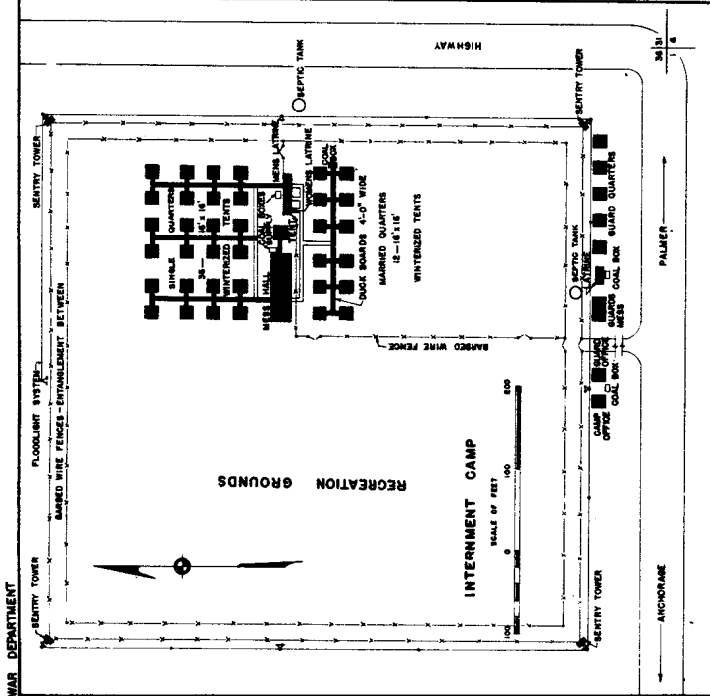
**FORT RICHARDSON**  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 4 OF 10  
 PERIOD: October 1943  
 SCALE OF FEET  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

TRANSMITTER BLDG.  
 EXISTING TOWER  
 SIGNAL CORPS TRANSMITTER RESERVATION  
 GRAVELLY WATER RESERVOIR  
 BY ORDER OF THE DIST ENGINEER  
 SEATTLE, WASH., DISTRICT  
 30 SEPTEMBER 1942

TYPE OF WORK: CONSTRUCTION OF STORAGE FACILITIES

**CONSTRUCTION LIST**

NO	DESCRIPTION	QUANT
1	DISPERSAL CANTONMENT NO. 1 S. NO. 2	1
2	BARRACKS (QUONSET HUT)	7
3	LATHING	7
4	MESS HALL	11
5	WAREHOUSE	9
6	MOTOR REPAIR	1
7	POST OFFICE	3
8	TOOL HOUSE	3
9	PRISON	1
10	HEADQUARTERS	1
11	POST OFFICE	1
12	POST OFFICE	3
13	POWER HOUSE	3
14	DAY ROOM	4
15	STORE ROOM	4
16	MESS HALL	6
17	IMPUNITY OFFICERS'	9
18	ADMINISTRATION	1
19	ADMINISTRATION	1
20	ADMINISTRATION	1
21	INFIRMARY (QUONSET HUT)	1



BY ORDER OF THE DISTRICT ENGINEER  
SEATTLE, DISTRICT 30 SEPTEMBER 1943

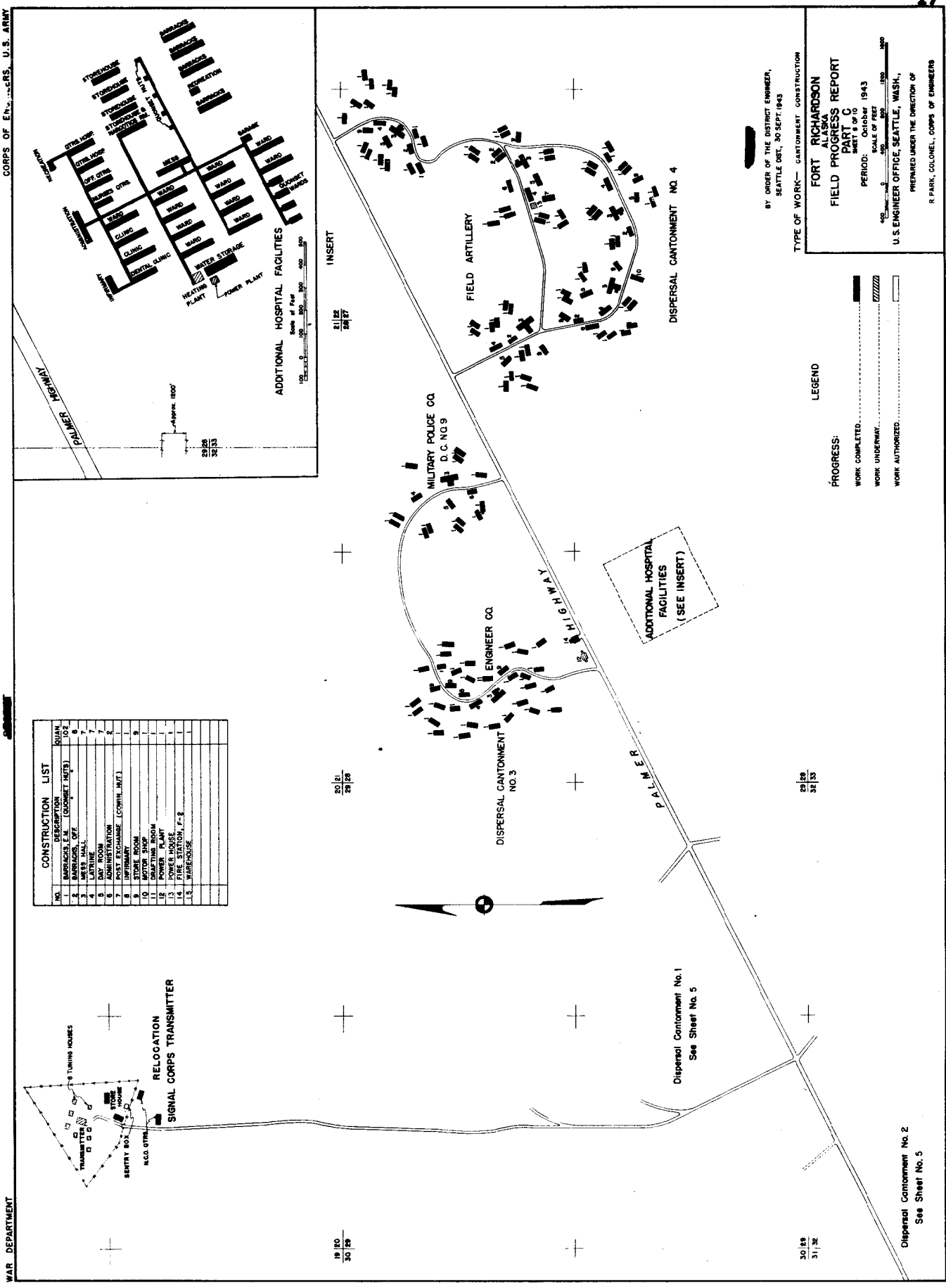
**LEGEND**

- PROGRESS:
- WORK COMPLETED:
  - WORK UNDERWAY:
  - WORK AUTHORIZED:

**FORT RICHARDSON  
ALASKA  
FIELD PROGRESS REPORT  
PART C**

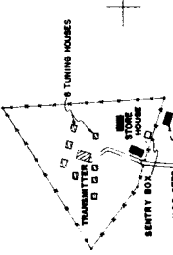
PERIOD: Oct 1942  
SCALE OF FEET: 1 inch = 250 feet

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS



**CONSTRUCTION LIST**

NO.	DESCRIPTION	QUAL.
1	BARRACKS, E.M. (COMBET. HOVS)	102
2	BARRACKS, OFF.	7
3	MESS HALL	7
4	LATRINE	7
5	DAY ROOM	7
6	ADMINISTRATION	2
7	STORE ROOM	2
8	MOTOR SHOP	2
9	POWER HOUSE (COHIN. MET.)	1
10	FIRE STATION, F-2	1
11	WAREHOUSE	1
12		
13		
14		
15		



WAR DEPARTMENT  
CORPS OF ENGINEERS, U.S. ARMY

BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DIST., 30 SEPT. 1943

TYPE OF WORK—CANTONMENT CONSTRUCTION

**FORT RICHARDSON  
ALASKA**

**FIELD PROGRESS REPORT  
PART C**

SHEET 4 OF 10

PERIOD: October 1943

SCALE OF FEET  
0 50 100 150 200

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, COMPS OF ENGINEERS

**LEGEND**

PROGRESS:

WORK COMPLETED: [Solid black rectangle]

WORK UNDERWAY: [Dotted rectangle]

WORK AUTHORIZED: [Empty rectangle]

30 89  
31 32

20 21  
29 28

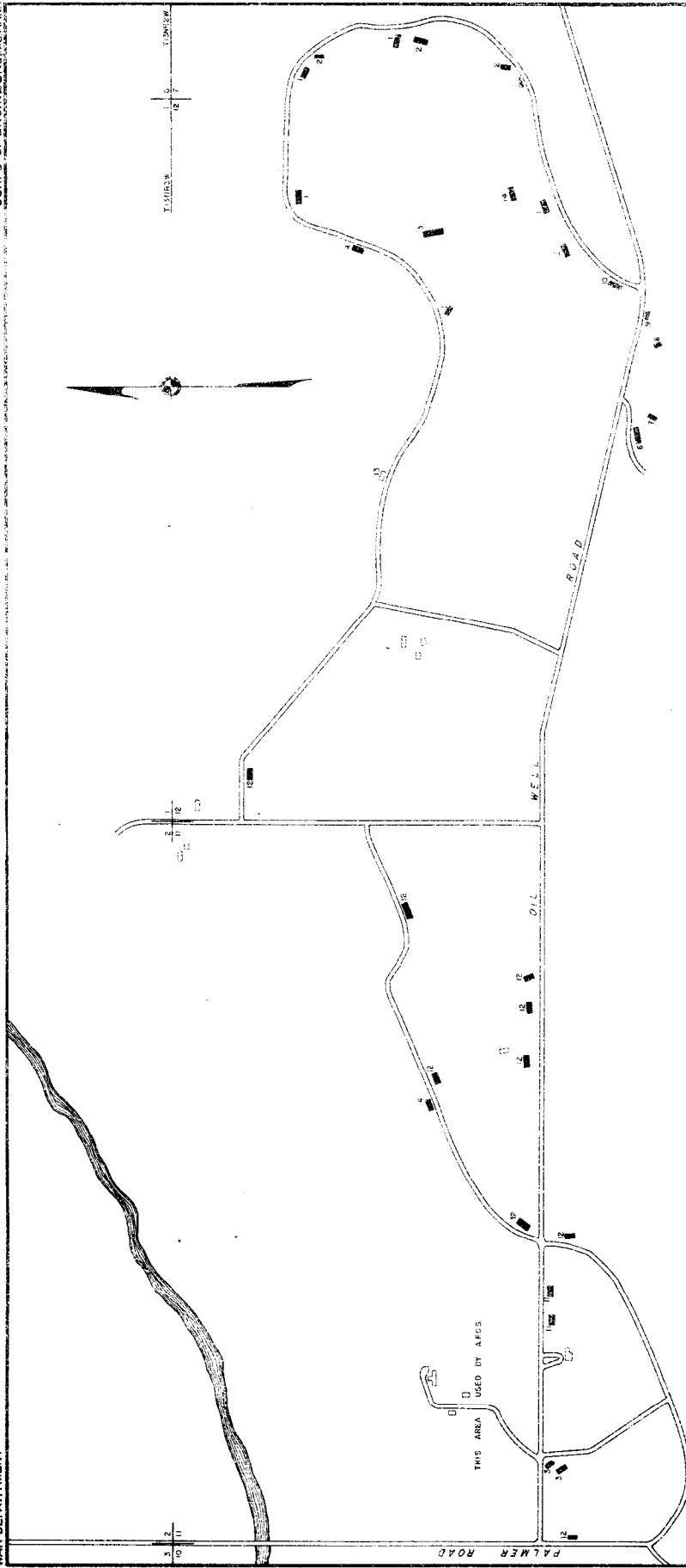
23 29  
32 33

21 22  
28 27

DISPERSAL CANTONMENT NO. 1  
See Sheet No. 5

DISPERSAL CANTONMENT NO. 2  
See Sheet No. 5

WAR DEPARTMENT  
CORPS OF ENGINEERS/US ARMY



CONSTRUCTION LIST		
NO.	DESCRIPTION	QUAN.
1	COMPLETION	1
2	ADMINISTRATION	2
3	ADMINISTRATION & SUPPLY	2
4	POST EXCHANGE	2
5	OFFICIAL SUPPLY OFFICE BUILDING	1
6	OPERATIONS	1
7	OFFICERS DAY ROOM	1
8	OFFICERS QUARTERS	2
9	OFFICERS BATH	2
10	UTILITY SHOPS	2
11	WAREHOUSE	2
12	KITCHEN & BATH	2
13	LAUNDRY	2
14	REPAIR SHOP	2

LEGEND

PROGRESS: ————

WORK COMPLETED: ————

WORK UNDERWAY: - - - - -

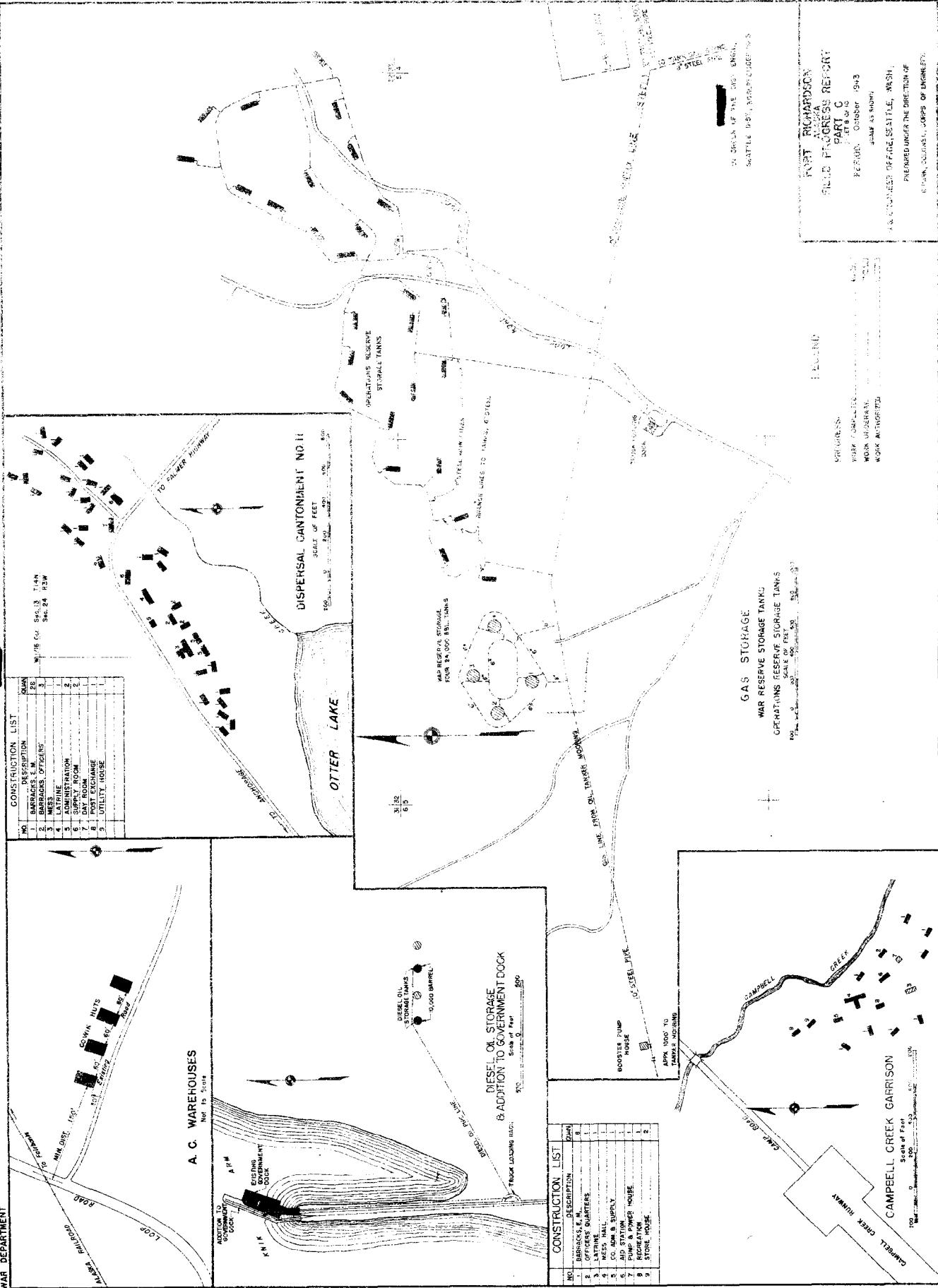
WORK AUTHORIZED: ······

EXISTING BUILDINGS: ————

BY ORDER OF THE CHIEF ENGINEER  
SEATTLE DISTRICT, 30 SEPT. 1943

FORT RICHARDSON  
ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 7 OF 10  
PERIOD: 15 SEP. 1943  
SCALE: AS SHOWN  
NO. 1000  
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. W. B. COLWELL, CHIEF OF ENGINEERS

CORPS OF ENGINEERS, U. S. ARMY



CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY
1	BARACKS, 5 M.	3
2	MESS	2
3	ADMINISTRATION	2
4	SUPPLY ROOM	2
5	DAY ROOM	2
6	POST EXCHANGE	2
7	UTILITY HOUSE	2

CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY
1	BARACKS, 5 M.	3
2	OFFICERS' QUARTERS	2
3	MESS HALL	2
4	CO. A.M. B. SUPPLY	2
5	AID STATION	2
6	POWER & POWER HOUSE	2
7	STORE HOUSE	2

CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY
1	BARACKS, 5 M.	3
2	OFFICERS' QUARTERS	2
3	MESS HALL	2
4	CO. A.M. B. SUPPLY	2
5	AID STATION	2
6	POWER & POWER HOUSE	2
7	STORE HOUSE	2

CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY
1	BARACKS, 5 M.	3
2	OFFICERS' QUARTERS	2
3	MESS HALL	2
4	CO. A.M. B. SUPPLY	2
5	AID STATION	2
6	POWER & POWER HOUSE	2
7	STORE HOUSE	2

CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY
1	BARACKS, 5 M.	3
2	OFFICERS' QUARTERS	2
3	MESS HALL	2
4	CO. A.M. B. SUPPLY	2
5	AID STATION	2
6	POWER & POWER HOUSE	2
7	STORE HOUSE	2

CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY
1	BARACKS, 5 M.	3
2	OFFICERS' QUARTERS	2
3	MESS HALL	2
4	CO. A.M. B. SUPPLY	2
5	AID STATION	2
6	POWER & POWER HOUSE	2
7	STORE HOUSE	2

PORT RICHARDSON  
FIELD PROGRESS REPORT  
PART C  
PERIOD: OCTOBER 1943  
SUMMARY  
PREPARED UNDER THE DIRECTION OF  
ENGINEER, CORPS OF ENGINEERS

LEGEND  
SYMBOLS  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

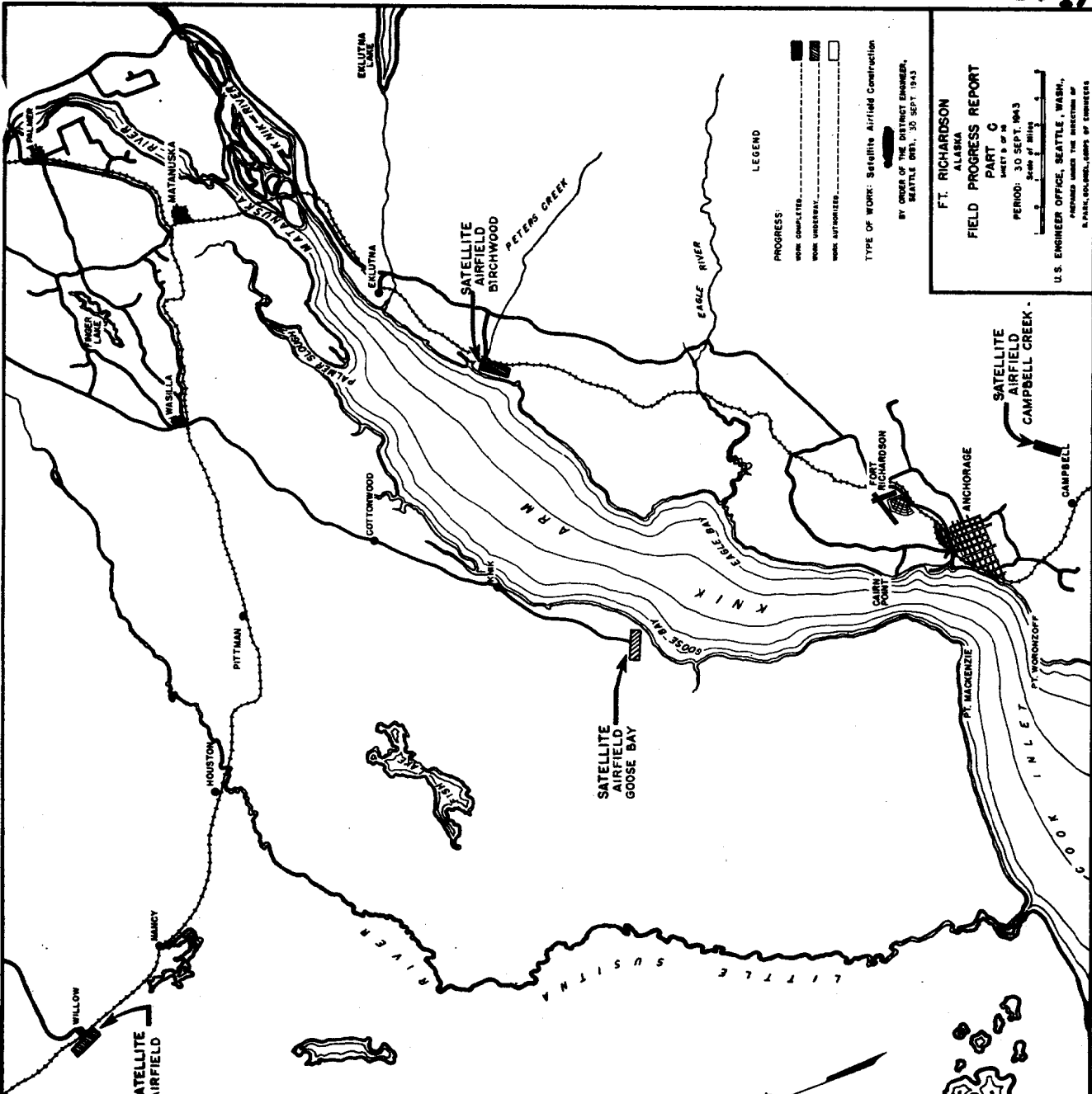
GAS STORAGE  
WAR RESERVE STORAGE TANKS  
OPERATIONS RESERVE STORAGE TANKS

DISPERSAL CANTONMENT NO II  
OTTER LAKE  
DIESEL OIL STORAGE  
& ADDITION TO GOVERNMENT DOCK

A. C. WAREHOUSES  
KNIX  
EXISTING WAREHOUSE DOCK  
DIESEL OIL STORAGE TANKS  
10,000 BARRELS

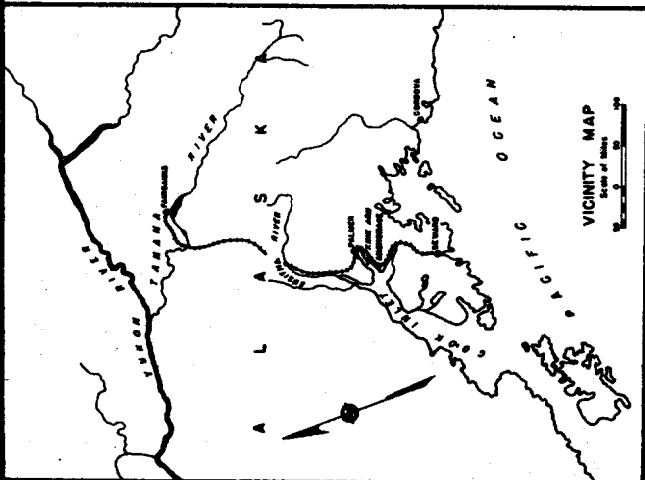
CAMPBELL CREEK GARRISON  
CAMPBELL CREEK RUNWAY

U.S. ARMY  
CORPS OF ENGINEERS

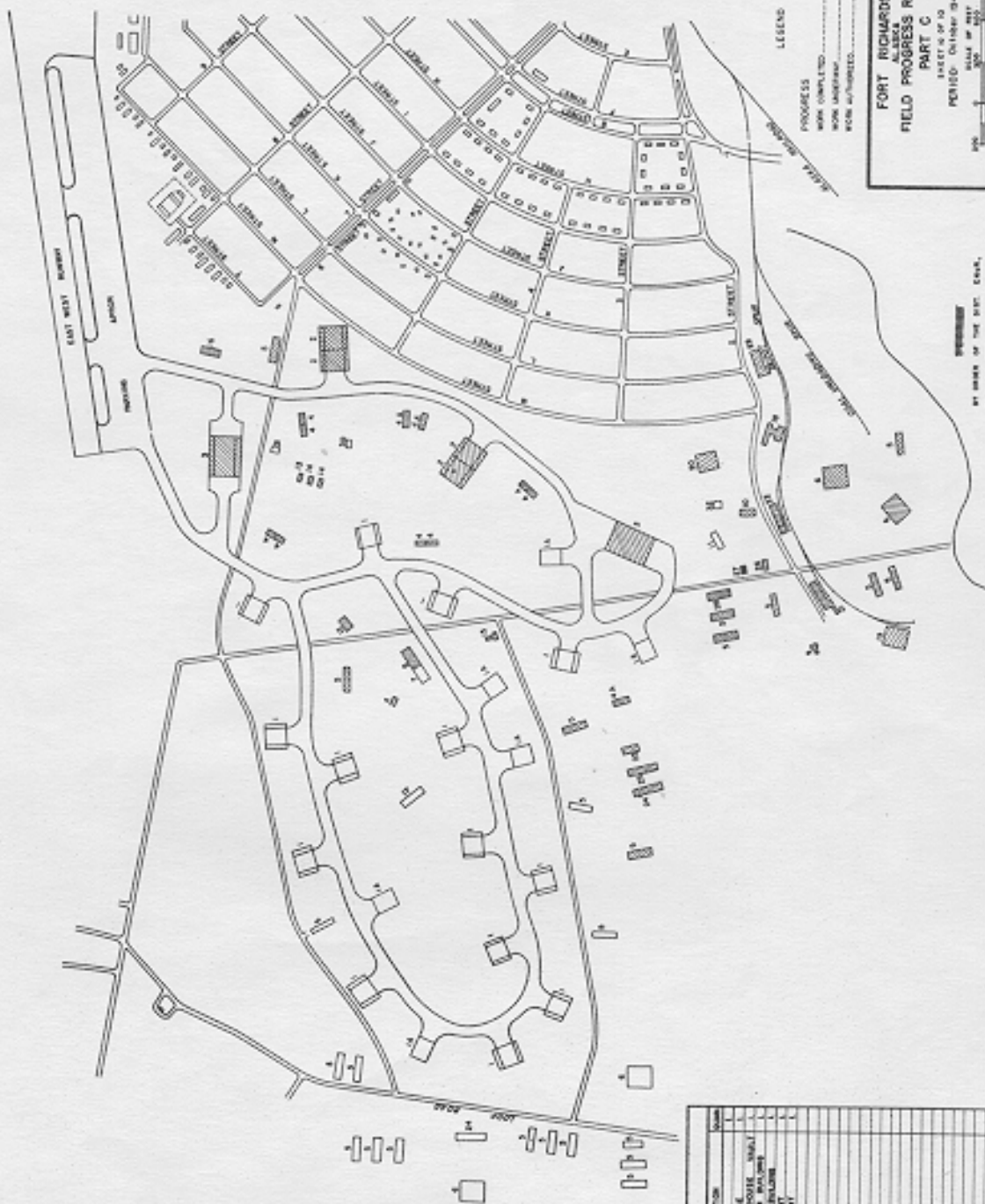


**FT. RICHARDSON**  
ALASKA  
**FIELD PROGRESS REPORT**  
PART C  
PERIOD: 30 SEPT. 1943  
Scale of drawing: 1" = 1 mile

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
FORWARDED UNDER THE AUTHORITY OF  
A. PAUL, COLONEL, CHIEF OF ENGINEERS



Alaska District



NO.	DESCRIPTION	STATUS	REMARKS
1.	REPAIRS AND AMBITION		
2.	REPAIRS AND AMBITION		
3.	REPAIRS AND AMBITION		
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100.	REPAIRS AND AMBITION		



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EL MENDORF FIELD, ALASKA

SECRET

## ANNETTE ISLAND PROJECT

The Annette Island project was established as a supplementary or intermediate landing field and staging area between air bases of the continental United States and Alaska for the accommodation of bomber and pursuit planes. The site for the field was on the southwest peninsula of Annette Island approximately 5 miles south of Metlakatla and 30 miles south of Ketchikan. This peninsula is roughly 4 miles wide and 6 miles long and temporary permission was granted to the War Department by the Department of the Interior on 6 January 1941 for use of this land subject to the consent of the Metlakatla Indian governing body.

Authorization of the Annette Island project was by 1st indorsement from The Adjutant General's Office to the Chief of Engineers, dated 25 July 1940, subject: "Proposed Auxiliary Landing Field and Staging Area at Metlakatla, Alaska."

The original program called for two 5,000' runways 200' wide with water-bound macadam surface, together with the necessary aprons, taxiways, hangar and lean-tos, and a tactical gas storage and fueling system. Both runways were subsequently widened to 300', one was extended to 6,000' and the other to 7,500' in length. Additional provisions were made to construct a 60' by 600' rock-filled, steel grating, seaplane ramp with parking area for the Navy; oil, ordnance, bombsight storage facilities; additional miscellaneous camp facilities; additional revetments for bombers and pursuit planes, service roads,

taxiways and four Panama Mounts for the Coast Artillery Battery with garrison housing, storage and utilities. Also additional garrison facilities for the R.C.A.F.; additional Coast Artillery, Anti Aircraft, R.C.A.F., Air Corps and Infantry housing together with utilities; two 6" Naval gun emplacements; three small docks in Tamgas Harbor; and a 75 bed hospital, various roads, utilities communications and technical facilities.

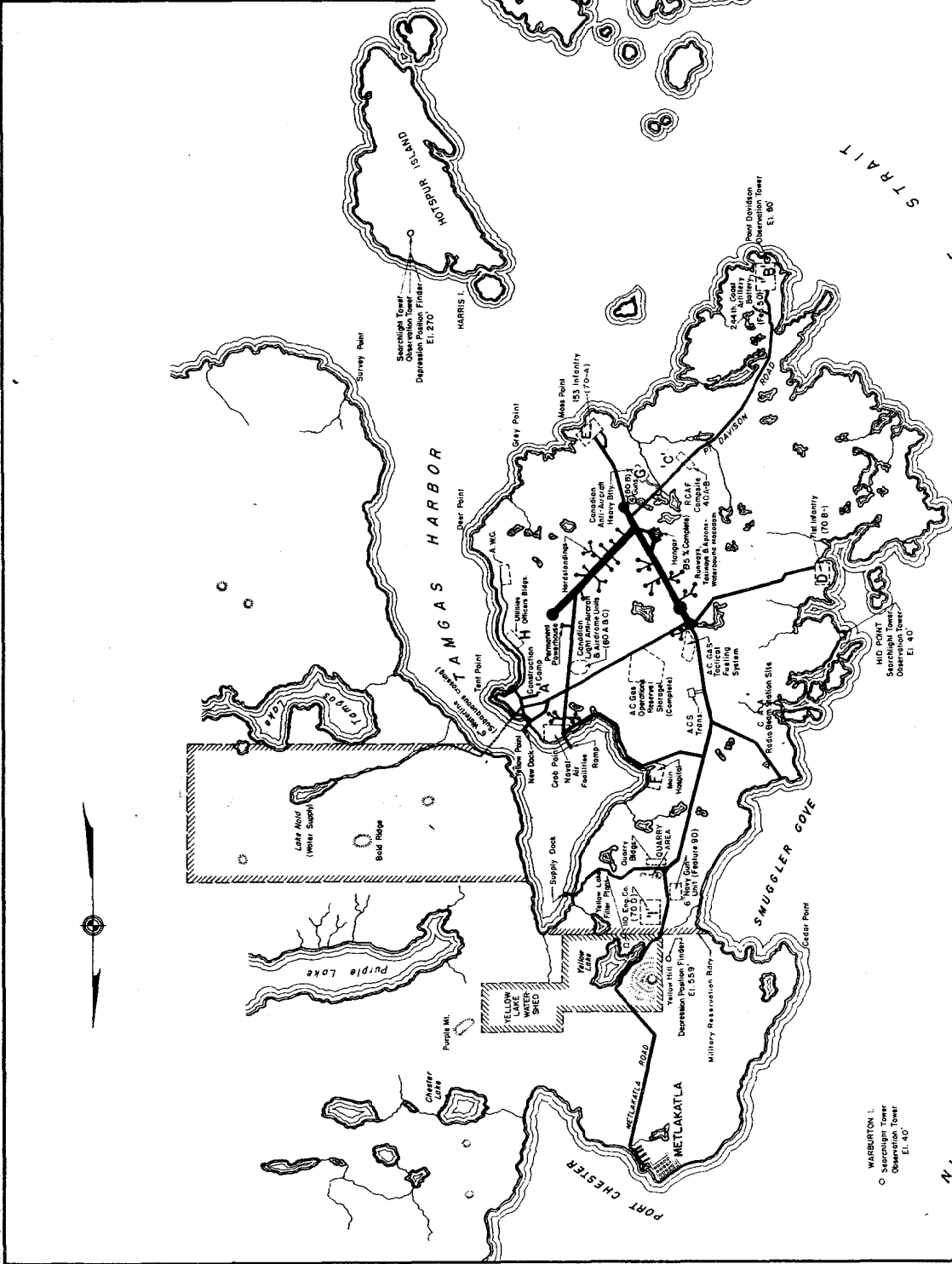
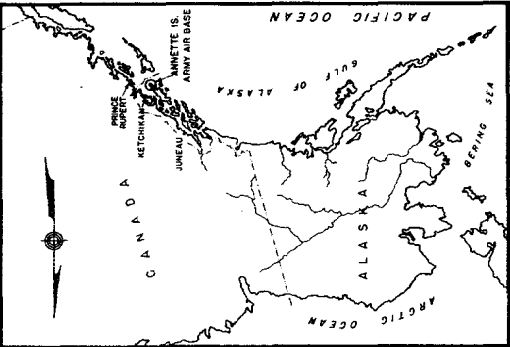
The construction of the Metlakatla road, connecting the Annette Island Landing Field with the village of Metlakatla, forms a time saving link from which traffic may be routed by boat to Ketchikan and vicinity. In addition to the American forces, units of the Canadian Army are now housed at the project. The Canadian force uses this station as a training base for its men. Several 6" Navy gun emplacements are located at strategic points adjacent to the airfield. The original water supply for the project was from Lake Hald, and the pipeline crossed Tamgas Harbor; however, the system has been supplemented by the water supply from Yellow Lake, which includes a separate distribution and chlorination system. Authorized housing at the project will accommodate 211 officers and 3,486 enlisted men. The completed project offers warehouse space of 125,000 square feet, cold storage space of 14,400 cubic feet and Ordnance warehouse space of 22,400 square feet.

The Annette Island Project was accomplished by troop labor and force account. Brigadier General (then Major) G. J. Nold was the first Resident Engineer. He was awarded the Legion of Merit

18 August 1943 for construction on the Annette Island Landing Field. General Neld was succeeded in turn by Lt. Colonel Fisher S. Blinn (now Resident Engineer of Amchitka) and Major Rollo J. McKinney. Mr. Charles B. Matcoer was the Construction Superintendent. He is now the Construction Superintendent at Ladd Field.

The greatest obstacle to overcome in construction was the rock fill over muskeg, in some cases 18 to 25 feet, for the runways and stable taxiways, and the excavation of the muskeg where construction of foundations for heavy features such as the hangar, boiler and powerhouses, and concrete cradles for the Air Corps gas tanks were necessary.

The Annette Island Project was completed 1 May 1943 and all features turned over to the Post Commander at that time. The cost was \$3,808,000.



BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST.

**ANNETTE ISLAND ARMY AIR BASE**  
ALASKA  
**FIELD PROGRESS REPORT**  
PART C  
SHEET 1 OF 3

PERIOD: 0 3000 6000 8000  
SCALE OF FEET

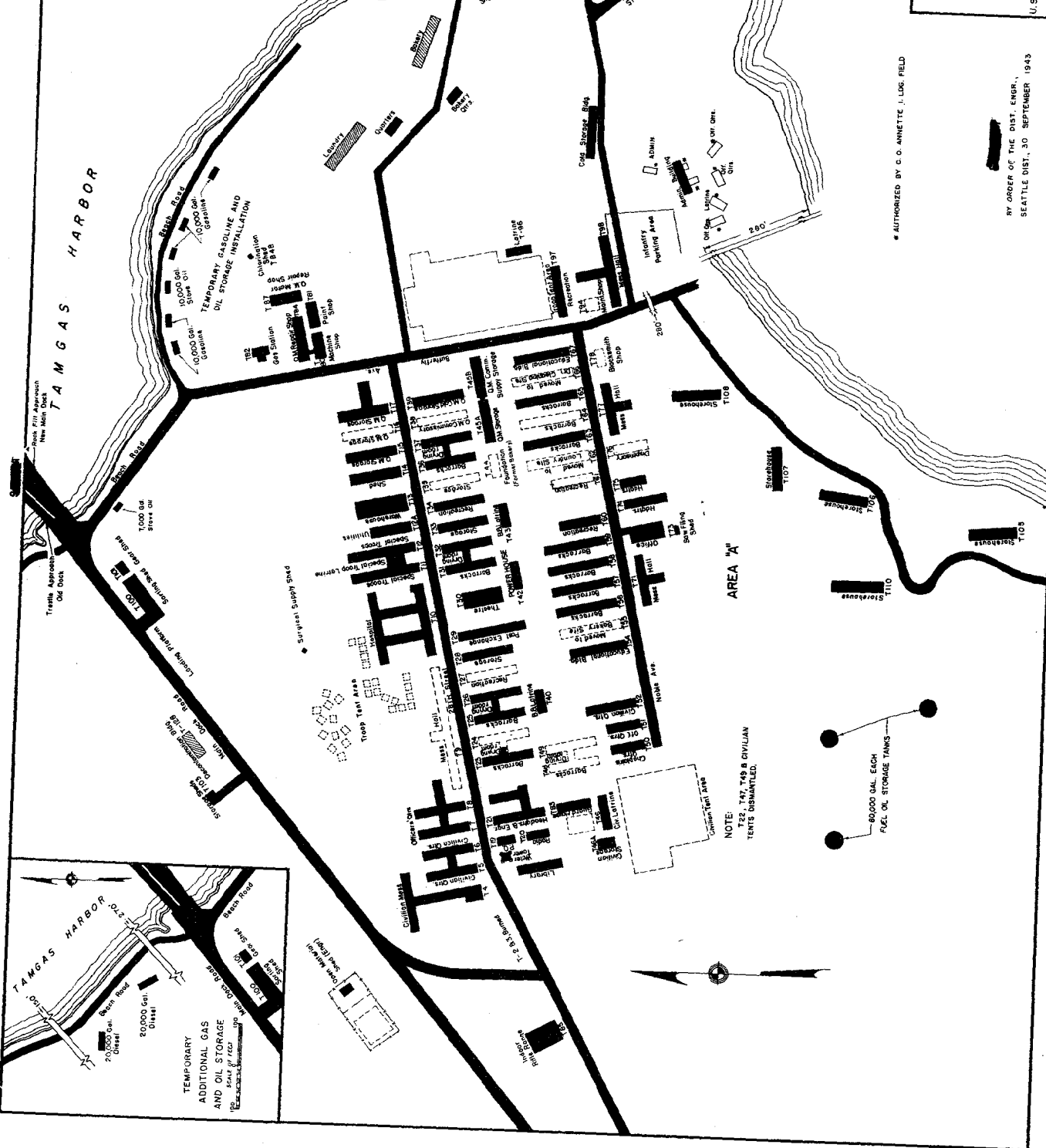
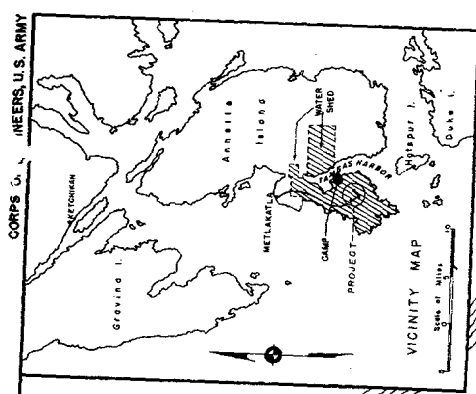
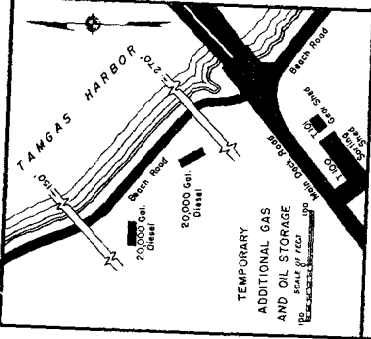
U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**

PROGRESS  
 WORK COMPLETED: [Solid black box]  
 WORK UNDERWAY: [Hatched box]  
 WORK AUTHORIZED: [Dashed line box]

TYPE OF WORK: Loading field and observation post construction

WAR DEPARTMENT



**ANNETTE ISLAND AIR BASE**  
ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
SHEET 2 OF 5  
PERIOD SEPTEMBER 1943  
SCALE OF FEET  
1" = 100'

U.S. ENGINEER OFFICE SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

\* AUTHORIZED BY G. G. ANNETTE, I. LOG. FIELD

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPTEMBER, 1943

**LEGEND**

**PROGRESS**  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

**TYPE OF WORK: CANTONMENT CONSTRUCTION**

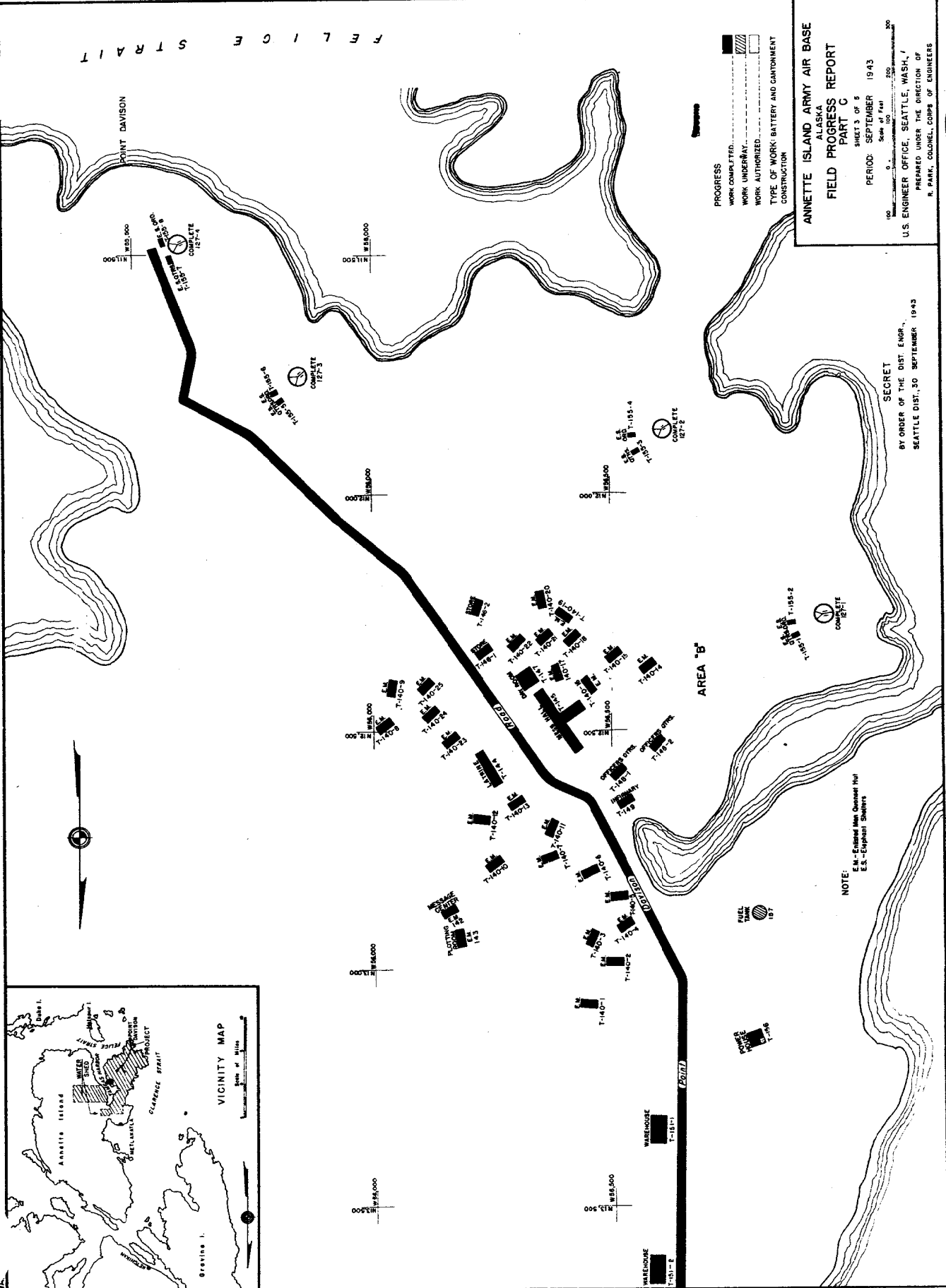
NOTE:  
T22, T47, T48 & CIVILIAN  
TENTS DISMANTLED.

80,000 GAL. EACH  
FUEL OIL STORAGE TANKS

J.S. ARMY

CORPS

F E L I C E S T R A I T

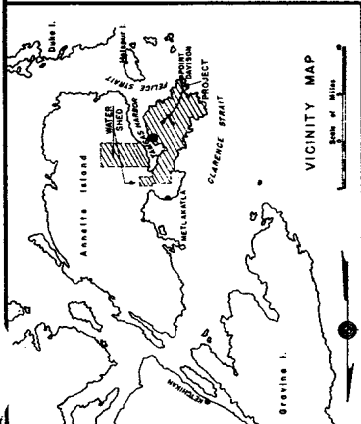


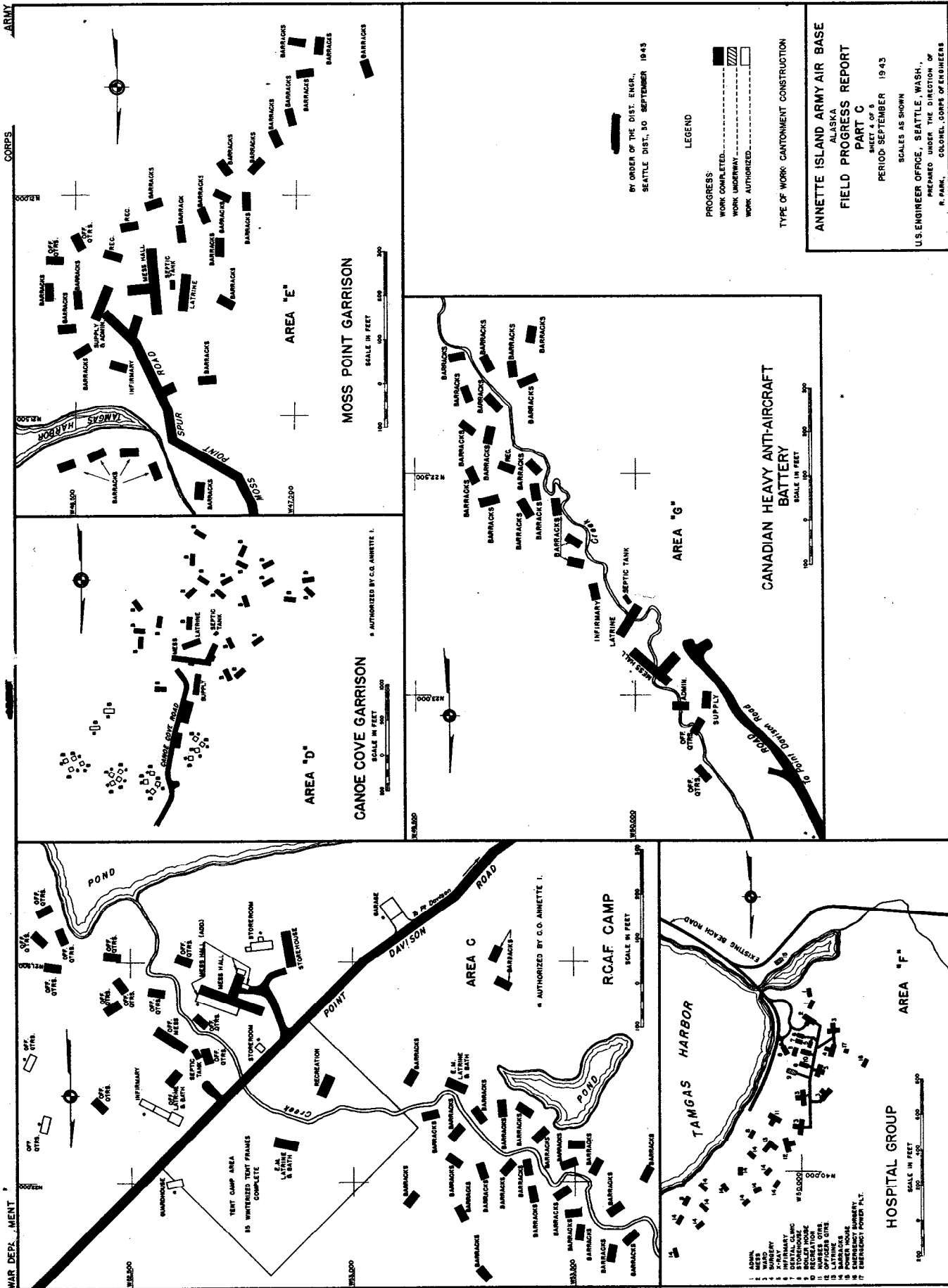
ANNETTE ISLAND AIR BASE  
ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 3 OF 5  
PERIOD: SEPTEMBER 1943  
Scale of Feet  
100 200 300 400 500 600 700 800 900 1000

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. BARK, COLONEL, CORPS OF ENGINEERS

SECRET  
BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPTEMBER 1943

NOTE:  
E.M. - Enclosed Area Contain Fuel  
E.S. - Enclosed Shelters





WAR DEPT. MEMT

ARMY CORPS

BY ORDER OF THE DIST. ENGR., SEATTLE DIST. 30 SEPTEMBER 1943

LEGEND

PROGRESS: WORK COMPLETED, WORK UNDERWAY, WORK AUTHORIZED

TYPE OF WORK: CANTONMENT CONSTRUCTION

ANNETTE ISLAND ARMY AIR BASE ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 4 OF 8  
PERIOD: SEPTEMBER 1943  
SCALES AS SHOWN

U.S. ENGINEER OFFICE, SEATTLE, WASH., PREPARED UNDER THE DIRECTION OF P. PARK, COLONEL, CORPS OF ENGINEERS

AREA 'A' CANOE COVE GARRISON

AREA 'B' MOSS POINT GARRISON

AREA 'C' RCAF CAMP

AREA 'D' CANOE COVE GARRISON

AREA 'E' MOSS POINT GARRISON

AREA 'F' HOSPITAL GROUP

AREA 'G' CANADIAN HEAVY ANTI-AIRCRAFT BATTERY

AREA 'H' HOSPITAL GROUP

AREA 'I' HOSPITAL GROUP

AREA 'J' HOSPITAL GROUP

AREA 'K' HOSPITAL GROUP

AREA 'L' HOSPITAL GROUP

AREA 'M' HOSPITAL GROUP

AREA 'N' HOSPITAL GROUP

AREA 'O' HOSPITAL GROUP

AREA 'P' HOSPITAL GROUP

AREA 'Q' HOSPITAL GROUP

AREA 'R' HOSPITAL GROUP

AREA 'S' HOSPITAL GROUP

AREA 'T' HOSPITAL GROUP

AREA 'U' HOSPITAL GROUP

AREA 'V' HOSPITAL GROUP

AREA 'W' HOSPITAL GROUP

AREA 'X' HOSPITAL GROUP

AREA 'Y' HOSPITAL GROUP

AREA 'Z' HOSPITAL GROUP

AREA 'AA' HOSPITAL GROUP

AREA 'AB' HOSPITAL GROUP

AREA 'AC' HOSPITAL GROUP

AREA 'AD' HOSPITAL GROUP

AREA 'AE' HOSPITAL GROUP

AREA 'AF' HOSPITAL GROUP

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AREA 'AT' HOSPITAL GROUP

AREA 'AU' HOSPITAL GROUP

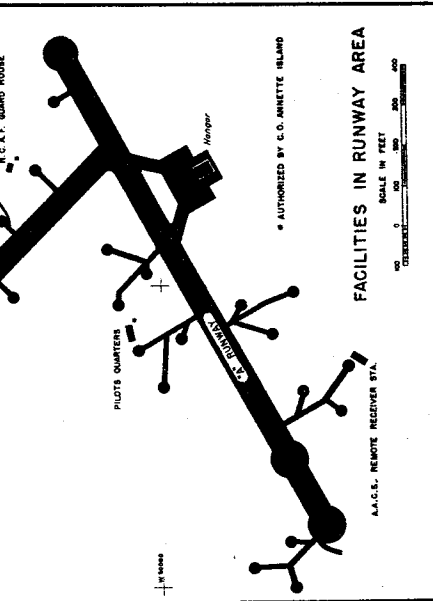
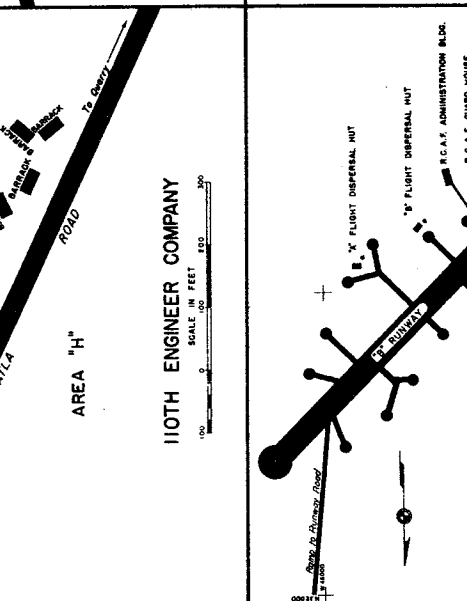
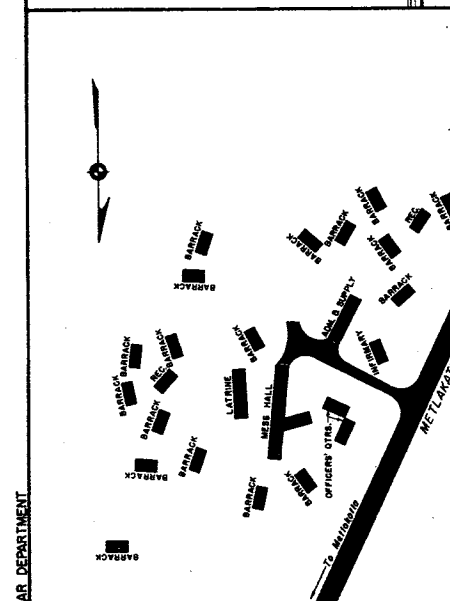
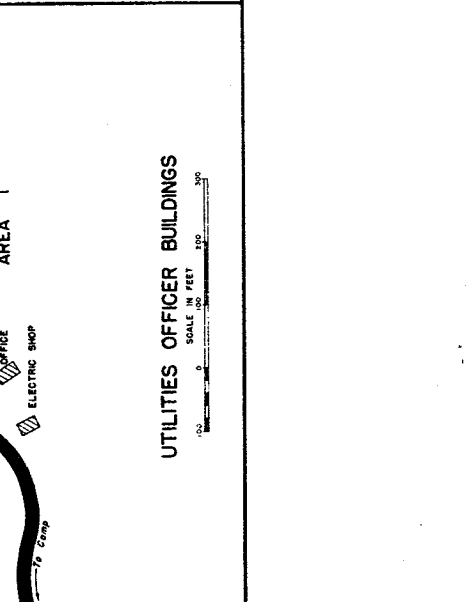
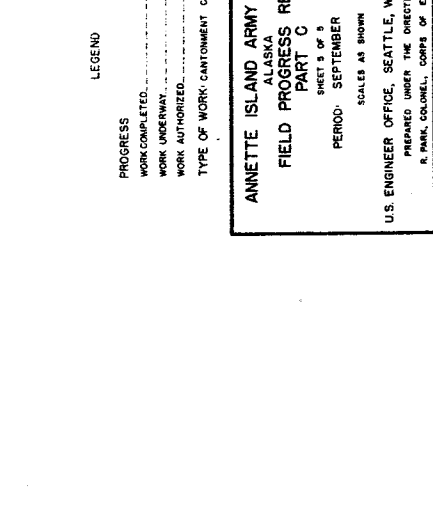
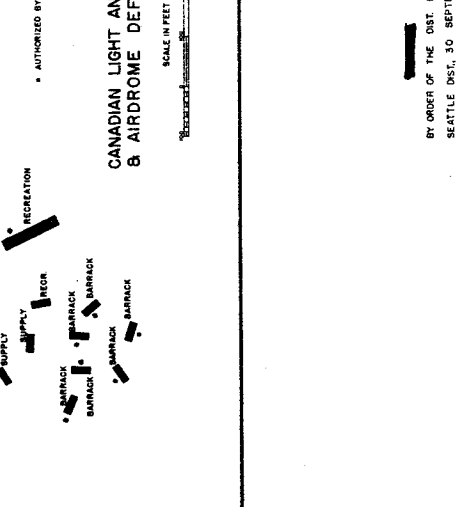
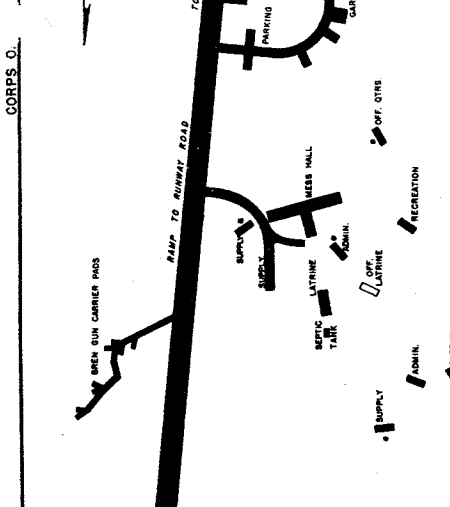
AREA 'AV' HOSPITAL GROUP

AREA 'AW' HOSPITAL GROUP

AREA 'AX' HOSPITAL GROUP

AREA 'AY' HOSPITAL GROUP

AREA 'AZ' HOSPITAL GROUP



## YAKUTAT LANDING FIELD

Yakutat Landing Field was established to provide an auxiliary airfield and staging area capable of accommodating both pursuit and bombardment planes en route between the continental United States and Alaska. It is possible to patrol the Gulf of Alaska from this base and to provide facilities as required by medium bombardment groups as well as fighter squadrons for offensive and defensive actions. This project is located approximately four miles southeast of Yakutat, Alaska, in the Tongass National Forest. The land is Government owned, and prior to initiation of construction by the Engineers, there were no installations other than a Civil Aeronautics Administration range station.

The Yakutat project was authorized by 2nd indorsement dated 30 September 1940, from The Adjutant General's Office, subject: "Proposed Auxiliary Landing Field and Staging Area, Yakutat, Alaska".

The features of construction authorized under the existing project include two concrete runways, 7,500' in length, living quarters, barracks and messhall for 2,000 enlisted men and 125 officers, operations building, storage for gasoline and oil, suitable gasoline servicing pits, facilities for radio communications, one steel truss hangar, 118,316 square feet of storage, defense installations and aircraft revetments.

The natural resources of timber and aggregate were used to good advantage. The timber was utilized in the construction of bridges, foundations and other work requiring heavy timber. Installa-

tion of a gravel washing plant provided sufficient aggregate for all concrete used in runway and building construction.

A standard gauge railroad exists between the Situk river and the Libby, McNeill and Libby cannery in Yakutat. This railroad passes near the site and has been used in transporting construction material to the project.

Dock and wharfage facilities were built on Monti Bay. The dock has a frontal length of 262' by 70' in width, and 2,400 square feet of warehouse space was constructed at the dock approach.

Work at Yakutat was done by Engineer troops and force account. Garrison troops were made available to expedite completion of the project in January 1943. The summer and fall of 1942 was the period of greatest accomplishment, but during the spring of 1943, a second peak of attainment was reached because of the addition of 250 troops supplied by the Post Commander.

The topography of the base site is flat, with drainage to the south. Heavy stands of Sitka spruce and hemlock predominate throughout the northern part of the reservation. A stratum of glacial silt and gravel lies underneath the overburden, varying from 30 to 50 feet in thickness. The water table was lowered in this region from approximately one foot to four feet by means of a system of drainage ditches.

The minor naval air facilities have a unique feature in its seaplane ramp which measures 50' by 108'. The ramp was constructed

of large timbers and spruce logs, tied together with creosoted lumber. Thirty-six concrete blocks 18" deep, 5' wide and 9' long were placed flush with the ramp deck and act as counterweights to hold the ramp on the bottom of the bay. The ramp starts at mean lower water line and extends to a depth of 8'. Extending 173' from mean lower low to approximately 17' above sea level is a concrete taxiway 50' wide constructed of standard paving.

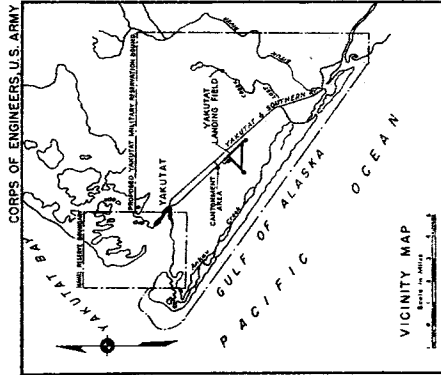
The main camp area was covered by a layer of muskeg varying in depth from 1' to 2' and generally saturated with water. Travel over this surface was restricted to vehicles with caterpillar treads. Carryalls proved unsuccessful in stripping this material and dozers were exclusively employed for this purpose. Completion of the stripping phase of the work was delayed because fast methods could not be used. The muskeg rolled up in front of the dozer blade like sod, and a full load was obtained in a distance of 4 or 5 feet. Furthermore, an excessive number of trips over this soft, spongy moss, chewed up the material, causing it to slide off at the side of the blade. The runway was stripped by working from the center line toward each shoulder.

Some delays in the work at Yakutat were caused by heavy rains, which sometimes totaled more than 6" of precipitation per 24-hour period, in summer, and correspondingly heavy snowfall during the winter.

Resident Engineers at Yakutat have been: Colonel B. B. Talley, CE, Major F. J. Loomis, Mr. Seymore Standish, Captain Milton A. Lagergren, CE, Captain Charles A. Block, CE, Colonel Charles F. Baish, CE.

Major Frank J. Loomis, CE, was awarded the Legion of Merit for his activities in connection with construction work in Alaska, particularly for his services while Resident Engineer of the Yakutat Landing Field.

The original construction program was merged with additional features, and the entire project was essentially complete as of 30 June 1943. Approximate cost of this project was \$10,000,000.



BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 31 JULY, 1943

**LEGEND**

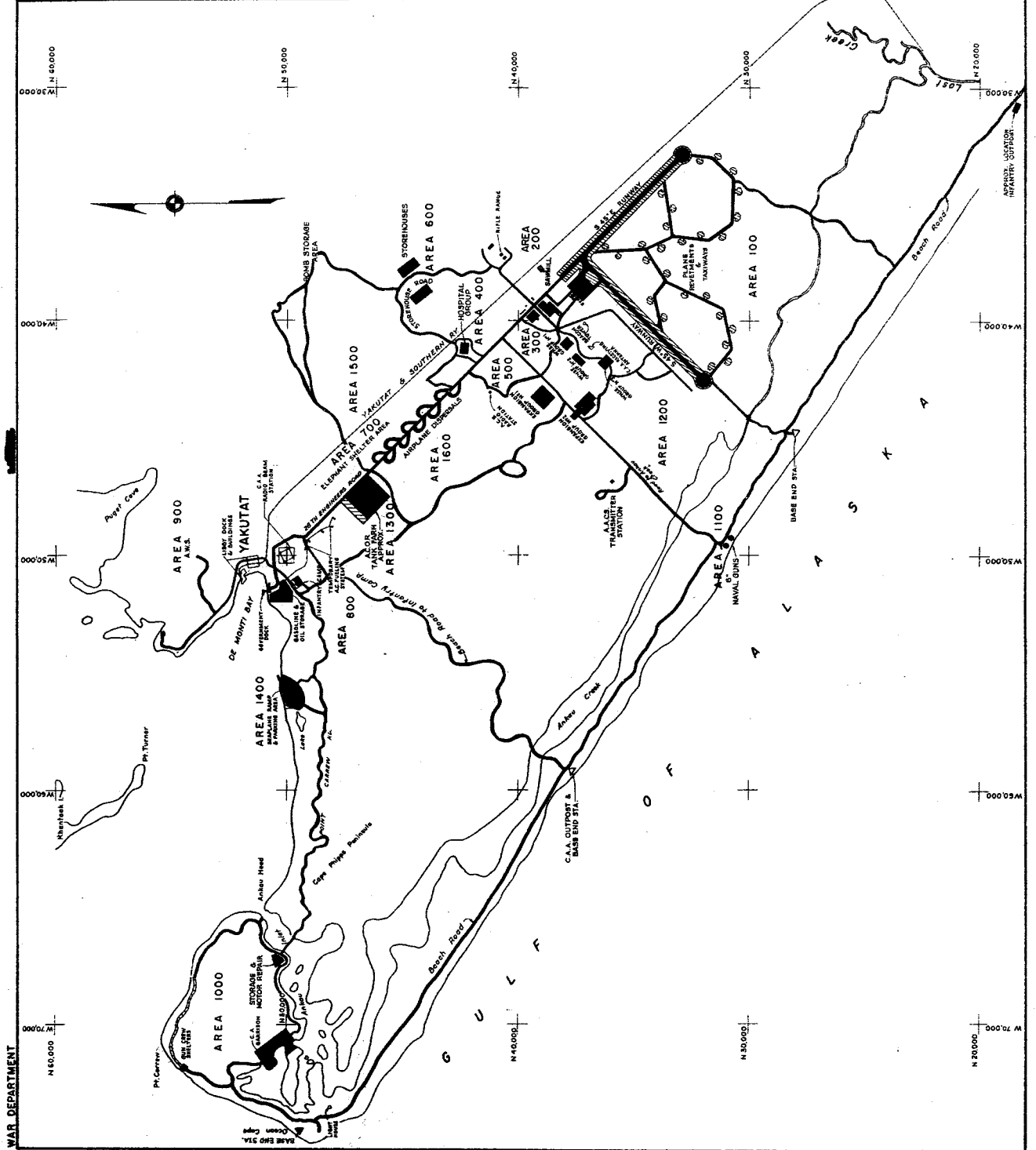
PROGRESS  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

TYPE OF WORK - LANDING FIELD AND CANTONMENT CONSTRUCTION

**YAKUTAT LANDING FIELD**  
ALASKA  
**FIELD PROGRESS REPORT**  
PART C

PERIOD: JULY, 1943  
Sheet # 1 of 1  
Map No. 49217

U.S. ENGINEER OFFICE, SEATTLE, WASH., JULY, 1943  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS



## FORT RAY PROJECT

Fort Ray, at Sitka, Alaska, was established to provide an Army garrison, as well as Fixed Harbor Defenses. The purpose of the garrison is for the defense of the Naval Base at Sitka. Fort Ray is located in approximately the center of the southeastern Alaska "panhandle", on Baranof Island.

Authority for Construction is as follows: letter from the Secretary of War to the Secretary of the Navy, dated 10 October 1940, letter from The Adjutant General to Western Defense Command, dated 11 October 1940 and letter from The Adjutant General to the Quartermaster General, dated 11 October 1940, subject: "Construction for garrisons at Kodiak, Sitka and Unalaska." Authority for the causeway construction is contained in letter from the Chief of Engineers to the Division Engineer, North Pacific Division, Portland, Oregon, dated 12 April 1941, subject: "Funds for Alaska RR Construction and Army garrison at Sitka, Alaska." Authority for the construction of the Fixed Harbor Defenses at Sitka, is contained in a letter, dated 5 May 1942, Western Defense Command, to Major Vincent, Liaison Officer, Contract NOy-3570, subject: "Construction of Fixed 6" and 8" batteries, Alaska", and three subsequent indorsements thereto. Program for further additional construction at this station has been approved, with certain deletions, by The Adjutant General in a letter to Western Defense Command, dated 31 December 1941, subject: "Program for additional Con-

struction at Alaska."

Under the original program, construction of the Fort Ray garrison was started on 9 January 1941, at Charcoal and Alice Islands, for administration, housing and hospital facilities. Cantonments on Kirushkin, Sasedni, Virublennoi, Makhnati, Gold Island and Baranof Island were started under the program for additional construction, together with increased facilities at Charcoal and Alice Islands.

Construction of the rock causeway connecting Japonski, Nevski, Reshimosti, Virublennoi, Gold, Sasedni, Kirushkin, Mogilnoi, and Makhnati Islands was started in July 1941 and completed in February 1943 by Siems Drake Puget Sound, Naval contractor. Field studies, cost estimates, as well as preliminary designs and specifications were prepared by the District Engineer, Seattle, and approved by the Division Engineer, Portland, Oregon. Construction of the causeway entailed the placing of a rock core protected on both sides by armor rock and surfacing the roadway across the fill area with a 3' concrete slab. The estimated cost is \$1,930,000.

Although the causeway has been reported complete, the concrete slab over the fill area, as well as the concrete roadway on the island, was not incorporated as originally planned due to several reasons. It was not deemed a military necessity, sufficient manpower, construction materials and equipment were not available, and the causeway was not considered stable for a permanent surfacing due to

the terrific pounding of storms.

Facilities constructed include warehouses (QM and Ordnance), cold storage buildings, fire stations, bakery, laundry and dry cleaning plant, steam plant, repair shops (motor and utilities), Ordnance shop, reclamation shop, Quartermaster gasoline storage, ammunition magazines for ground troops, radio station, guardhouse, a 150 bed hospital, infirmaries, post exchanges, recreation buildings, libraries, theater, and post office.

Fixed Defense installations include three 6" batteries located at Shoal Point, Biorka Island and Makinati Island, together with searchlight positions and supporting fire control appurtenances and necessary housing at St. Lazaria Island, Hill 800, Lava Point, Clam Island, Kayak Island, Little Biorka, Ataku Island, Golf Island, Kita Island, and Lisianski Peninsula. Seacoast radar installations have been provided at St. Lazaria, Abalone, and Biorka Islands. Housing and emplacements have been provided for two 90 mm. Anti Motor Torpedo Boat batteries at Whale Island and Watson Point, respectively.

According to the curtailment program, housing and facilities will be constructed for a final permanent garrison of 1,400 officers and men (including Harbor Defense Troops). Temporarily located housing can now accommodate 250 officers and 3,051 enlisted men.

The following utility features have been installed: two primary and three outpost water, sewage and electrical distribution systems. Constructed harbor facilities include: two ferry slips

(Baranof and Alice Islands), seven finger floats and pier (Alice Island), three barge and small docks (150' by 40' at Biorka, 220' by 40' at Shoals Point and 300' by 15' at Whale Island). All post roads and walks are complete and access roads for the Harbor Defense installations are approximately 70 percent complete.

The work at Fort Ray was to be accomplished by the Navy Department under Contract NOy-3570 (replaced by Contract NOy-6060) and Seabee construction units. Siems Drake Puget Sound, Contractor for the Navy under Contract NOy-3570, started construction for the Army garrison at Charcoal and Alice Islands on 9 January 1941. To facilitate Army construction War and Navy Departments agreed that the Navy contractor proceeding with the construction of the Naval Operating Base and Naval Air Station would also handle Army construction. (The Navy has since made Sitka solely a Naval Air Station). On 30 April 1943, the Navy Department terminated Contract NOy-3570 and replaced it with Contract NOy-6060, whereby Siems Drake served solely as a procurement agency out of Seattle for the Navy projects. Several construction battalions were sent to Sitka to replace the contractor's employees. These units arrived at the project approximately the first week in February 1943 and immediately picked up where the contractor had left off. The last of the contractor's forces left Sitka in March 1943.

Coast Artillery and Infantry troops were also used in laying garrison utility lines and in the construction of the Fixed Defense

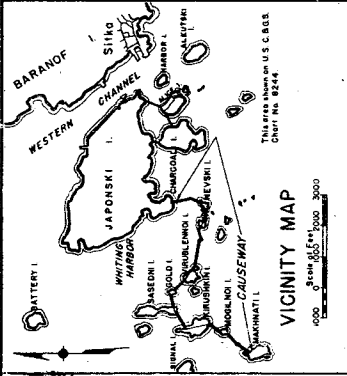
installations as well as outpost facilities. On 17 June the Navy withdrew the last of the construction battalion personnel from Sitka, and it was not until 17 July that a small unit, one-fourth of a maintenance battalion, resumed operations on Army construction. The peak of construction was reached in November 1942 with 1,706 contractor workers and troop laborers on the job. Captain George P. Bennett, C.E., is the Resident Engineer at the Fort Ray project.

Standard Constructing Quartermaster plans were used for the construction of the original cantonment. Hut and T/O type construction were utilized for the expansion program and Fixed Defense housing.

Lack of adequate shipping materials and equipment together with scarcity of manpower delayed construction progress. Time was lost when construction battalions withdrew on 17 June. Shifting of construction operations caused much good construction time to be lost and lack of approved plans and specifications for the construction of the Fixed Harbor Defense installations caused some delay.

The Fort Ray project was substantially complete in August 1943. The Fixed Defense Program at Fort Ray is approximately 70 percent complete with estimated completion by field listed as July 1944. The estimated cost is \$9,855,900. (Tentative revised estimate excluding additional civilian labor costs subject to court action between Navy and Siems Drake)

CORPS OF ENGINEERS, U.S. ARMY



BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DIST., 30 SEPTEMBER 1943

TYPE OF WORK -- CAMOUFLAGED CONSTRUCTION

- LEGEND
- PROGRESS
  - WORK COMPLETED
  - WORK UNDERWAY
  - WORK AUTHORIZED

FT. RAY ARMY GARRISON  
 SITKA, ALASKA  
 CHARCOAL & ALICE ISLAND  
 FIELD PROGRESS REPORT  
 PART I C

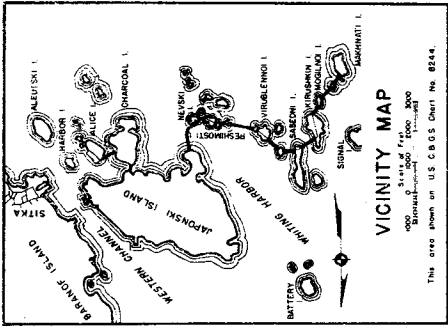
PERIOD: 1 AUGUST 1943 - 30 SEPTEMBER 1943

SCALE OF FILE: 1" = 100 FEET  
 PREPARED UNDER THE DIRECTION OF  
 R. PARN, COLONEL, CORPS OF ENGINEERS

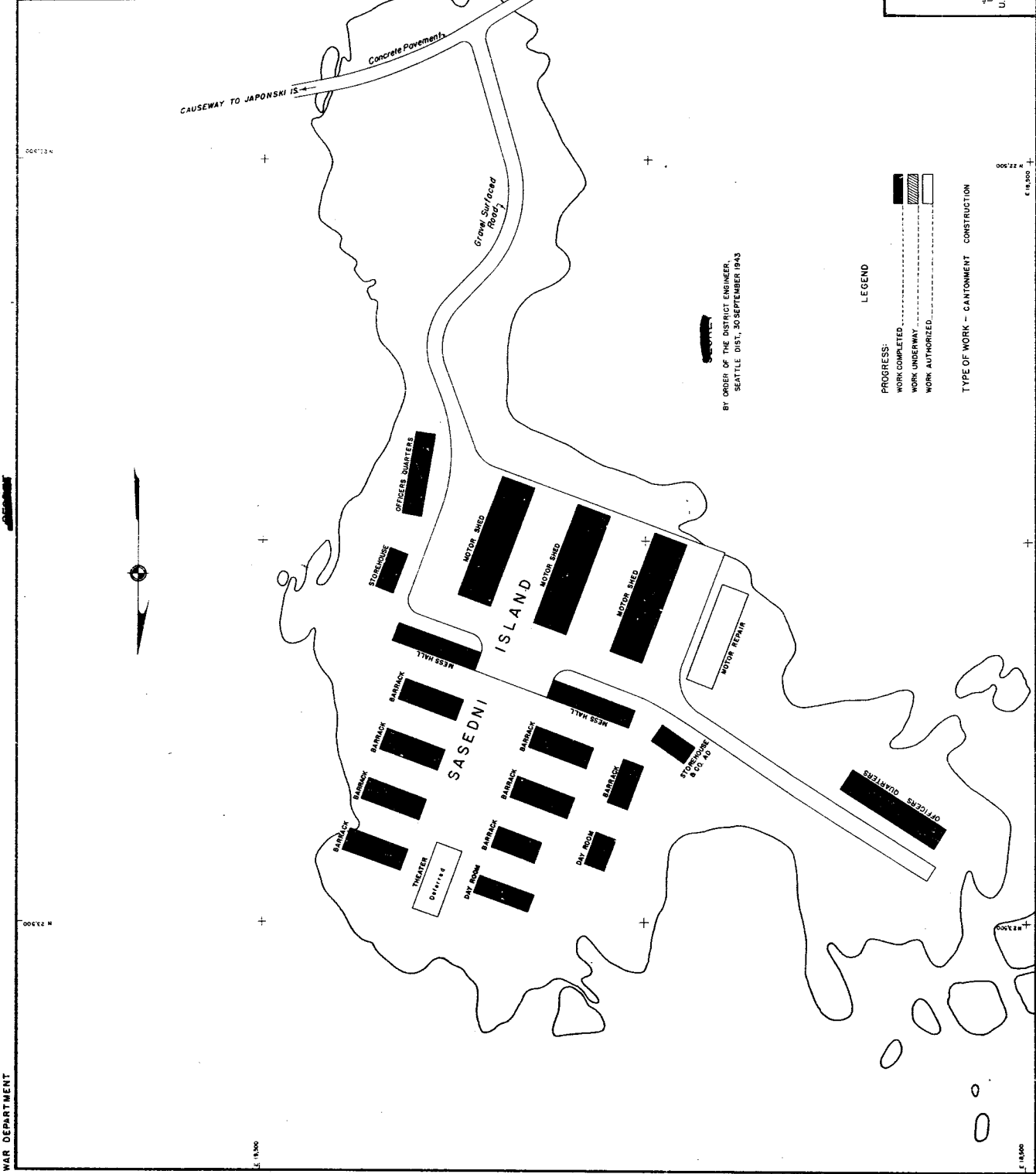
WAR DEPARTMENT



CORPS OF ENGINEERS, U.S. ARMY



**FT. RAY ARMY GARRISON**  
 SITKA, ALASKA  
 SASEDNI ISLAND  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 2 OF 7  
 PERIOD: October 1943  
 SCALE OF FEET  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS



BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DIST., 30 SEPTEMBER 1943

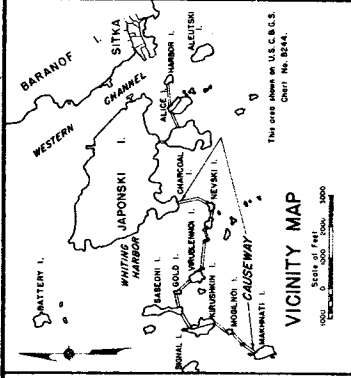
**LEGEND**

- PROGRESS:**
- WORK COMPLETED (Solid black rectangle)
  - WORK UNDERWAY (Hatched rectangle)
  - WORK AUTHORIZED (Dashed outline rectangle)
- TYPE OF WORK - CANTONMENT CONSTRUCTION**
- (Solid black rectangle) - CANTONMENT
  - (Hatched rectangle) - CONSTRUCTION

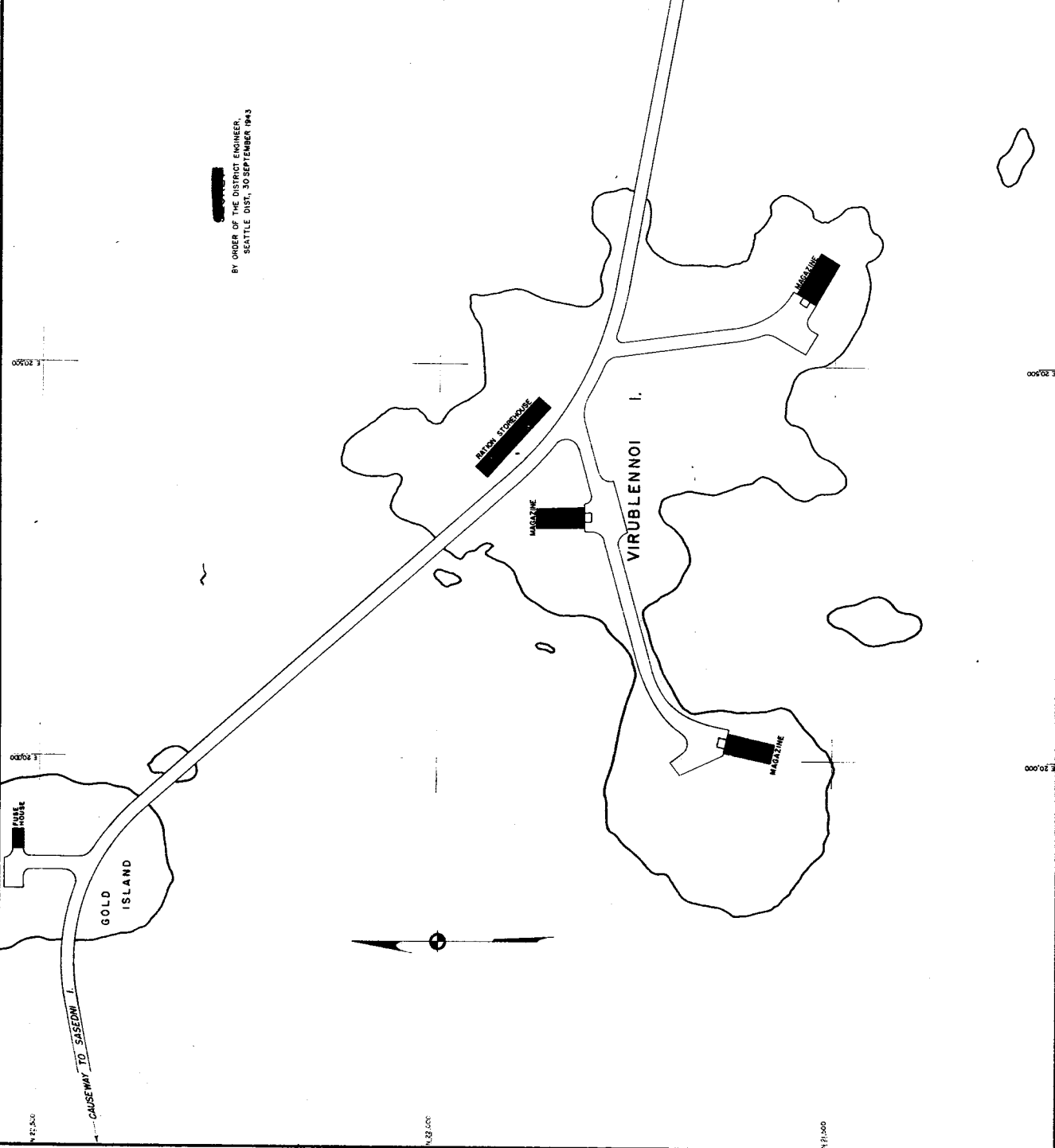
WAR DEPARTMENT

1:1400

CORPS OF ENGINEERS, U.S. ARMY



BY ORDER OF THE DISTRICT ENGINEER  
SEATTLE DIST., 30 SEPTEMBER 1943



**FT. RAY ARMY GARRISON**  
 SITKA, ALASKA  
 VIRUBLENNOI ISLAND  
**FIELD PROGRESS REPORT**  
 PART C  
 SHEET 1 OF 7  
 PERIOD OF REPORT  
 15 SEPTEMBER 1943  
 SCALE OF DRAWING  
 AS SHOWN

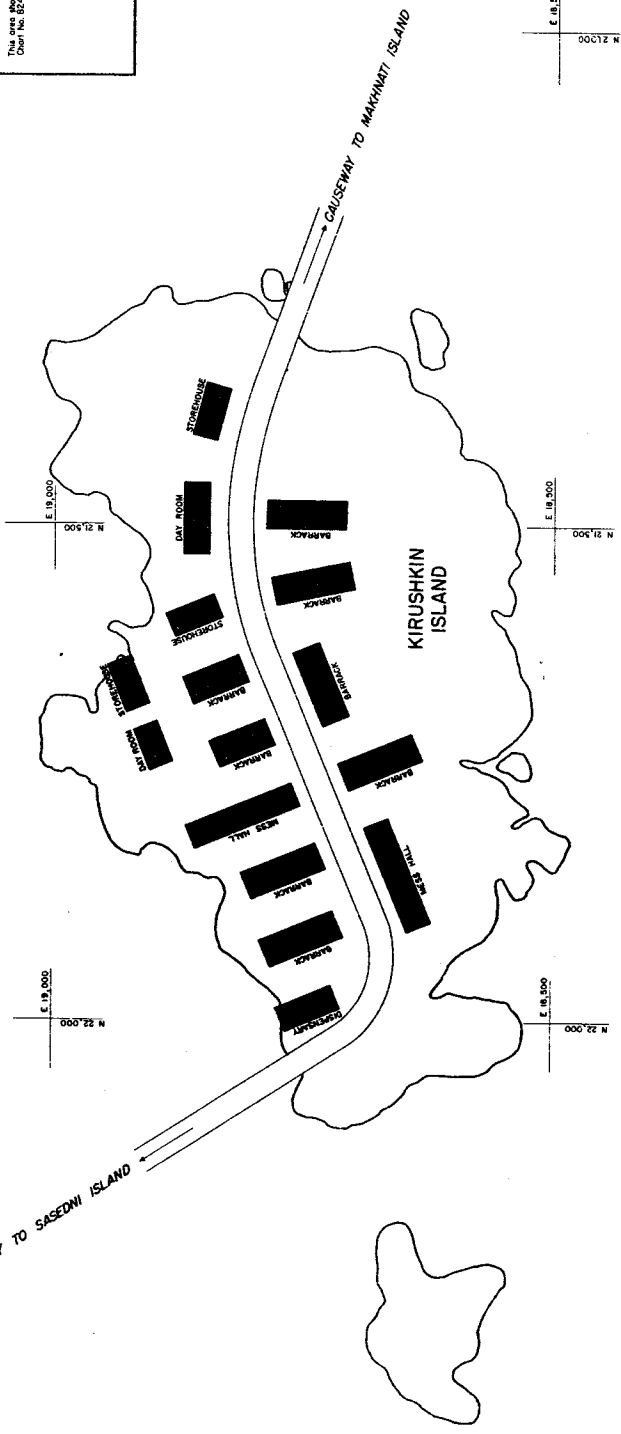
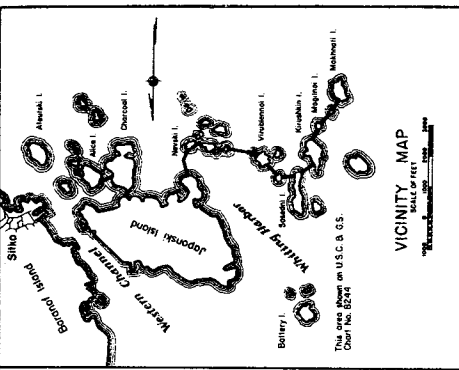
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT

471,500

471,500

471,500



LEGEND

PROGRESS

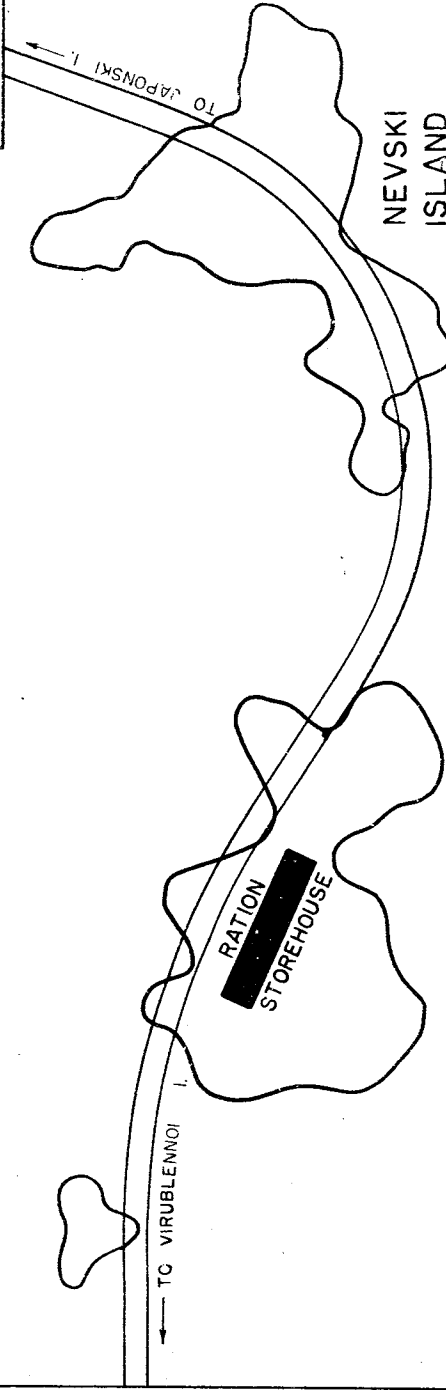
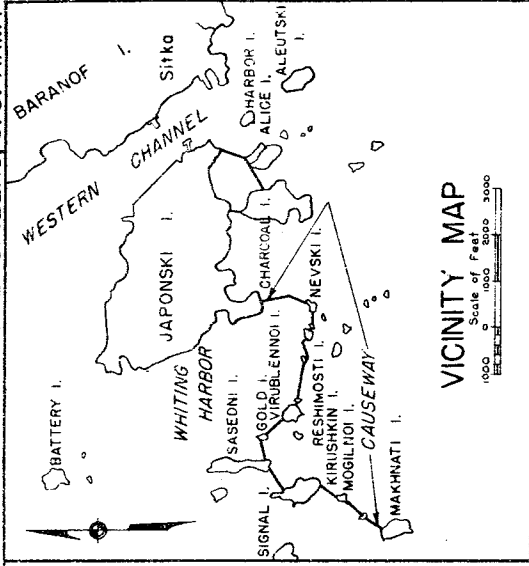
- WORK COMPLETED: [Solid black box]
- WORK UNDERWAY: [Hatched box]
- WORK AUTHORISED: [Dotted box]

TYPE OF WORK: CANTONMENT CONSTRUCTION

BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DIST., 30 SEPTEMBER 1943

**FT. RAY ARMY GARRISON  
SITKA, ALASKA  
KIRUSHKIN ISLAND  
FIELD PROGRESS REPORT  
PART C  
PART 4 OF 7**

PERIOD: OCTOBER 1943  
SCALE OF FIELD MAP: 1:50,000  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS



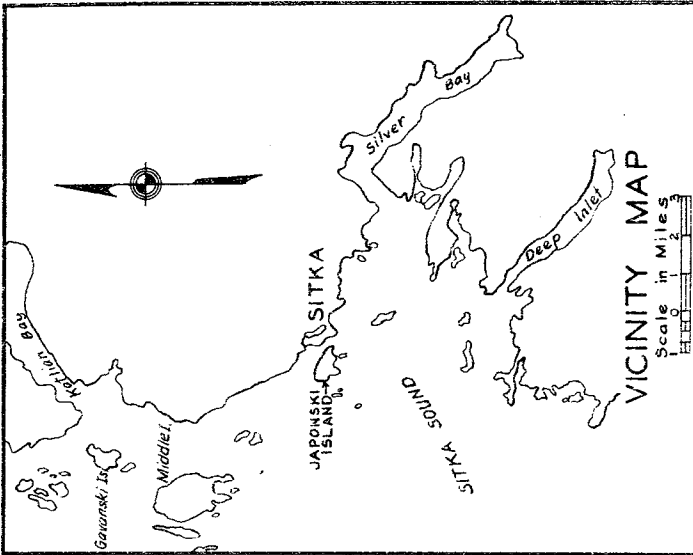
BY ORDER OF THE DISTRICT ENGINEER  
SEATTLE DIST. 30 SEPTEMBER 1943

**LEGEND**

- PROGRESS**
- WORK COMPLETED -----
  - WORK UNDERWAY -----
  - WORK AUTHORIZED -----
- TYPE OF WORK: Cantonment Construction**

FT. RAY ARMY GARRISON  
SITKA, ALASKA  
RESHIMOSTI ISLAND  
FIELD PROGRESS REPORT  
PART C  
SHEETS OF  
PERIOD: OCTOBER 1943  
SCALE: 50' FEET  
U. S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

CORPS OF ENGINEERS, U. S. ARMY



LEGEND

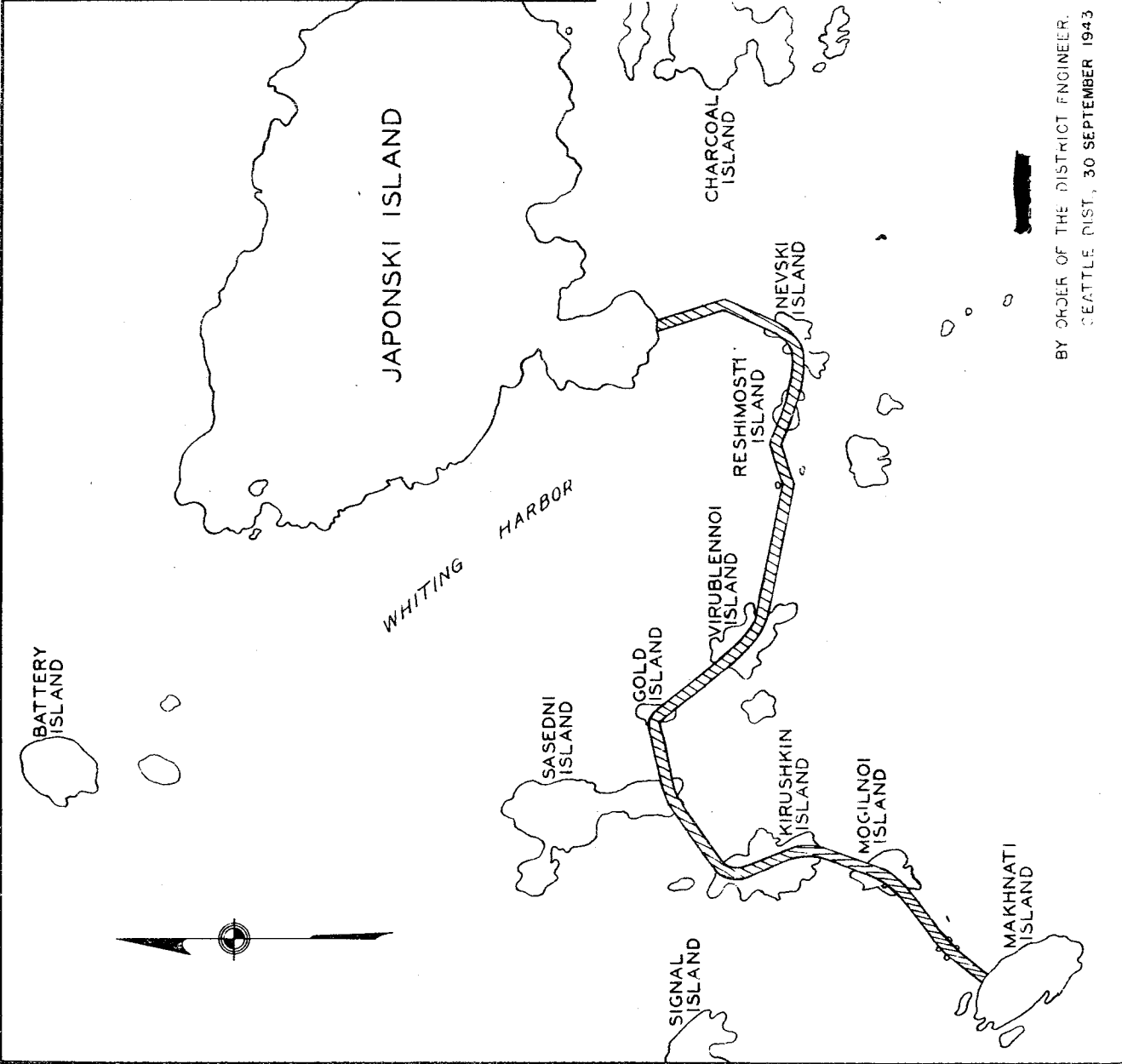
- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

TYPE OF WORK: CAUSEWAY CONSTRUCTION

FT. RAY CAUSEWAY  
SITKA, ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 9 OF 7  
PERIOD: OCTOBER 1943  
Scale in Feet  
0 100 200 300 400 500 600 700 800 900 1000

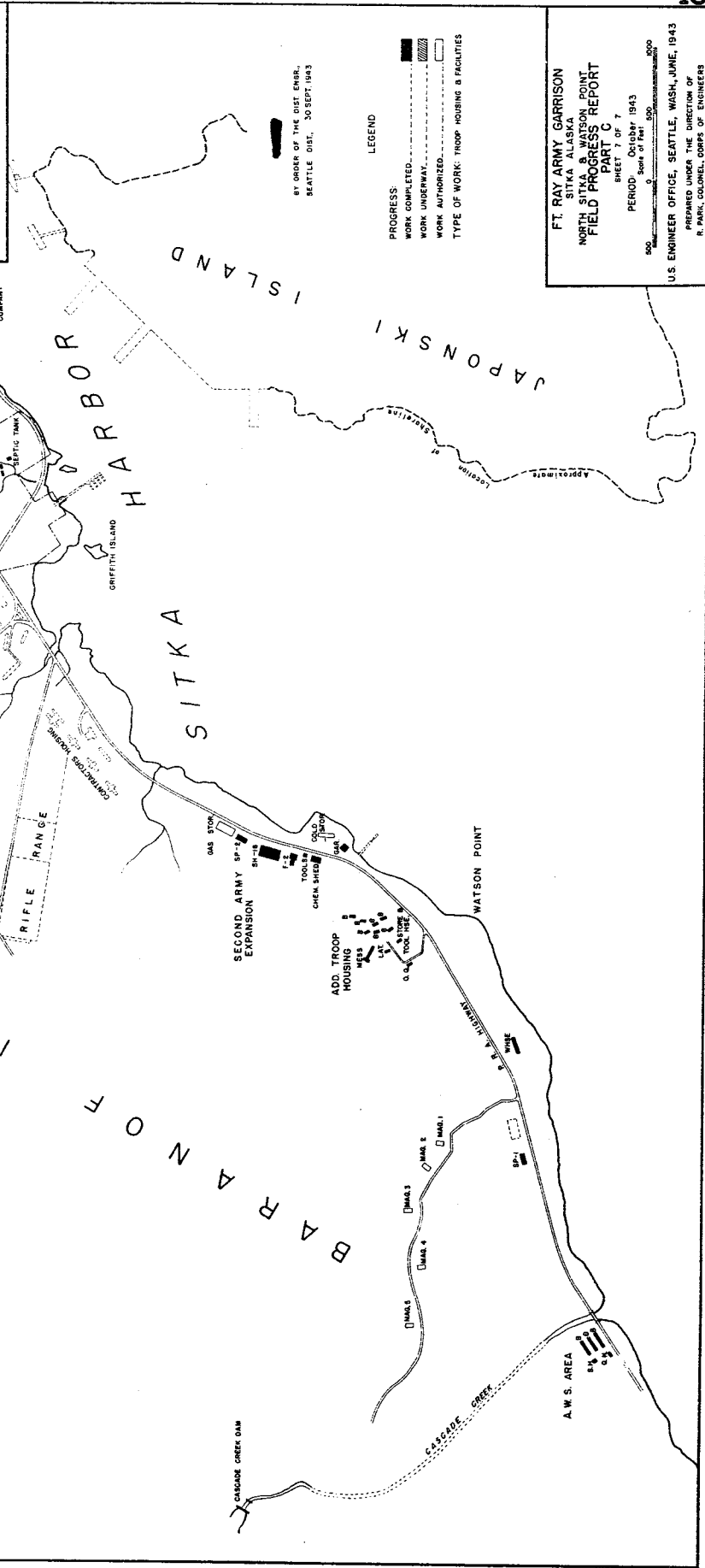
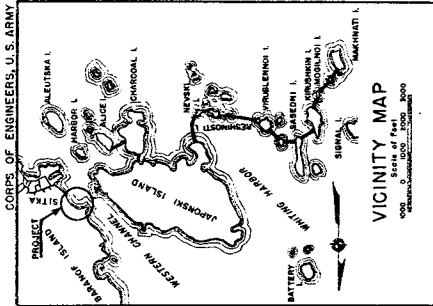
U. S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT



BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DIST., 30 SEPTEMBER 1943

WAR DEPARTMENT



FT. RAY ARMY GARRISON  
NORTH SITKA, ALASKA  
NORTH SITKA & WATSON POINT  
FIELD PROGRESS REPORT  
PART C  
SHEET 7 OF 7

PERIOD: October 1943

Scale of Map: 1:50,000

U.S. ENGINEER OFFICE, SEATTLE, WASH., JUNE, 1943  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

## FORT MEARS PROJECT

Fort Mears provides for the construction of an Army garrison with necessary appurtenant facilities, as well as for Fixed Harbor Defense installations in the vicinity of Unalaska, Alaska, for the defense of the Naval Base at Dutch Harbor. Fort Mears is located on Unalaska Island, approximately 700 miles southwest of Seward and 75 miles from the tip of the Alaska Peninsula.

Authority for construction is as follows: letter from the Secretary of War to the Secretary of the Navy, dated 10 October 1940, letter from The Adjutant General to the Western Defense Command, dated 11 October 1940, and a letter from The Adjutant General to the Quartermaster General, dated 11 October 1940, subject: "Construction for Garrisons at Kodiak, Sitka, and Unalaska." The program for further additional construction at this station was approved with certain deletions by The Adjutant General in a letter to the Western Defense Command, dated 31 December 1941, subject: "Program for Additional Construction at Alaska." Authority for the construction of the Fixed Harbor Defenses at Dutch Harbor is contained in a letter dated 5 May 1942, from the Western Defense Command to Major Vincent, Liaison Officer, Contract NOy-3570, subject: "Construction of Fixed 6" and 8" batteries, Alaska," and three subsequent indorsements thereto.

Under the original program, construction on the Margaret Ray cantonment, was started on 25 January 1941, for administration,

housing, and hospital facilities. The Mt. Rallyhoo garrison Unalaska garrison, Hog Island, and Summer Bay cantonments were started under the program for additional construction.

Facilities constructed include: warehouses (QM and Ordnance), cold storage buildings, fire stations, bakery, laundry, dry cleaning, steam plant, repair shops (motor and utilities), decontamination building, ordnance shop, reclamation shop, Quartermaster gasoline storage, Diesel oil storage, ammunition magazines for ground troops, bombproof radio station, guardhouse, 308 bed hospital, dispensaries, infirmaries, post exchange, theater, chapel, and post office.

Fixed Defense installations include: one 6" battery at Eider Point and one 8" battery at Ulakta Head (Mt. Rallyhoo), together with searchlight positions and supporting fire control appurtenances and necessary housing at Constantine Head, Erskine Point, Wislow, and Ugadga. Four 360° Panama mounts for 155 mm. guns, with necessary magazines, have been constructed at the Summer Bay garrison, as well as at Hill 400 located at South Amaknak Island. Seacoast radar installations have been provided for at Eider Point and Mt. Rallyhoo. Housing and emplacements have been provided for 90 mm. Anti Motor Torpedo Boat batteries at Dutch Harbor Spit and Eider Point Spit, respectively.

According to the curtailment program housing and facilities will be constructed for 5,700 officers and enlisted men, which is 25 percent above the permanent garrison strength, including Harbor Defense

troops. Temporarily located housing can now accommodate 393 officers and 9,729 enlisted men.

Under utilities, the post will have 3 principal electrical distribution systems, 7 outpost systems, 2 primary water systems, 9 outpost chlorinator units, and 2 principal sewage systems. Constructed harbor facilities consist of 1 large terminal wharf 760' long at Captain's Bay, 3 outpost wharves, transit and jitney sheds and rigging loft. Small boat harbor facilities are now under construction at Agnes Beach, and should be completed in November.

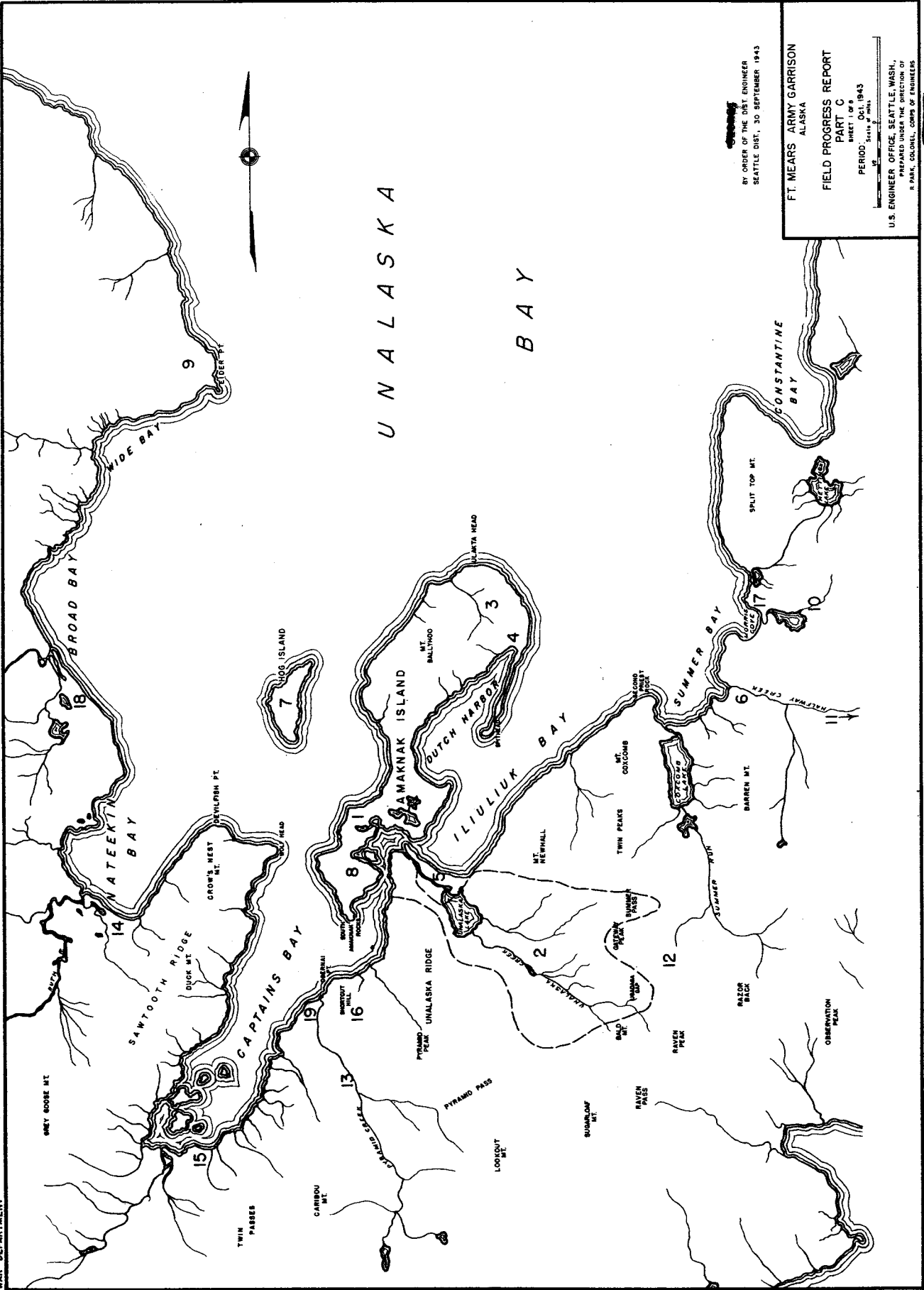
The work at Fort Mears was to be accomplished by the Navy Department, under Contract NOy-3570 (replaced by Contract NOy-6060), and Seabee construction units. To facilitate Army construction, the War and Navy Departments agreed that the Navy contractor proceeding with the construction of the Naval Operating Base and Naval Air Station should also handle Army construction. Siems Drake Puget Sound, contractor for the Navy under Contract NOy-3570, started construction for the Army garrison on 25 January 1941. On 30 April 1943 the Navy Department terminated Contract NOy-3570 and replaced it with Contract NOy-6060, whereby Siems Drake served solely as a procurement agency out of Seattle for the Navy projects. Several construction battalions were sent to Dutch Harbor to replace the contractor's employees. These units arrived at the project site on 18 February 1943, and immediately picked up where the contractor left off. The last of the contractor's forces left Dutch Harbor

1 January 1943. A company of the 151st Combat Engineers was assigned to road construction and various fortification projects. Forty of the 54 miles of 20' gravel roads were completed by contractor employees, Seabees and Engineer troops. The Engineer unit is still there and is now completing the beach road to Summer Bay from Ferry Slips at Unalaska. Coast Artillery and Infantry troops were also used in laying utility lines and in the construction of outpost facilities. The peak of construction was reached in June 1942, with 1,655 contractors and troop laborers on the job. Lieutenant L. W. Lance was succeeded by Captain Sidney F. Tate, Jr., as Resident Engineer.

Standard Constructing Quartermaster plans were used for the construction of the original cantonment (Margaret Bay Garrison) and Rallyhoo Garrison. Hut and T/O type construction was utilized for the expansion program and Fixed Defense housing.

The construction of concrete buildings for Fixed Defenses at isolated points inaccessible at times by water transportation and located in faces of cliffs, required superior construction skill and equipment.

The garrison construction will be substantially complete by the end of 1943 and the Fixed Defense program at Fort Mears is approximately 85 percent complete with estimated completion by field listed as June 1944. The estimated cost is \$12,318,500. (Tentative revised estimate excluding additional civilian labor costs subject to court action between Navy and Siems Drake.)



BY ORDER OF THE DIST ENGINEER  
 SEATTLE DIST., 30 SEPTEMBER 1943

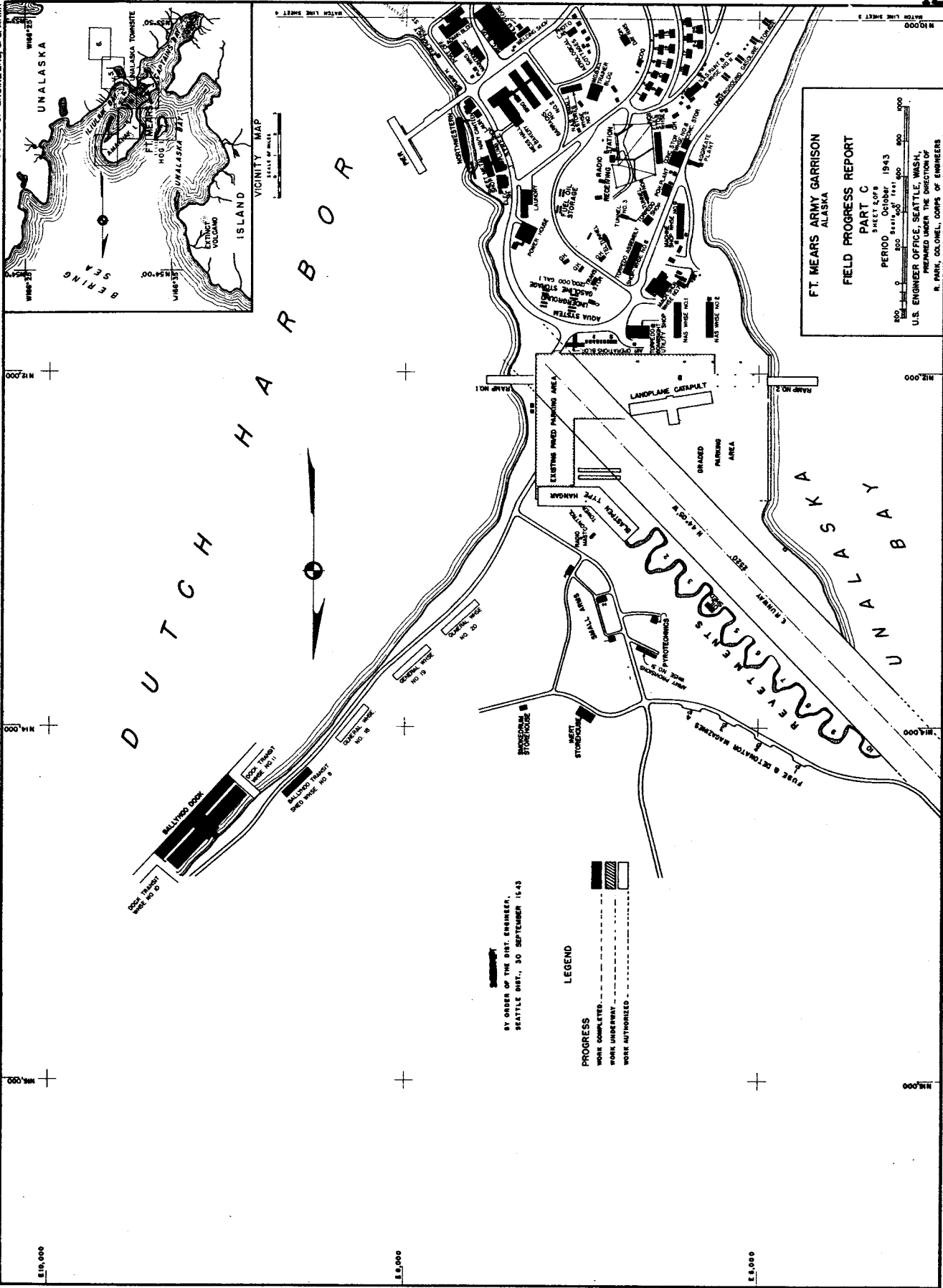
FT. MEARS ARMY GARRISON  
 ALASKA

FIELD PROGRESS REPORT  
 PART C

SHEET 1 OF 9  
 PERIOD: Oct, 1943  
 SCALE: 1:50,000

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT CORPS OF ENGINEERS, U.S. ARMY



**F.T. MEARS ARMY GARRISON**  
ALASKA

**FIELD PROGRESS REPORT**  
**PART C**

SHEET LOTS  
PERIOD October, 1943

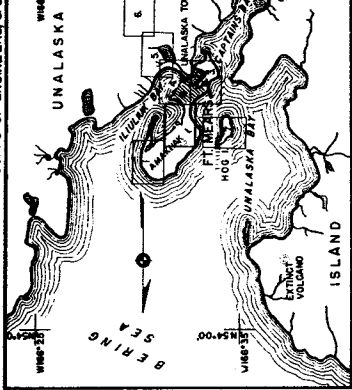
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**

**PROGRESS**

- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

BY ORDER OF THE DIST. ENGINEER,  
SEATTLE DIST., 30 SEPTEMBER 1943



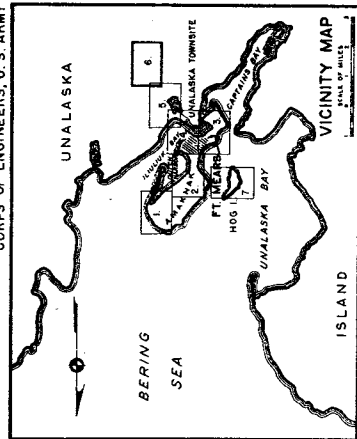
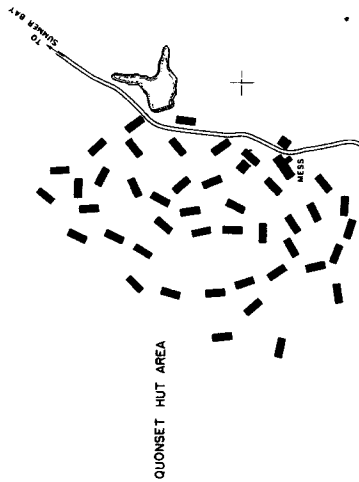




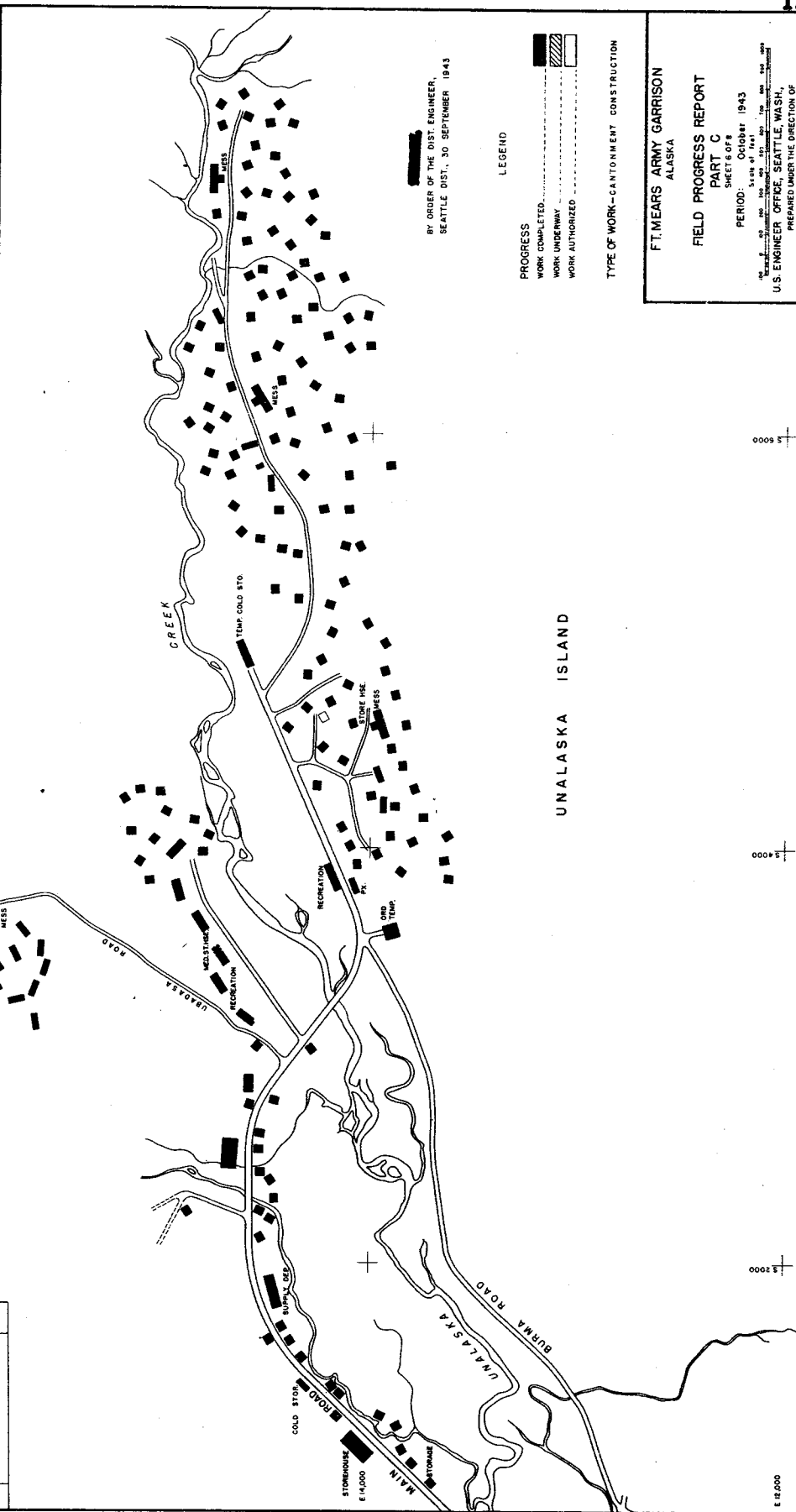
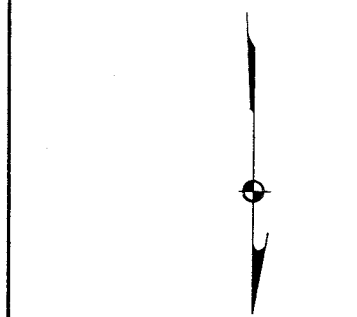


**WAR DEPARTMENT**

CONSTRUCTION LIST		
NO.	DESCRIPTION	QUAN.



CORPS OF ENGINEERS, U. S. ARMY



BY ORDER OF THE DIST. ENGINEER,  
SEATTLE DIST., 30 SEPTEMBER 1943

**LEGEND**

- PROGRESS
  - WORK COMPLETED
  - WORK UNDERWAY
  - WORK AUTHORIZED
- TYPE OF WORK—CANTONMENT CONSTRUCTION

FT. MEARS ARMY GARRISON  
ALASKA

**FIELD PROGRESS REPORT**

PART C

SHEET 6 OF 8

PERIOD: October 1943

Scale of Map

U. S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

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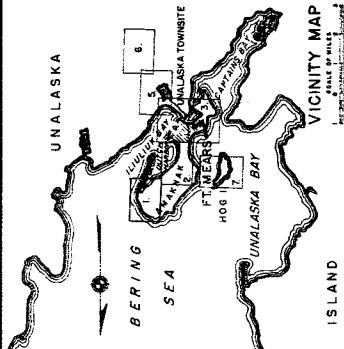
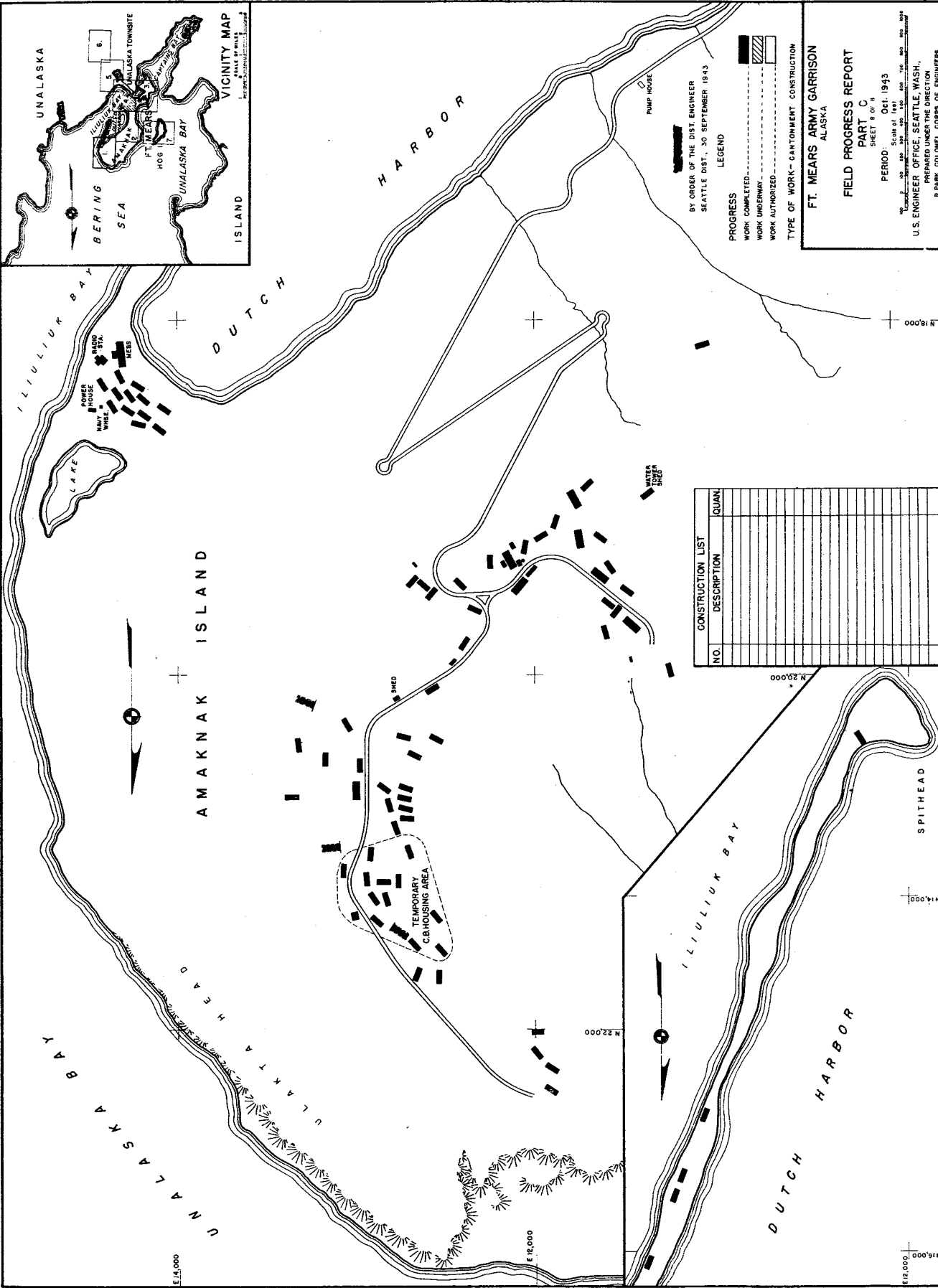
5 000

5 2000

E 12,000

SEE SHEET 5





CONSTRUCTION LIST

NO.	DESCRIPTION	QUAN.

BY ORDER OF THE DIST. ENGINEER  
SEATTLE DIST., 30 SEPTEMBER 1943

LEGEND  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED  
TYPE OF WORK - CANTONMENT CONSTRUCTION

FT. MEARS ARMY GARRISON  
ALASKA

FIELD PROGRESS REPORT  
PART C  
SHEET 8 OF 8  
PERIOD FROM 30 Sept. 1943 TO 30 Oct. 1943  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

FORT GREELY PROJECT

Fort Greely was established to provide for the construction of an Army garrison, with necessary appurtenant facilities, as well as Fixed Harbor Defense installations in the vicinity of Kodiak, Alaska, for the defense of the Naval Base at Kodiak. Fort Greely is located on Kodiak Island, approximately 200 miles southwest of Seward and off the coast of the southern Alaska mainland.

Authority for construction is as follows: letter from the Secretary of War to the Secretary of the Navy, dated 10 October 1940, letter from The Adjutant General to the Western Defense Command, dated 11 October 1940, and a letter from The Adjutant General to the Quartermaster General, dated 11 October 1940, subject: "Construction for garrisons at Kodiak, Sitka, and Unalaska". Program for further additional construction at this station has been approved, with certain deletions, by The Adjutant General, in a letter to the Western Defense Command, dated 31 December 1941, subject: "Program for additional construction in Alaska". Authority for the construction of the Fixed Harbor Defenses at Kodiak, is contained in a letter, dated 5 May 1942, from the Western Defense Command, to Major Vincent, Liaison Officer, Contract NOy-3570, subject: "Construction of Fixed 6" and 8" Batteries, Alaska", and three subsequent indorsements thereto. Construction for Garrison #1, under the original program, included administration,

housing, and hospital facilities. The Long Island Cantonment and Garrison #2 were started under the program for additional construction.

Facilities constructed include: warehouses (QM and Ordnance), cold storage buildings, fire stations, repair shops (motor, utility, and searchlight), defense housing (duplex units), laundry, dry cleaning plant, cryptographic station, decontamination building, ordnance shop, guardhouses, bakery, telephone building, QM gasoline and fuel oil storages, post exchanges, day rooms, theaters, libraries, chapels, ammunition magazines for ground troops, Air Corps, and fixed defenses, reclamation shop, hospitals (300 bed unit at Garrison #1 and 50 bed unit at Russian River Valley), dispensaries, and infirmaries.

Fixed Defense installations include: one 6" battery at Long Island, and two 8" batteries at Miller Point, St. Peter's Head and Chiniak, respectively. Supporting searchlight positions and fire control appurtenances with necessary housing, are located at Narrow Cape, Spruce Island, Kizhuyak, Artillery Hill, Soquel Point, Midway Point, Gibson Cove, Spruce Cape, Long Island, Chiniak, Miller Point, and Buskin Hill. Four 360° Panama mounts for 155 mm. guns, with necessary magazines, have been constructed at Cape Chiniak, Buskin Hill and Deer Point (Long Island), respectively. Seacoast radar installations have been provided for at Long Island, Piedmont Point, and Cape Chiniak. Housing facilities, emplacements and magazines

have been provided for the two 90 mm. Anti Motor Torpedo Boat batteries located at Puffin Island and Spruce Cape.

According to the curtailment program housing and facilities will be constructed for a permanent garrison of 6,000 officers and enlisted men including Harbor Defense troops. Temporarily located housing as of 30 September 1943 can accommodate 694 officers and 10,629 enlisted men.

The following utility features have been installed: five water systems covering three 200,000 gallon and two 30,000 gallon water storages, two sawmills with rated capacity of 30,000 and 100,000 f.b.m. per day respectively, seven sewage systems and one principal electrical distribution system and five outpost systems. Garrisons 1, 2, and 3 (Bell's Flat), obtain power from the Navy generating plants through a 13 KVA loop system. Stand-by power is provided for by two 600 KW diesel generators housed in a concrete powerhouse and located in Garrison 2. Harbor facilities include: one dock, 925' long, three barge and small boat docks, finger floats, and a small boat repair grid.

Seventy eight miles of gravel access roads, 20' wide, and 131 miles of gravel garrison roads, 20' wide, have been completed by contractor forces, Seabees, and Engineer troops.

Completed land plane facilities include: three hangars, two of which are Kodiak "T" size, 100' by 50' by 175' and paved bunkers

for bombers and fighter planes. The 200,000 gallon storage for Air Corps tactical gas has been started and should be completed by the end of December. Three 150' wide concrete runways (5,000', 5,200' and 6,000') were built by the Navy for joint use with the Army. Army funds were used for the construction of the 6,000' runway.

The work was to be accomplished by the Navy Department, under Contract N0y-3570 (replaced by Contract N0y-6060 and Seabee construction units).

Siems Drake Puget Sound, contractor for the Navy, under contract N0y-3570, started construction for the Army garrison #1, on 1 February 1941, and on the hospital installation on 28 May 1941. To facilitate Army construction the War and Navy Departments agreed that the Navy Contractor proceeding with the construction of the Naval Operating Base and Naval Air Station would also handle Army construction.

On 30 April 1943 the Navy Department terminated Contract N0y-3570 and replaced it with Contract N0y-6060, whereby Siems Drake served solely as a procurement agency out of Seattle for the Navy projects. Several Navy construction battalions were sent to Kodiak to replace the contractor's employees; the last of whom left in February 1943. These Seabee units arrived at the project site in October 1942 and immediately picked up where contractor's forces had left off.

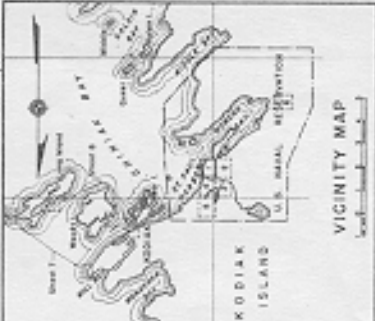
Several companies of the 151st Combat Engineers were assigned to road construction and various field fortification projects. The

units are still there, working on garrison camouflage and extension of the Army dock to accommodate two Liberty ships. At Cape Chiniak a civilian Army Engineer construction force installed the Aircraft Warning Service unit and supporting housing as well as housing and four Panama mounts for the 155 mm. gun battery. Battery housing was started 1 March 1942 and completed 1 December 1942. Coast Artillery and Infantry troops were also used in laying utility lines, outpost facilities, and on construction of the Chiniak Satellite Field (steel mat surface, 150' by 5,000'). Peak construction was reached in May 1942 with 2,981 contractors and troop laborers on the job. Resident Engineers were Mr. David J. Flood, Captain G. J. Barton, CE, and at present Captain John D. Snyder, CE.

Standard Constructing Quartermaster plans were used in the construction of the buildings for garrisons 1, 2, and the Long Island cantonment. Hut, local design, and T/O type construction were utilized for the expansion program and Fixed Defense housing.

The post was substantially complete in September 1943 although the field estimates 30 June 1944 as the probable completion date. The Fixed Defense program is approximately 70 percent complete with estimated completion as 1 January 1944.

Cost is \$17,612,400. (Tentative revised estimate, excluding additional civilian labor costs subject to court action between Navy and Siems Drake.)



NO.	DESCRIPTION	STATUS
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99	GENERAL OFFICERS' QUARTERS	100%
100	GENERAL OFFICERS' QUARTERS	100%

LEGEND

PROGRESS

WORK COMPLETED: ———

WORK UNDERWAY: - - - - -

WORK AUTHORIZED: - - - - -

**FORT GREELY ARMY GARRISON**  
 KODIAK, ALASKA

**FIELD PROGRESS REPORT**  
 PART C

Sheet 1 of 5

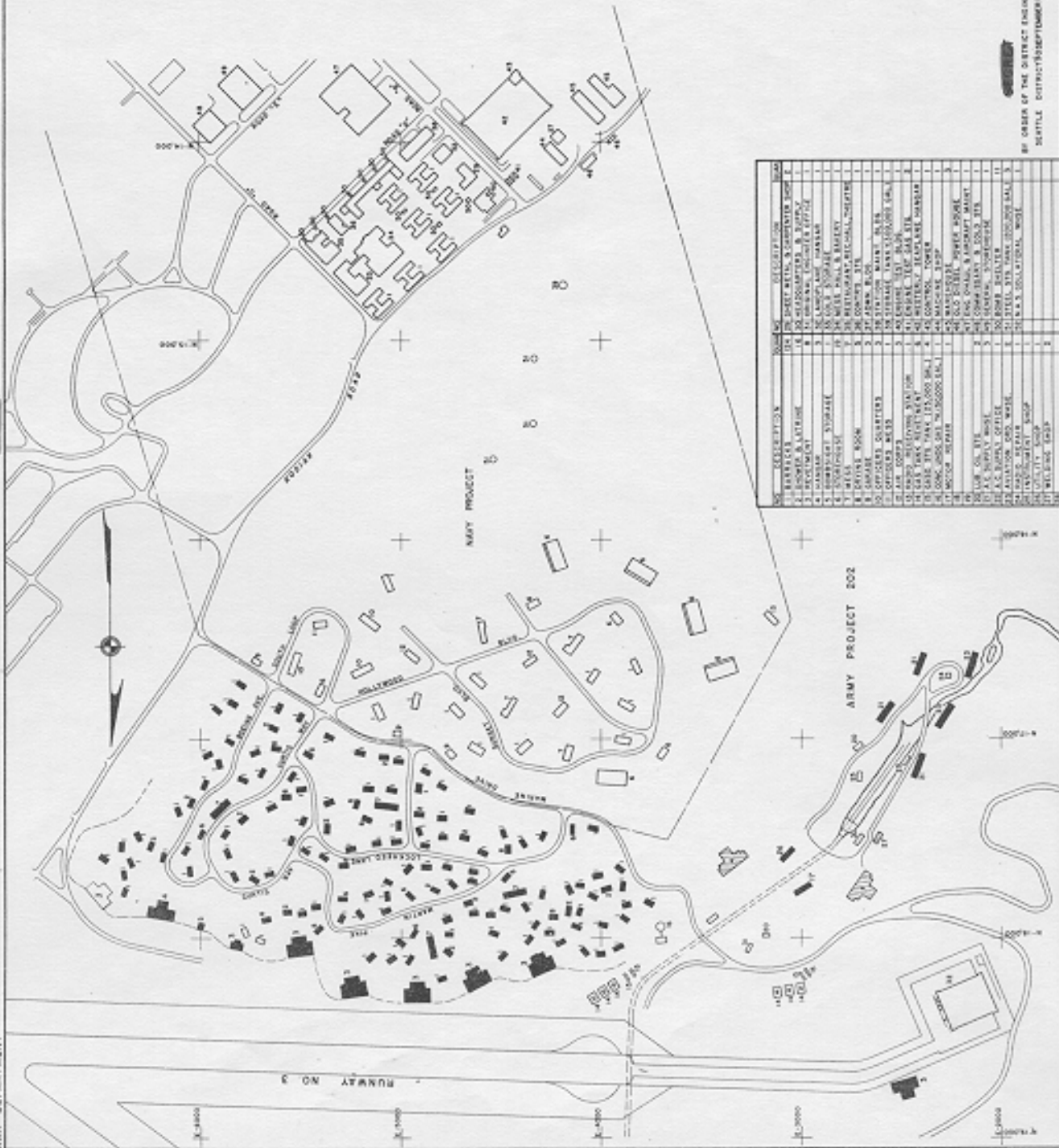
PERIOD: October 1943

BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DISTRICT, 30 SEPTEMBER 1943

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
 PREPARED UNDER THE DIRECTION OF  
 S. HARR, COLONEL, CORPS OF ENGINEERS

CORPS OF ENGINEERS, U.S. ARMY

WAR DEPARTMENT



NO.	DESCRIPTION	NO.	DESCRIPTION
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## LEGEND

PROGRESS  
 WORK COMPLETED  
 WORK UNDERWAY  
 WORK ANTICIPATED

### FORT GREELY ARMY GARRISON KODIAK, ALASKA FIELD PROGRESS REPORT

PART C

Sheet 8 of 9

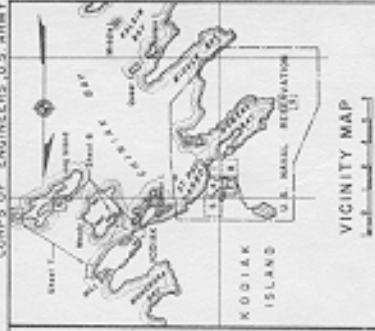
PERIOD: October 1943

1000

BY ORDER OF THE DISTRICT ENGINEER,  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. MARK, COLONEL, CORPS OF ENGINEERS

SECRET

COMPS OF ENGINEERS, U.S. ARMY

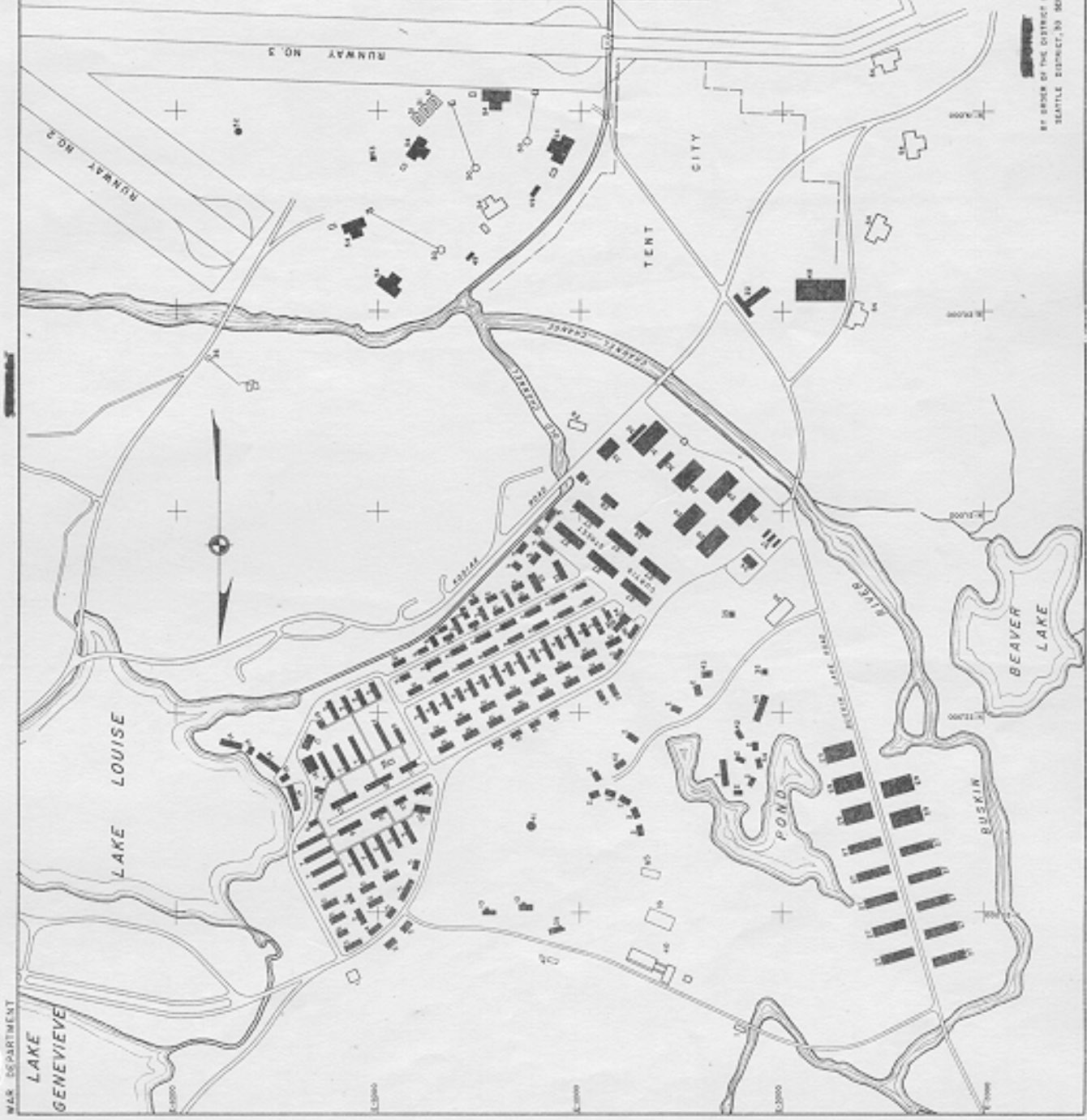


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7. 5th BARRACKS	UNDERWAY
8. 6th BARRACKS	UNDERWAY
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102. 100th BARRACKS	UNDERWAY

LEGEND

- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

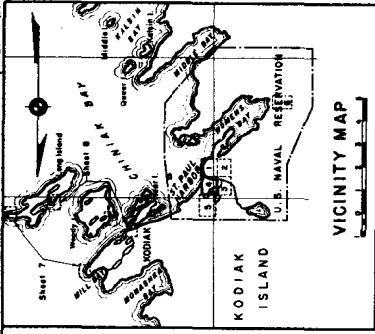
FORT GREELY ARMY GARRISON  
KODIAK, ALASKA  
FIELD PROGRESS REPORT  
PART C  
Period from 1st to 31st of Month 1943



WAR DEPARTMENT

BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DISTRICT, 25 SEPTEMBER 1943

CORPS OF ENGINEERS U.S. ARMY

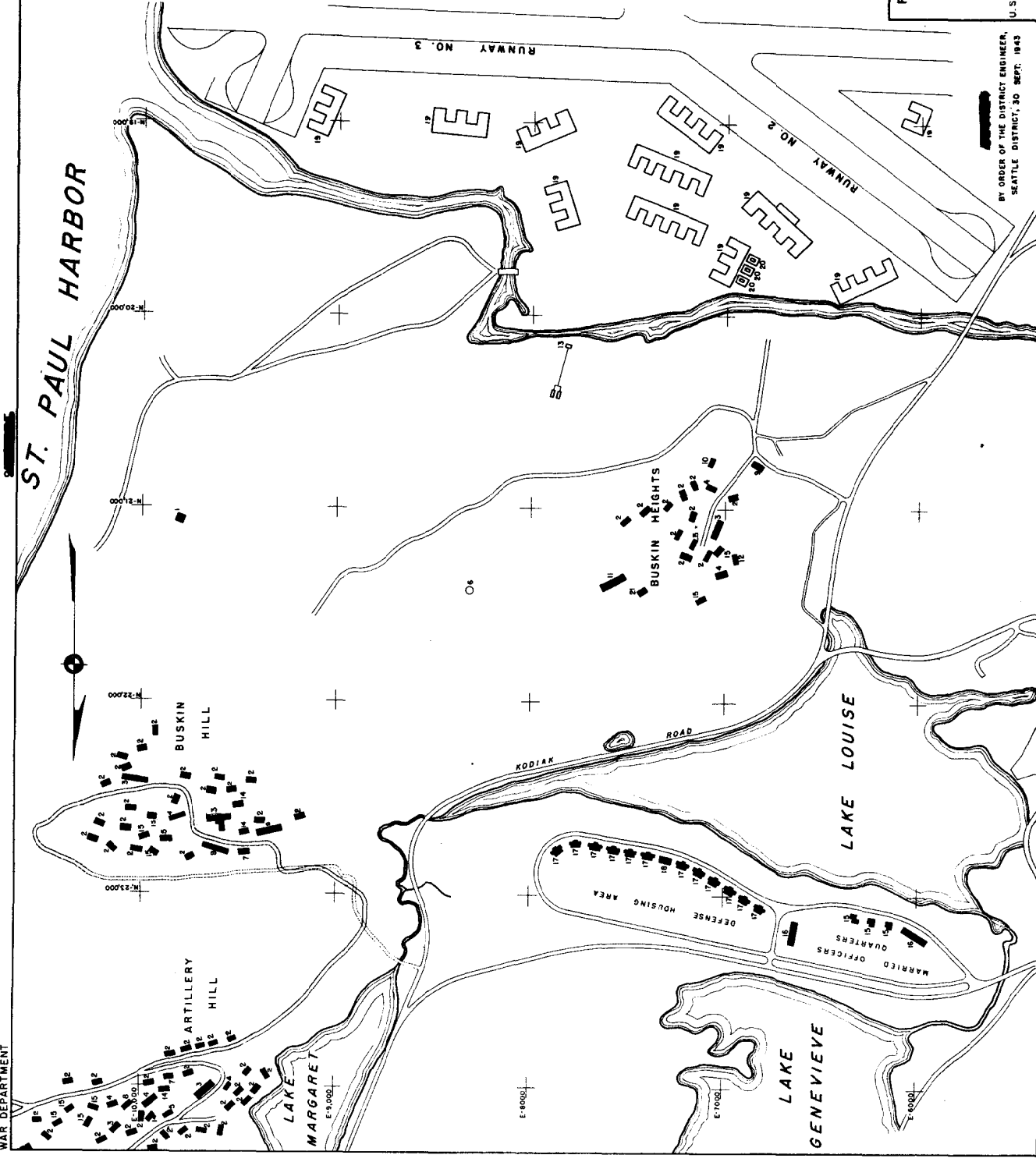


NO.	DESCRIPTION	DATE
1	DEBASSING STATION	11
2	BARRACKS	8
3	MESS	5
4	SHOWER & LATRINE	5
5	OFFICERS' QUARTERS	5
6	WOOD YARD (100,000 GAL.)	3
7	ADMIN. BLDG.	2
8	UTIL. & MOTOR REPAIR	2
9	WATERHOUSE	2
10	WATER TOWER	2
11	FILTER CENTER	2
12	DRIVING ROOM	2
13	TRUCK LOADING STAND	2
14	OFFICERS' QUARTERS	2
15	OFFICERS' QUARTERS	2
16	OFFICERS' MESS	2
17	DEFENSE HOUSING	2
18	LAUNDRY - DEFENSE HOUSING	2
19	LAUNDRY - DEFENSE HOUSING	2
20	GAS TRUCK REPLENISH	2
21	CO-HEADQUARTERS	2
22	DISPENSARY	2

LEGEND

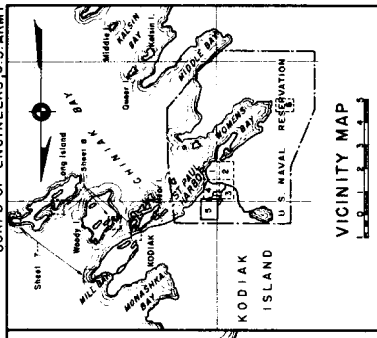
PROGRESS  
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 WORK UNDERWAY  
 WORK AUTHORIZED

**FORT GREELY ARMY GARRISON**  
 KODIAK, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
 PERIOD: 1 October 1943  
 BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DISTRICT, 30 SEPT. 1943  
 R. PARK, COLONEL, CORPS OF ENGINEERS



WAR DEPARTMENT

BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DISTRICT, 30 SEPT. 1943

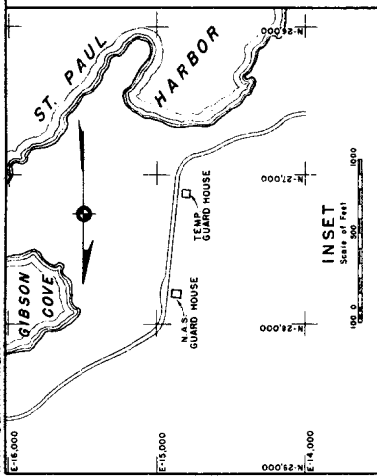
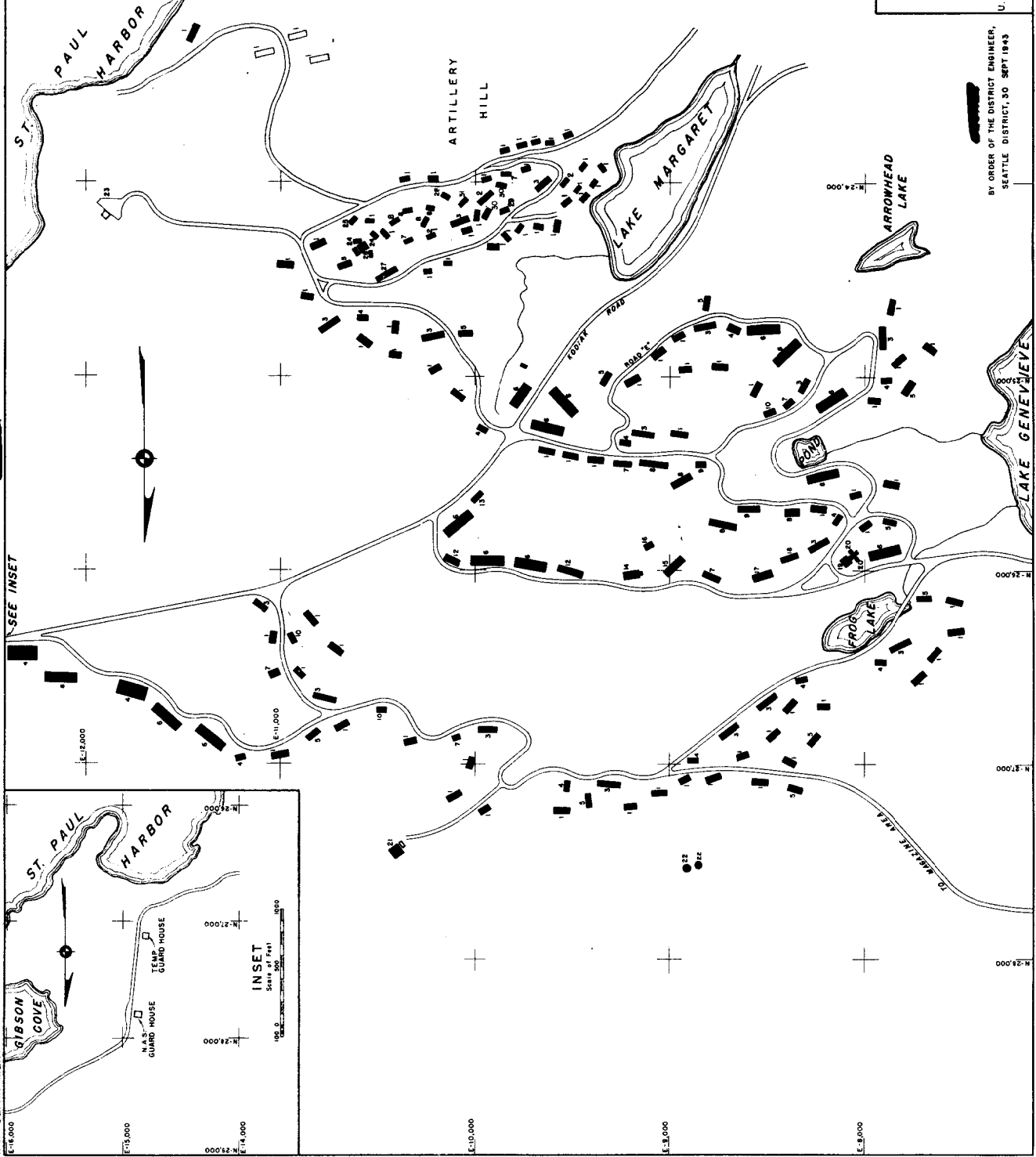


NO.	DESCRIPTION	QUANT.
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4	STOREHOUSE	15
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6	SD-17	14
7	OFF. DTRS.	7
8	OFF. MESS.	2
9	S.A. 2	3
10	SP-2	2
11	GUARD HOUSE	1
12	CHapel	1
13	THEATRE	1
14	POST EXCHANGE	1
15	INFORMANT	1
16	FIRE STATION	1
17	ROSE TOWER	1
18	WOOD STG. TANK (200,000 GAL.)	2
19	HOOTS & ADMN.	3
20	POST OFFICE	1
21	WAREHOUSE	1
22	OFF. SHOWER & LATRINE	1
23	RECREATION	1
24	UTILITIES & MOTOR REPAIR	1

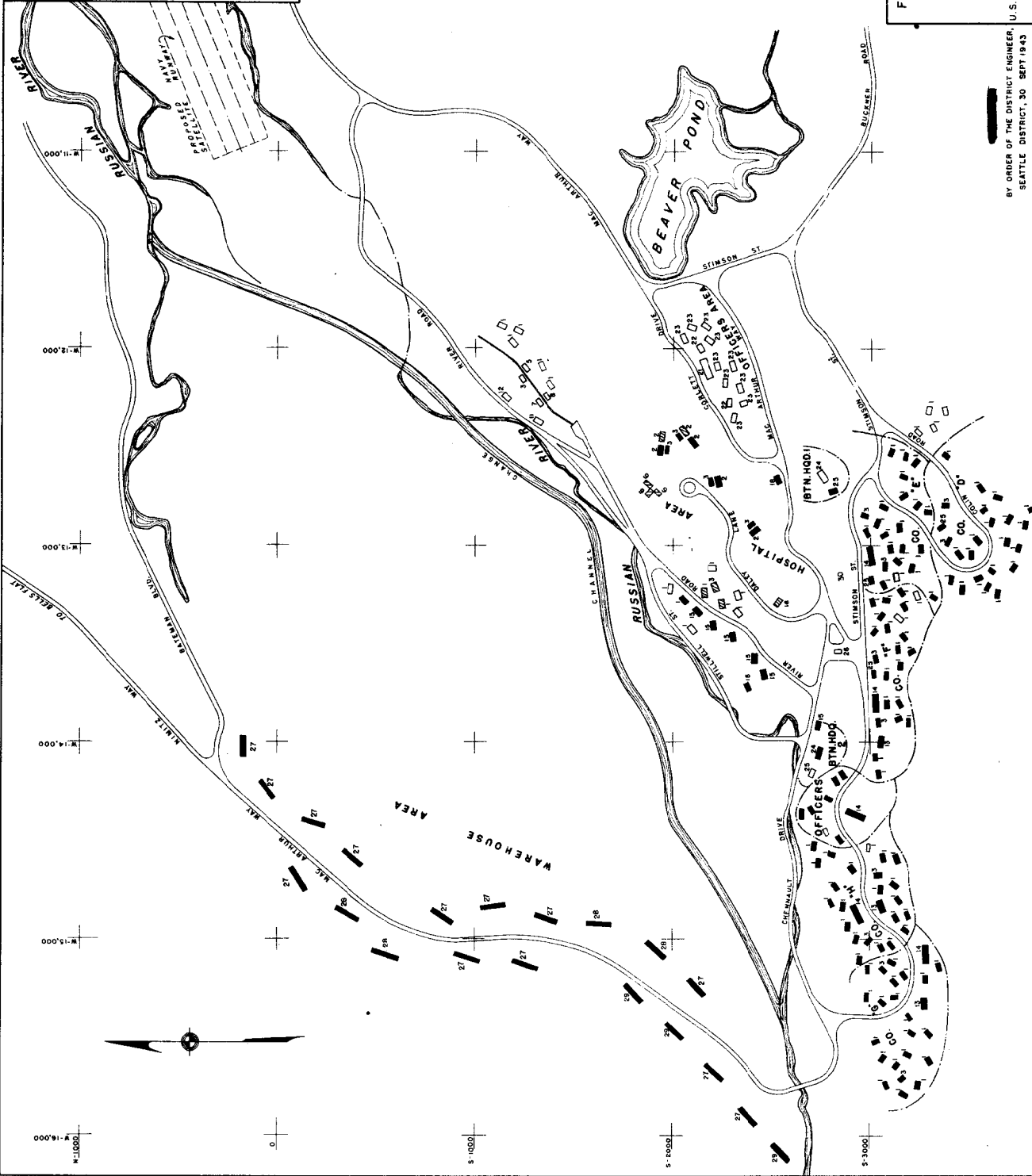
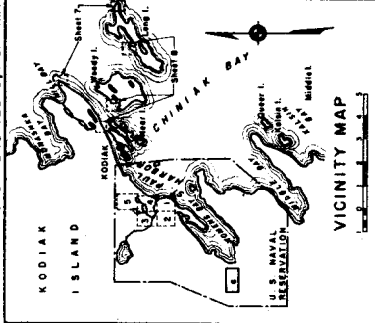
**LEGEND**

PROGRESS  
 WORK COMPLETED [Solid black rectangle]  
 WORK UNDERWAY [Dashed line rectangle]  
 WORK AUTHORIZED [Dotted line rectangle]

**FORT GREELY ARMY GARRISON**  
 KODIAK, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
 PERIOD: October 1943  
 SCALE OF PLAN: 1" = 500'



BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DISTRICT, 30 SEPT 1943



NO.	DESCRIPTION	ROOM
1	WAREHOUSE	105
2	WARD	17
3	BATH & LATRINE	1
4	DENTAL CLINIC	1
5	DENTAL CLINIC (SURGICAL)	1
6	EXAMINATION BLDG.	1
7	LABORATORY	1
8	LABORATORY	1
9	SECURITY BLDG.	1
10	POWER HOUSE	1
11	BOILER BLDG.	1
12	RECREATION	5
13	RECREATION	5
14	MESS HOUSE	5
15	MESS HOUSE	5
16	INFIRMARY & CLINIC	1
17	INFIRMARY & CLINIC	1
18	MURRES OTES	1
19	MURRES OTES	1
20	MURRES OTES	1
21	OFFICERS MESS	2
22	OFFICERS BATH & LATRINE	2
23	OFFICERS QUARTERS	10
24	OFFICERS QUARTERS	10
25	OFFICERS QUARTERS	10
26	ADMINISTRATION	6
27	WAREHOUSE	6
28	WAREHOUSE	6
29	GOLD STORAGE	3
30	GOLD STORAGE	3
31	FIRE STATION	1
32	FIRE STATION	1

LEGEND

PROGRESS  
 WORK COMPLETED [Solid line]

WORK UNDERWAY [Dashed line]

WORK AUTHORIZED [Dotted line]

**FORT GREELY ARMY GARRISON**  
 KODIAK, ALASKA

**FIELD PROGRESS REPORT**  
 PART C

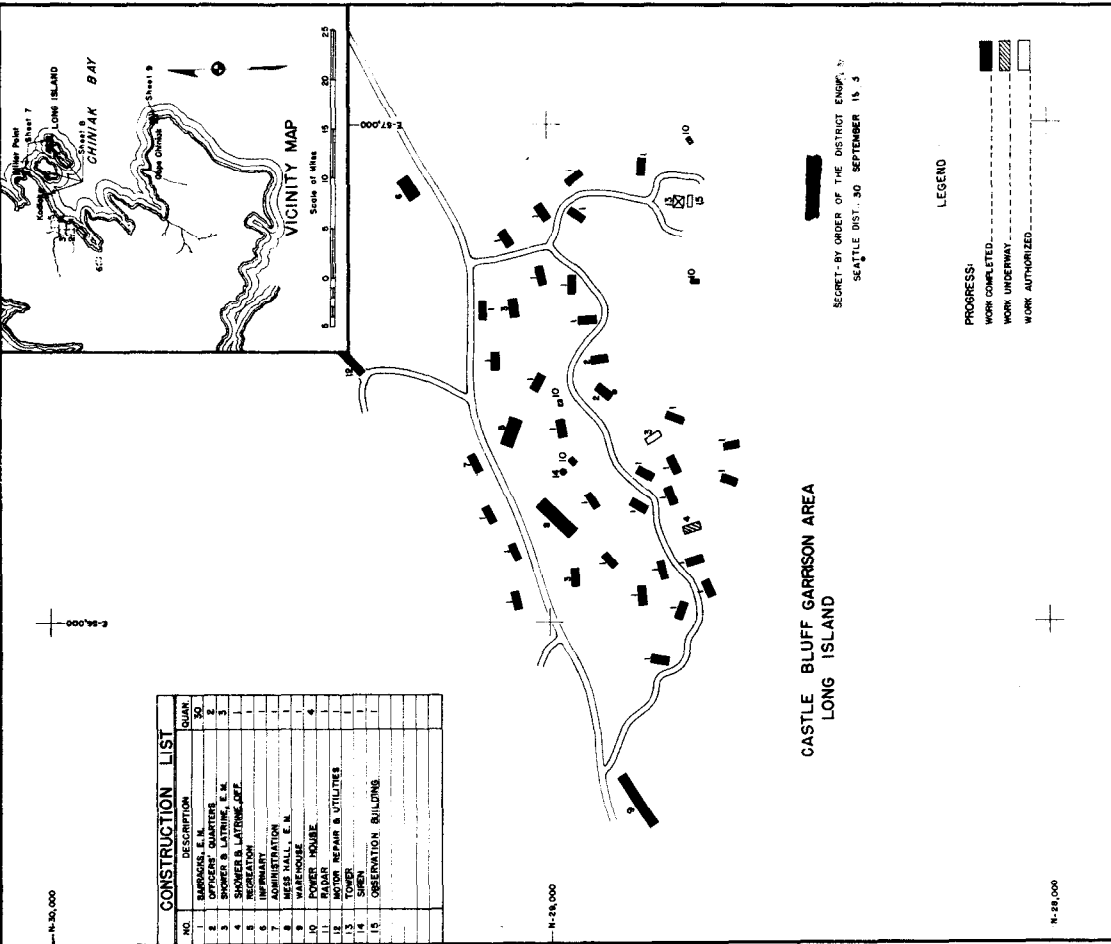
SHEET 5 OF 9  
 PERIOD: October 1943

8000

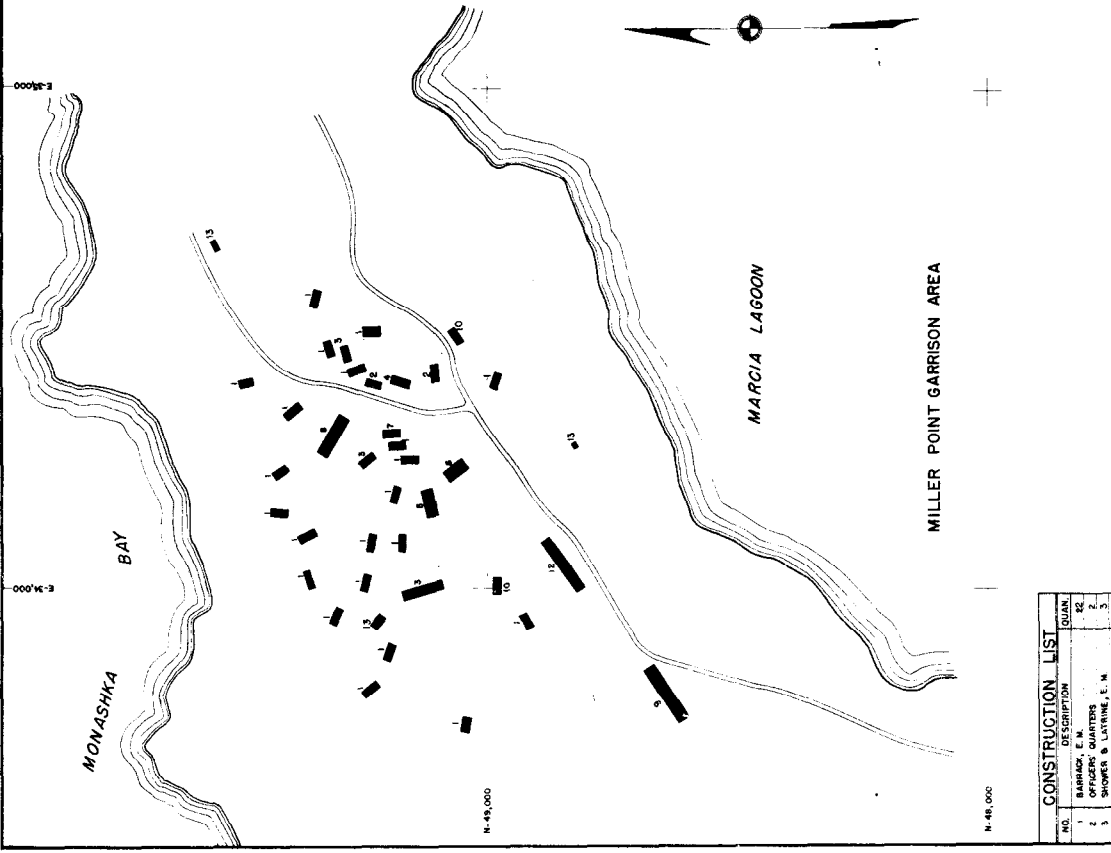
BY ORDER OF THE DISTRICT ENGINEER,  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

CORPS OF ENGINEERS, U.S. ARMY

WAR DEPARTMENT



NO.	DESCRIPTION	QUAN.
1	BARRACKS, E. M.	50
2	OFFICERS' QUARTERS	2
3	SHOWER & LATHING, E. M.	3
4	SHOWER & LATHING, A.P.F.	1
5	RECREATION	1
6	INFIRMARY	1
7	WAREHOUSE	1
8	MESS HALL, E. M.	1
9	WATERHOUSE	1
10	POWER HOUSE	1
11	MAIN STOREHOUSE	1
12	REPAIR & UTILITIES	1
13	TOWER	1
14	SHED	1
15	OBSERVATION BUILDING	1



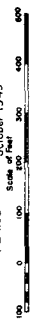
NO.	DESCRIPTION	QUAN.
1	BARRACKS, E. M.	52
2	OFFICERS' QUARTERS	2
3	SHOWER & LATHING, E. M.	3
4	SHOWER & LATHING, OFFICERS'	1
5	RECREATION	1
6	INFIRMARY	1
7	WAREHOUSE	1
8	MESS HALL, E. M.	1
9	GROUP BATT. STOREHOUSE	2
10	GROUP BATT. STOREHOUSE	1
11	MOTOR REPAIR & UTILITIES	1
12	POWER HOUSE	1
13		3

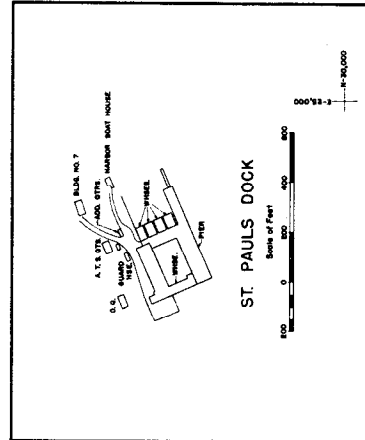
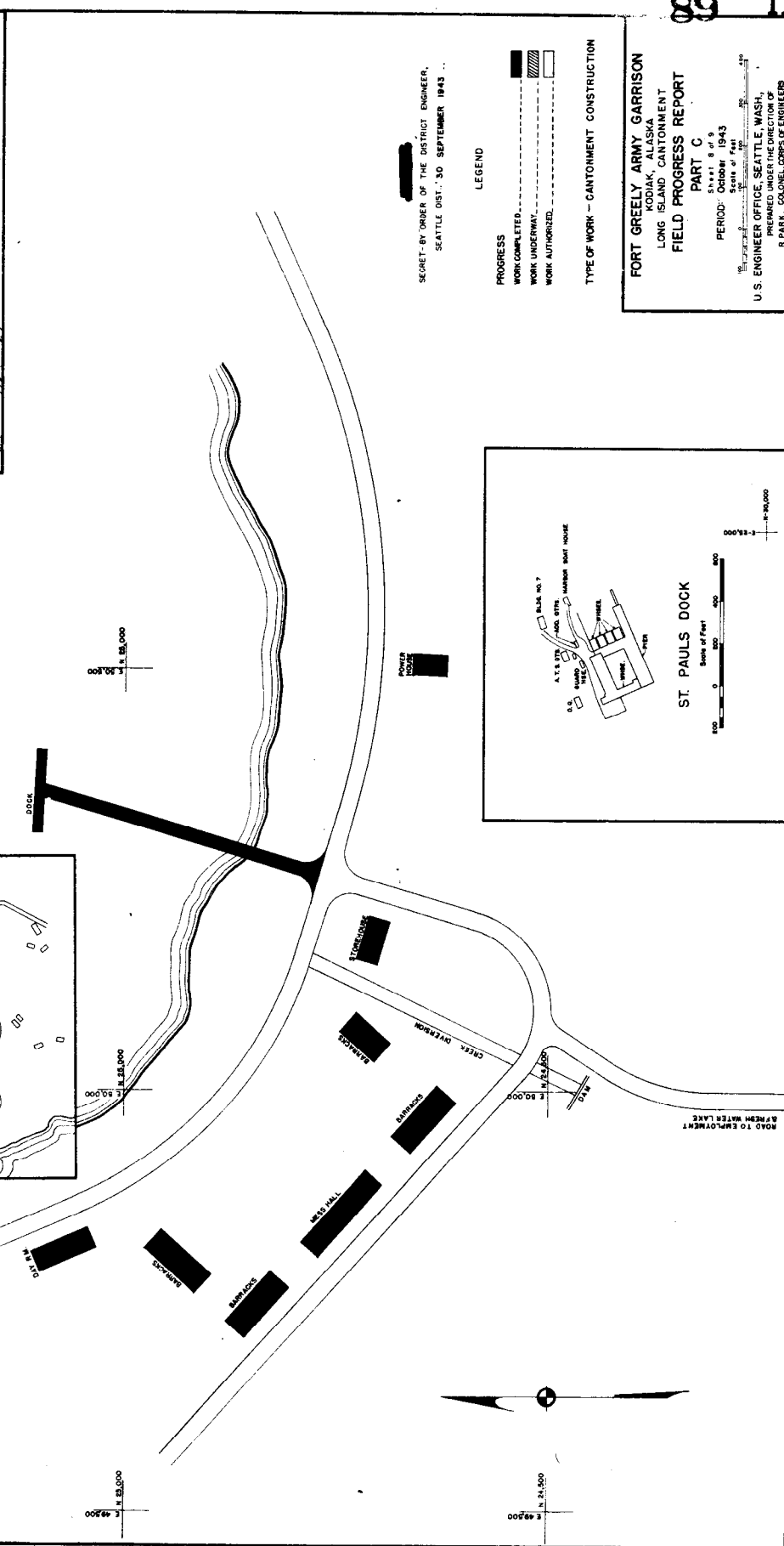
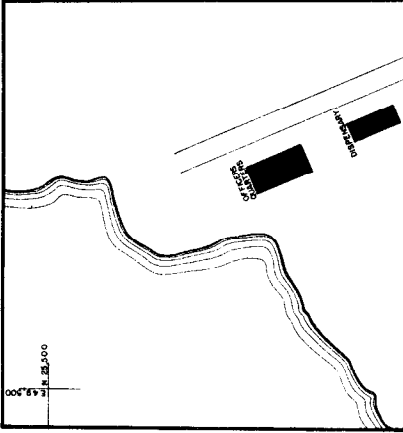
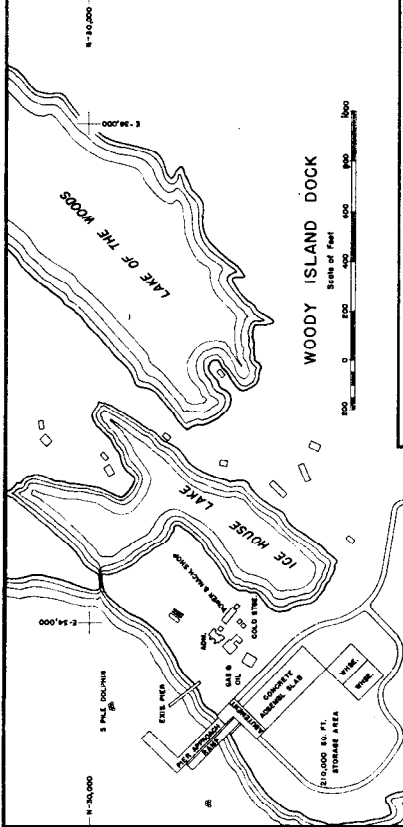
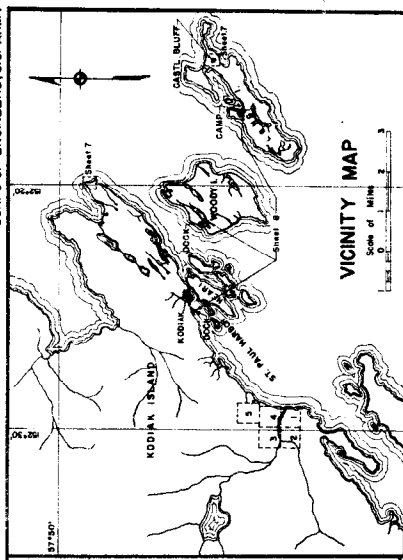
SECRET BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DIST. 30 SEPTEMBER 1945

LEGEND

- PROGRESS:
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

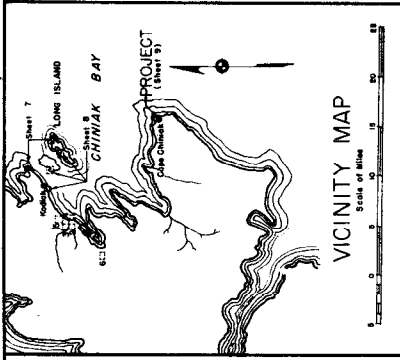
FORT GREELY ARMY GARRISON  
MILLER POINT & LONG ISLAND CAMPS  
FIELD PROGRESS REPORT  
PART C  
PERIOD: Sheet 7 of 9  
October 1945  
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS





**FORT GREELY ARMY GARRISON**  
KODIAK, ALASKA  
LONG ISLAND CANTONMENT  
FIELD PROGRESS REPORT  
PART C  
Scale of Feet  
PERIOD: October 1943  
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

CORPS OF ENGINEERS, U.S. ARMY



1	BARRACKS, EN	7
2	BARRACKS, EN	7
3	SHOWER & LATRINE	8
4	MESS HALL	3
5	SEARCHLIGHT REPAIR	1
6	ENTRY, MAPS & ADMINISTRATION	1
7	BN HEADQUARTERS	1
8	SUPPLY	7
9	REFRESHMENT	2
10	REFRESHMENT	2
11	ORDNANCE STORAGE	1
12	COLD STORAGE	1
13	ORDNANCE STORAGE	1
14	WAREHOUSE	1
15	UTILITY ROOM	1
16	WATER TANK	1
17	PUMP HOUSE	1
18	ENGINE STATION	1
19		1
20		1
21		1
22		1

SECRET BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DIST., 30 SEPTEMBER 1943

LEGEND

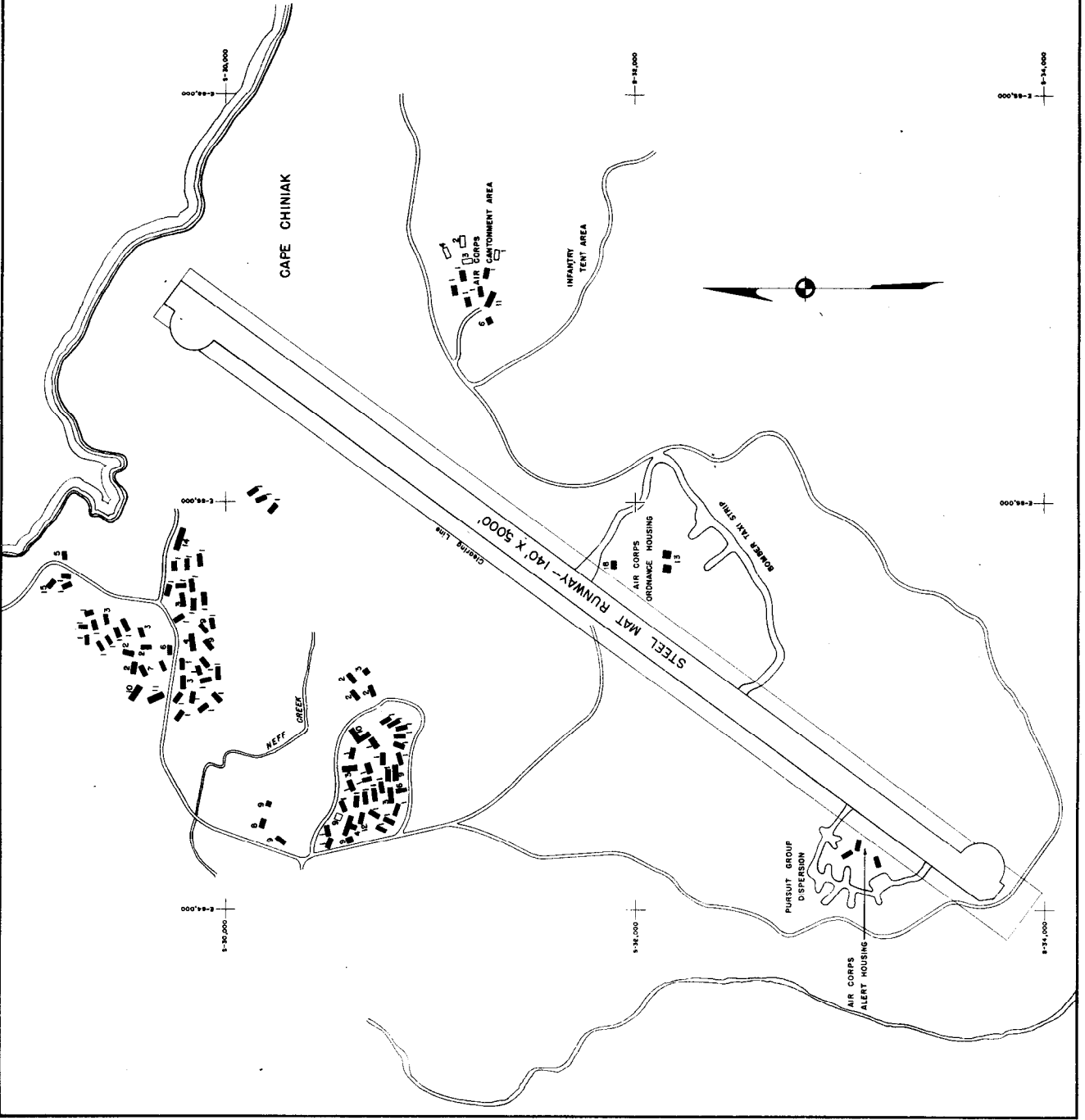
PROGRESS:  
 WORK COMPLETED [Solid black box]  
 WORK UNDERWAY [Dashed line box]  
 WORK AUTHORIZED [Hatched box]

FORT GREELY ARMY GARRISON  
 KODIAK, ALASKA  
 CAPE CHINIAC CAMP  
 FIELD PROGRESS REPORT  
 PART C

Sheet 9 of 9  
 PERIOD: October 1943

Scale of Feet  
 0 100 200 300 400 500 600 700 800 900 1,000  
 PREPARED UNDER THE DIRECTION OF  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT



GARRISONS AT AIRFIELDS  
constructed by the  
Civil Aeronautics Administration

Previous to the summer of 1941 the Civil Aeronautics Administration (CAA) had inaugurated a construction program for the development of airfields in Alaska, the locations of which were selected for both commercial and tactical value. This program covered the construction of the landing fields with allied facilities for peacetime operation.

Immediately after our Declaration of War upon the Axis Nations, a construction program was authorized by letter from The Adjutant General to the Western Defense Command, subject: "Program for Additional Construction in Alaska", dated 31 December 1941, for the housing of defensive garrisons for these airfields.

These fields were located at Nome, Cordova, Juneau, Naknek, Gulkana, Bethel, Big Delta, Northway, McGrath, Moses Point, Galena and Tanacross. The Tanacross project was authorized by letter from the Western Defense Command to the Alaska Defense Command, dated 18 August 1942. The Moses Point project was authorized by 3rd indorsement dated 29 September 1942 from the Western Defense Command to the Alaska Defense Command to basic letter from the Alaska Defense Command dated 13 August 1942, subject: "Housing Requirements -- Moses Point".

## NOME

Nome is located approximately 580 air miles northwest of Anchorage on the southern shore of the Seward Peninsula on the Bering Sea. It was realized that Nome's position in relation to global routes of air travel was of great importance and establishment there of a bomber operating air base would enable long range patrolling of the Bering Sea and protection of Alaska's west coast. In addition, the Nome project was to provide an air base with maximum facilities for medium bombardment and fighter squadrons. The site finally selected for the main field was on tailing piles in an old gold dredge area where there was sufficient thawed ground. This site is approximately two miles northwest of the Nome town site.

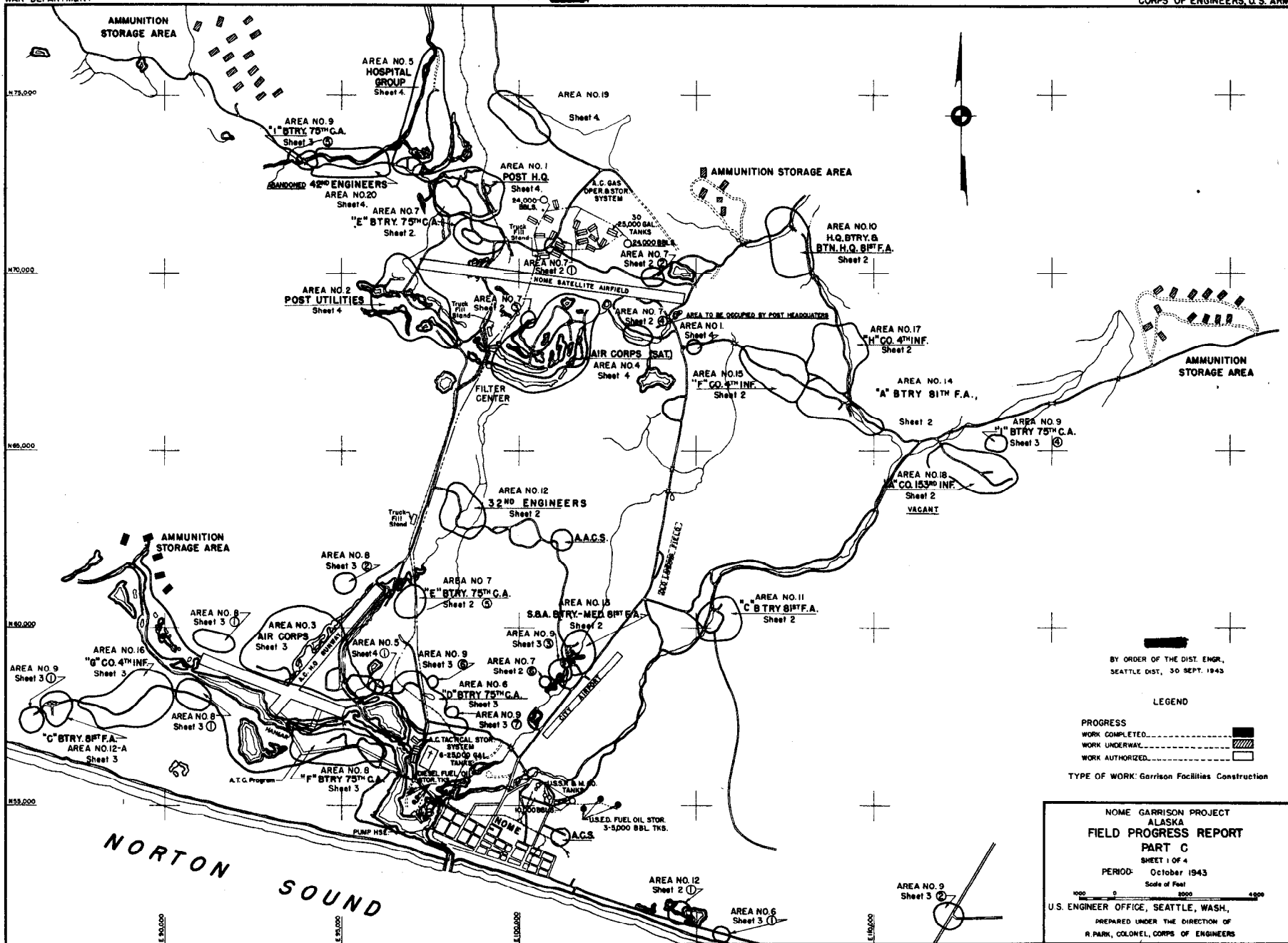
Three runways were constructed by the CAA by contract. The north-south runway measures 300' by 4,200' and the east-west runway measures 300' by 4,700'. The satellite field at Moonlight Springs is 300' by 5,643'. There now exists at Nome, storage for approximately 2,900,000 gallons of gasoline and 850,000 gallons of fuel oil. (Commercial storage facilities could be used to augment the fuel oil storage by 50 percent.) A 100 bed hospital and two Rodiak type "T" hangars were erected.

In May 1943 it became evident that the ferrying of Russian aircraft from Fairbanks to Siberia under the Lend-Lease program called for additional facilities at Nome. Therefore an expansion program known as Plans "B" and "C" were authorized by letter dated

17 June 1943 from The Adjutant General's Office to the Western Defense Command, subject: "Construction Program for Expansion of Alaskan Wing Air Transport Command. (Modified 1 June 1943) This plan included the diversion of the Snake River to provide ground for the construction of additional parking area, erection of a modified Birchwood hangar and a 2,000' extension of the satellite field and new housing for approximately 1,000 officers and men.

Construction was initiated 23 July 1941 by small forces of civilian employees under Engineer Officer supervision. The first troops for the initial garrison arrived in September 1941. Upon expansion of the garrison in June 1942, the various troop units built their own housing. The 32nd Engineer Company forces were available for technical work and erection of the construction camps. First surveys and planning were done by Captain John W. Baum, CE. He was awarded the Legion of Merit for construction work in Alaska, particularly for his activities in connection with the erection of the original garrison at Nome. Captain Baum was also the first Resident Engineer, succeeded in turn by Captain Burford K. Tanner, CE, Major Frank P. Brock, CE, and Captain John F. McDermott, CE. Mr. James Wise was the civilian engineer assistant.

Approximately 90 percent of the original program and subsequent programs were completed by November 1943. The completion of Plans "B" and "C" is scheduled for August 1944. The estimated cost of the Nome Project is approximately \$7,000,000.



BY ORDER OF THE DIST. ENGR,  
SEATTLE DIST., 30 SEPT. 1943

LEGEND

PROGRESS

WORK COMPLETED

WORK UNDERWAY

WORK AUTHORIZED

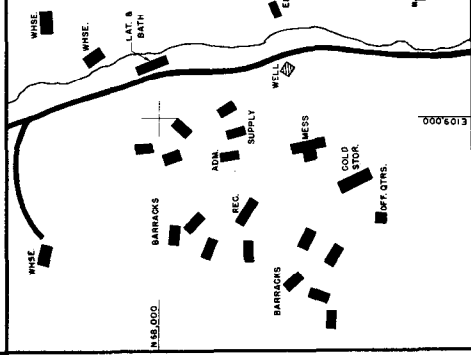
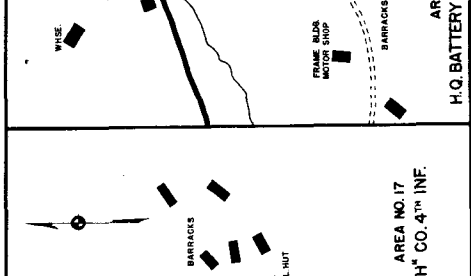
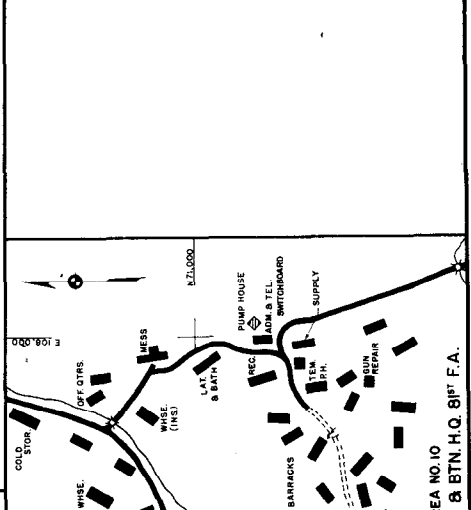
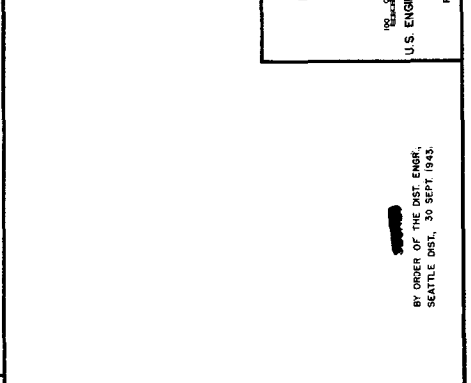
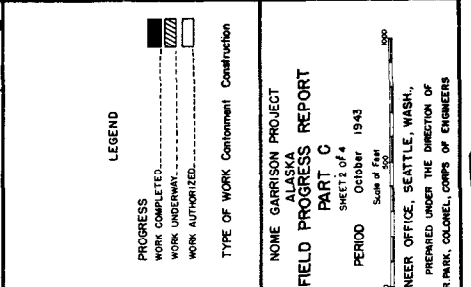
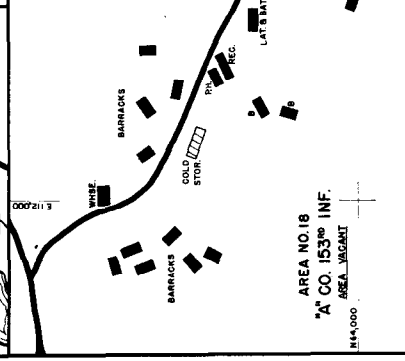
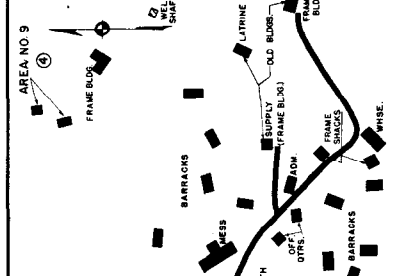
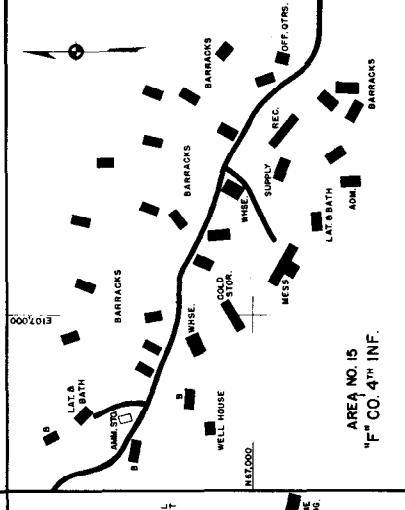
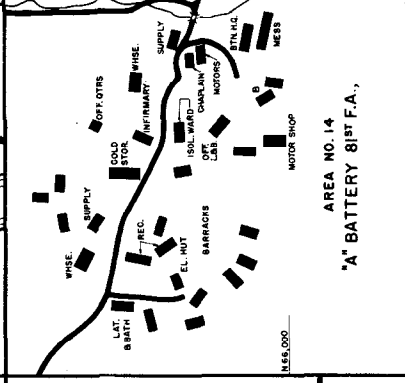
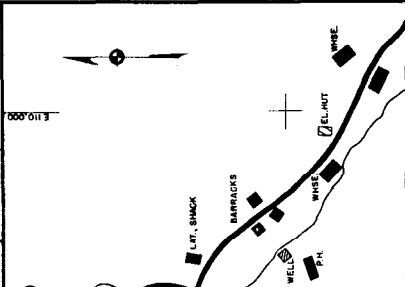
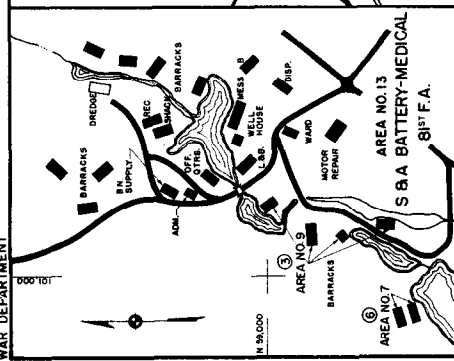
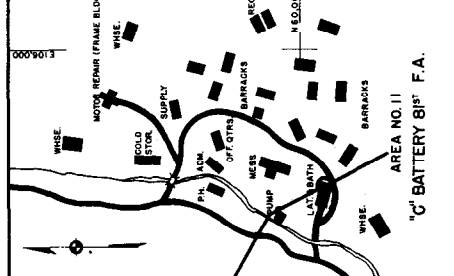
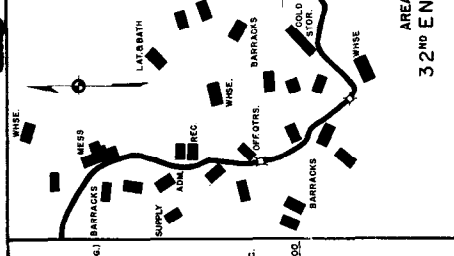
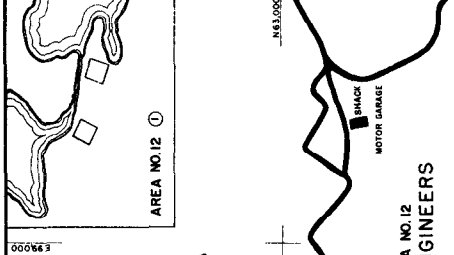
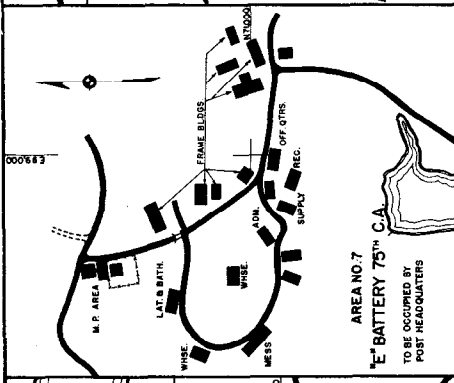
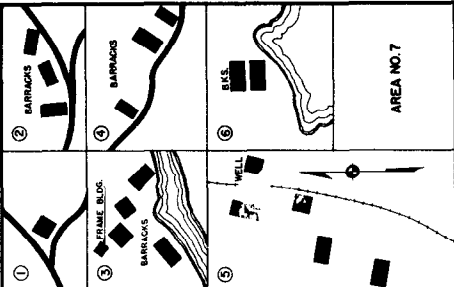
TYPE OF WORK: Garrison Facilities Construction

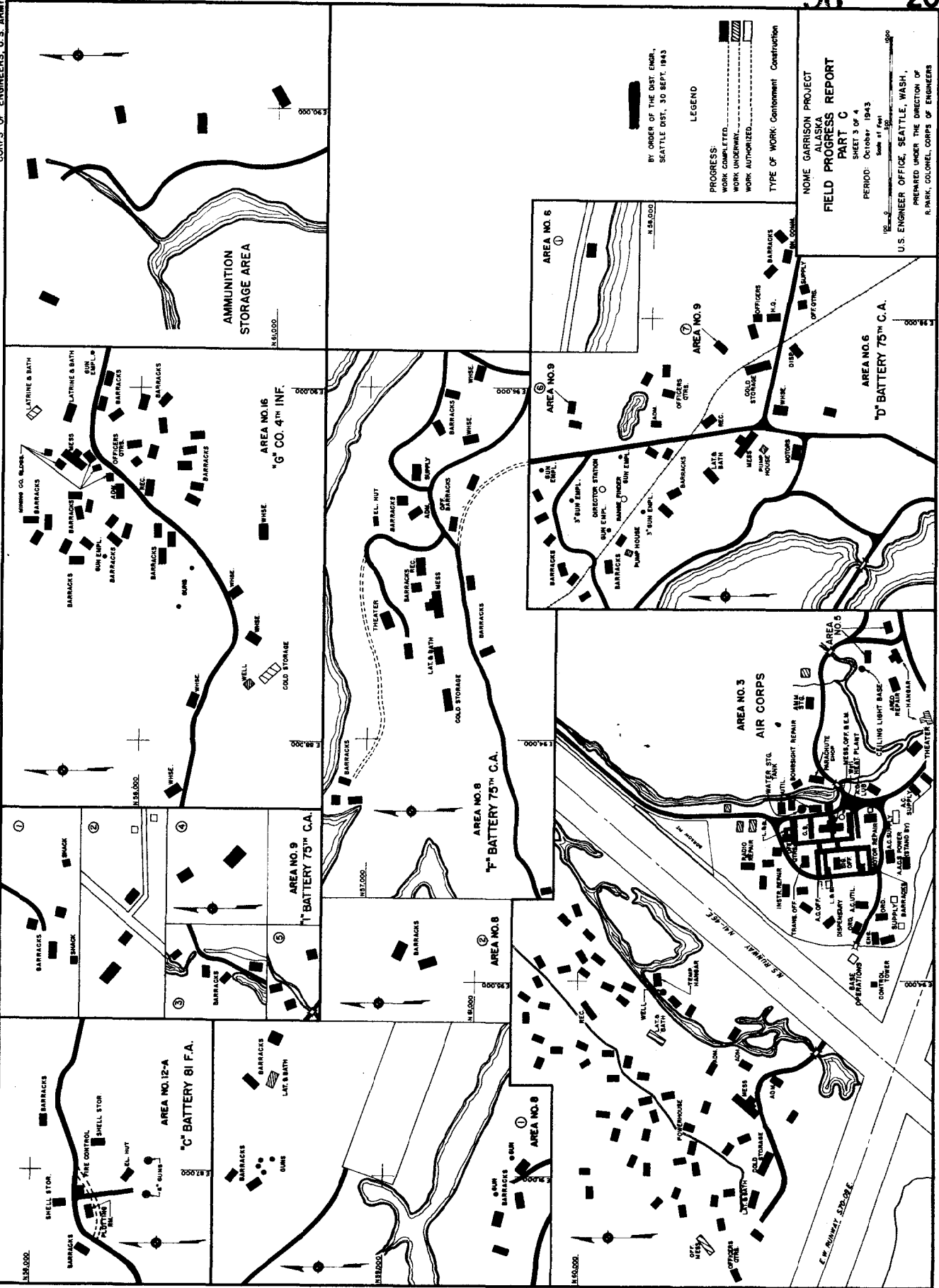
NOME GARRISON PROJECT  
ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 1 OF 4  
PERIOD: October 1943  
Scale of Feet  
0 2000 4000  
U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

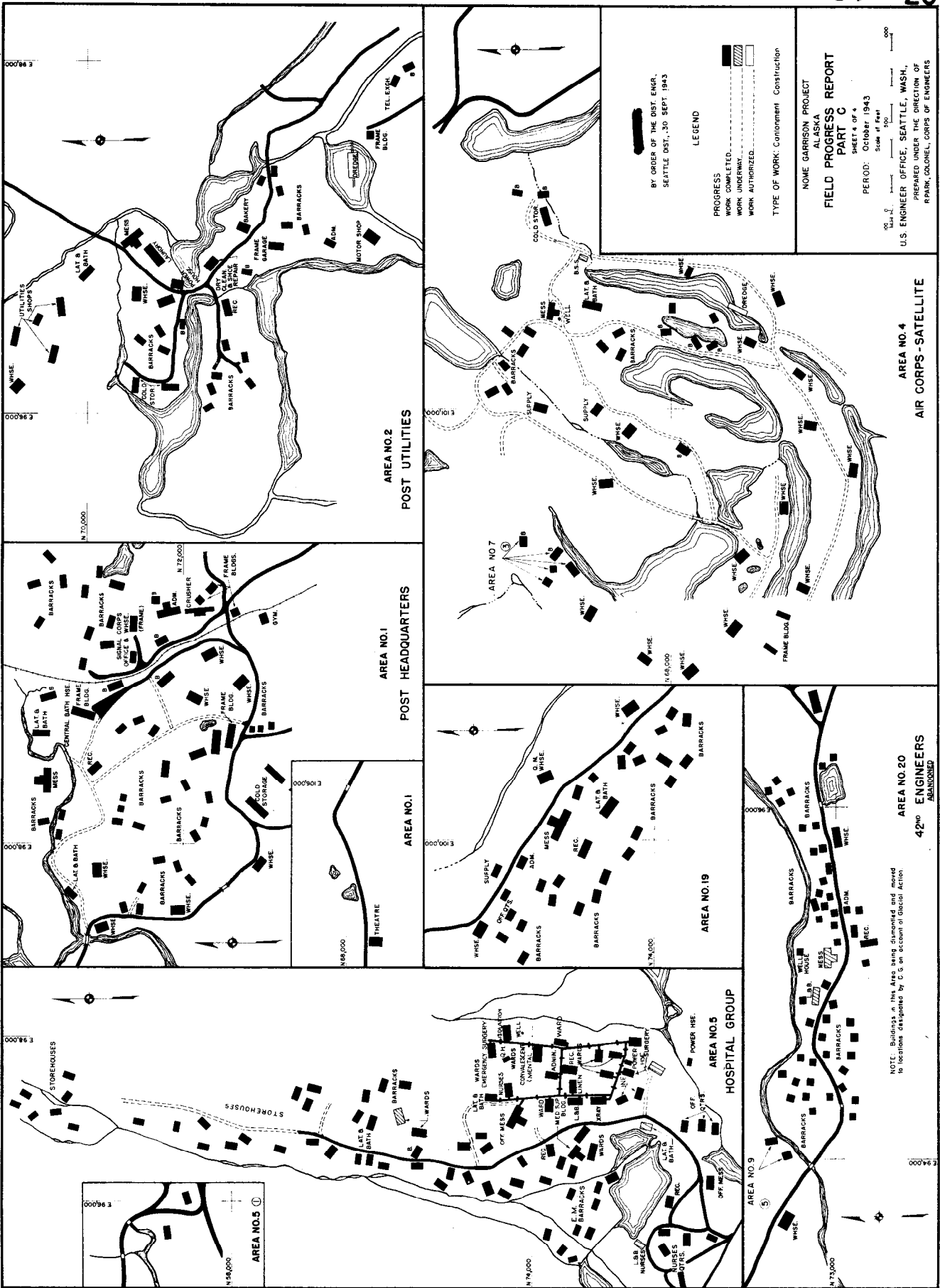
94  
20

CORPS OF ENGINEERS, U.S. ARMY

WAR DEPARTMENT







BY ORDER OF THE DIST. ENGR.  
SEATTLE DIST., 30 SEPT 1943

LEGEND

PROGRESS: [Solid black rectangle] WORK COMPLETED  
[Dashed line] WORK UNDERWAY  
[Hatched rectangle] WORK AUTHORIZED

TYPE OF WORK: Containment Construction

NOME GARRISON PROJECT  
ALASKA

FIELD PROGRESS REPORT  
PART C  
SHEET 4 OF 4

PERIOD: October 1943  
Scale of Feet

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

AREA NO. 2  
POST UTILITIES

AREA NO. 1  
POST HEADQUARTERS

AREA NO. 19

AREA NO. 5  
HOSPITAL GROUP

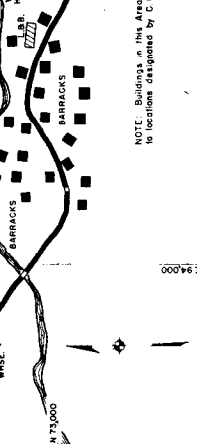
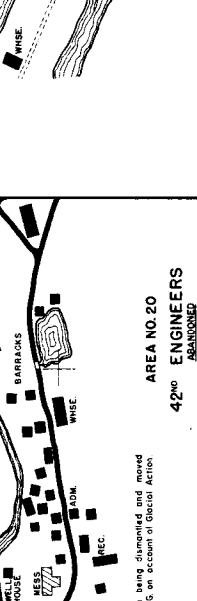
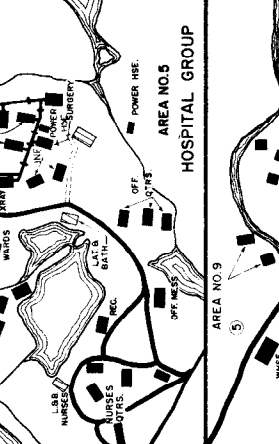
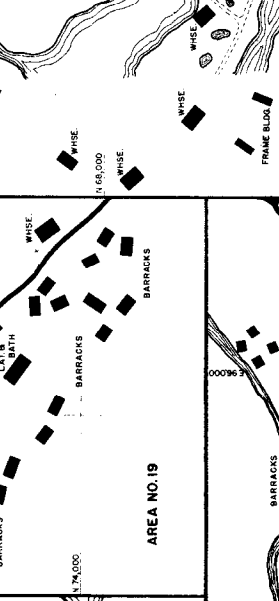
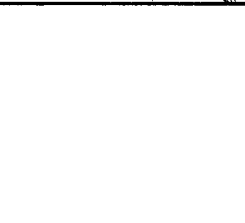
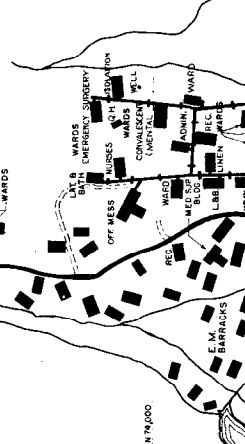
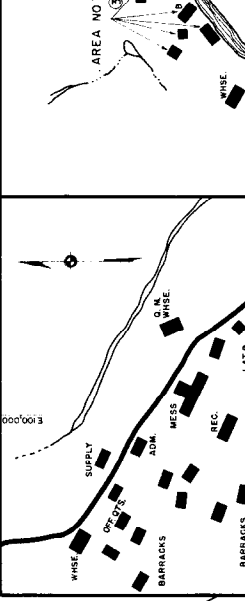
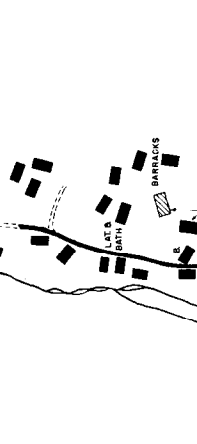
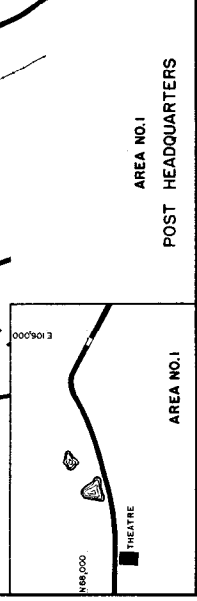
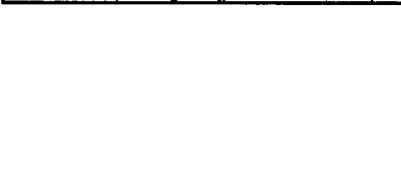
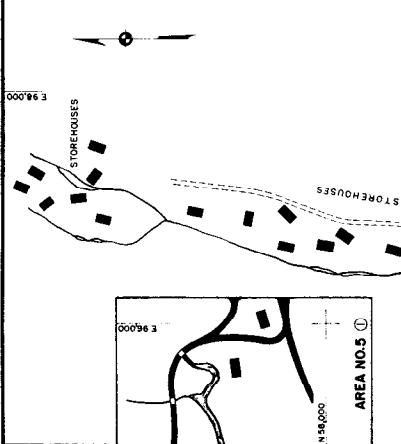
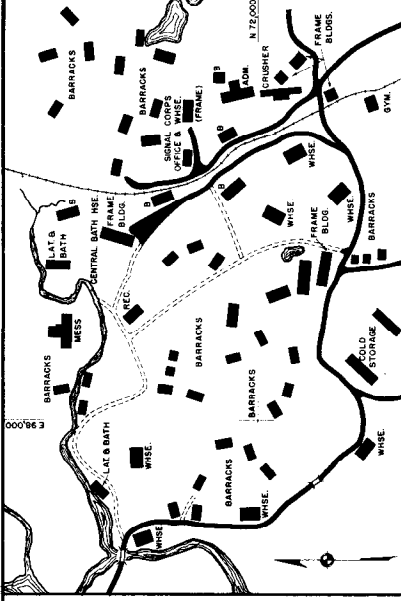
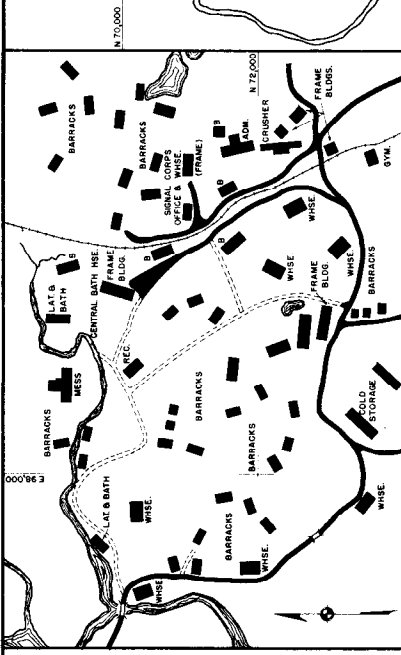
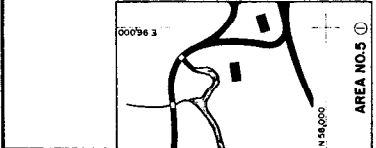
AREA NO. 7

AREA NO. 20  
ENGINEERS BARRACKS

AREA NO. 4  
AIR CORPS - SATELLITE

AREA NO. 19  
ENGINEERS BARRACKS

NOTE: Buildings in this Area being dismantled and moved to locations designated by 6.5 on account of tactical action



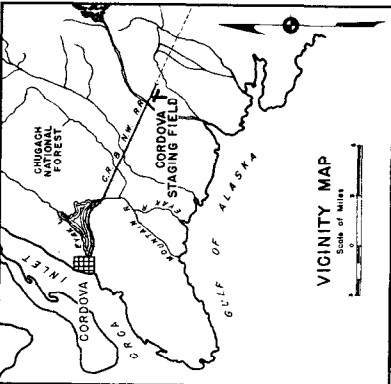
## CORDOVA

The Cordova project is located about 13 miles southeast of the town of Cordova on the abandoned Copper River and Northwestern Railroad. This railroad was the only means of access to the project other than by air and was of inestimable value in transporting materials to the project. Cordova, while not experiencing extremely low temperatures, has a mean annual snowfall of 132". This project lies on the coastal river flats between the Chugach Mountains and the shores of the Gulf of Alaska in a heavily timbered area which affords natural covering and concealment.

The original construction program included facilities for 73 officers and 1,004 enlisted men, with necessary motor repair shops and cold storage. The CAA runway measures 500' by 4,500'. Quonset huts and T/O (frigid zone) buildings were used throughout the camps with additional storage space, if needed, available at the Copper River and Northwestern Railroad warehouses in Cordova.

Construction at this project commenced 19 March 1942 and was carried out by personnel of the 42nd Engineer (GS) troops with detachments of H & S Company. The first Resident Engineer was Major C. B. Burgoynes, CE, succeeded in turn by Mr. Tauf Charnefski, Colonel Virgil L. Womeldorff, CE, and Major H. F. Zinsser, CE.

There were no serious construction problems at Cordova and the program, estimated at \$1,858,850, was largely completed by 15 June 1943.



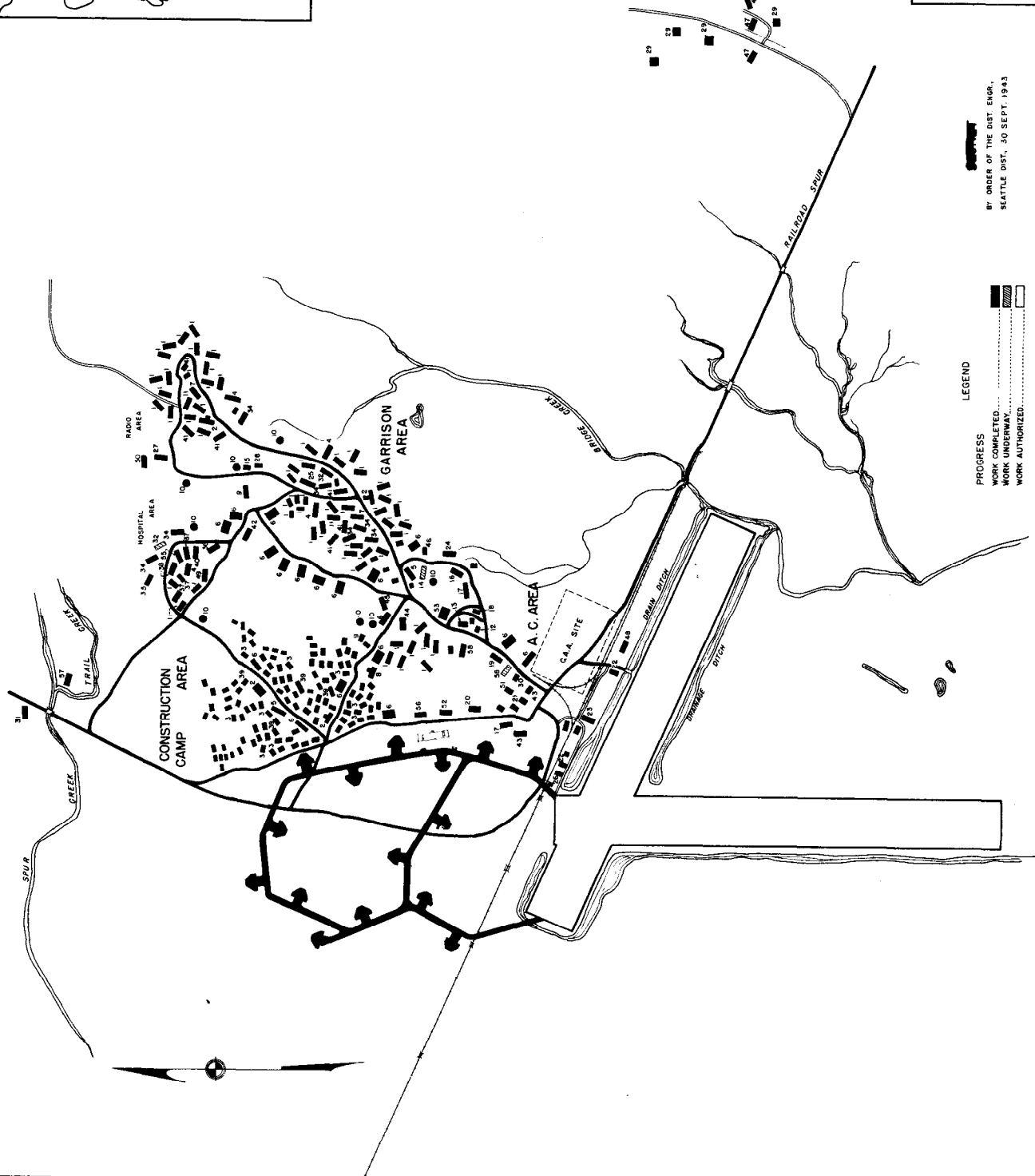
NO.	DESCRIPTION	QUAN.
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3	WATER - CONSTRUCTION AREA	4
4	WATER - CONSTRUCTION AREA	4
5	WATER - CONSTRUCTION AREA	4
6	WATERHOUSE	18
7	POST EXCHANGE	2
8	POST EXCHANGE	2
9	POST EXCHANGE	2
10	POST EXCHANGE	2
11	POST EXCHANGE	2
12	POST EXCHANGE	2
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51	POST EXCHANGE	2
52	POST EXCHANGE	2
53	POST EXCHANGE	2
54	POST EXCHANGE	2
55	POST EXCHANGE	2
56	POST EXCHANGE	2
57	POST EXCHANGE	2
58	POST EXCHANGE	2
59	POST EXCHANGE	2
60	POST EXCHANGE	2

TYPE OF WORK: Containment Construction

**CORDOVA STAGING FIELD**  
CORDOVA, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**

SHEET 1 OF 1  
PERIOD: SEPTEMBER 1943  
Scale of Feet

U. S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS



BY ORDER OF THE DIST. ENGR.  
SEATTLE DIST., 30 SEPT. 1943

LEGEND

PROGRESS  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

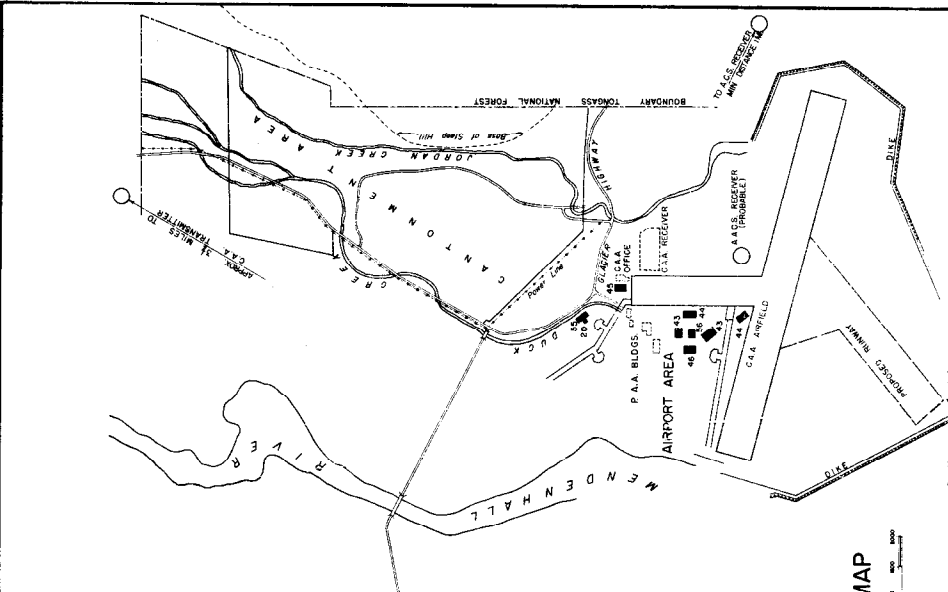
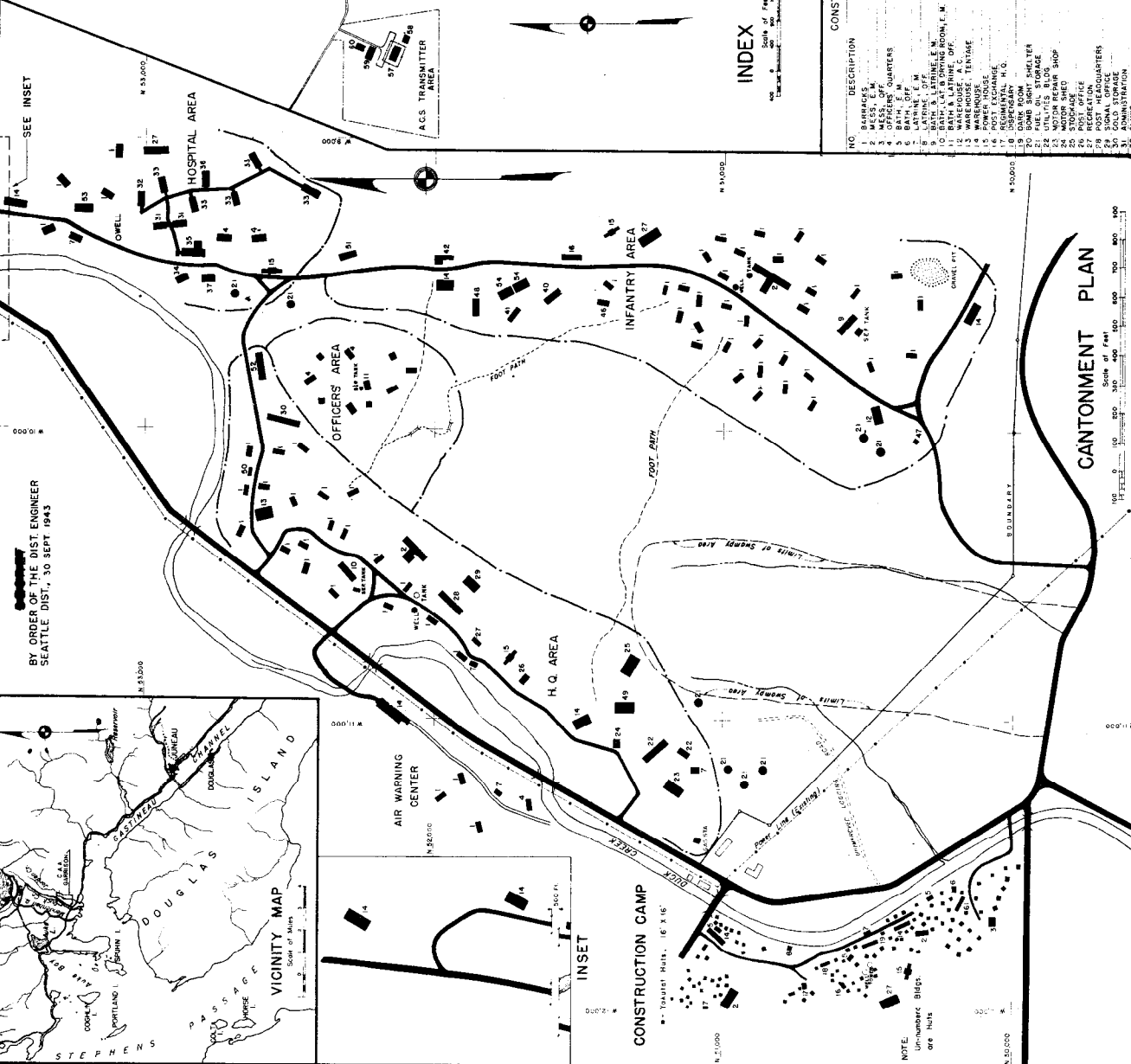
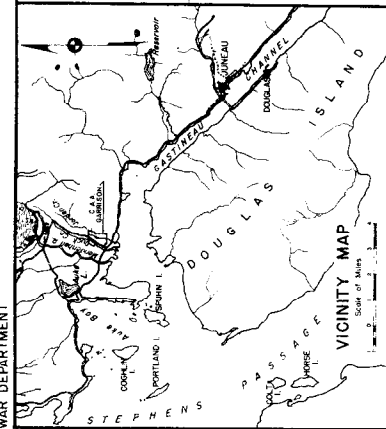
## JUNEAU

The Juneau garrison is approximately six miles from the city of Juneau, the Capital of Alaska. Juneau has good harbor facilities. The main industry in Juneau is the Alaska Juneau Gold Mine which also supplies power for the garrison and city. The water table in the vicinity of the garrison is very close to the surface and a considerable portion of the adjacent area is very swampy. Foundations for buildings at the garrison site vary from unstable subsoil requiring much rock fill to firm gravel bases.

The original program included facilities for 79 officers and 987 enlisted men, motor repair shops and protective revetments and taxiways at the airfield. Air Corps gasoline facilities consist of two 50,000 gallon tanks with a fueling pit and truck fill stand. A transmitter station for the garrison is located north of the airfield about 10 miles west of Juneau on the Glacier Highway. Quonset huts and T/O (frigid zone) buildings were used throughout the camp. The CAA runway measures 450' by 5,000' and is located on the tidal flats of Gastineau Channel. It is built on a 10 to 14' sand fill with rock riprap. A dike was placed around the runway to prevent erosion due to tide action.

Construction at this project commenced 5 March 1942 and was carried on by personnel of the 42nd Engineer (GS) troops with detachments of H & S Company. Lt. Colonel Thomas E. Ormiston, CE, was the Resident Engineer.

Delays in work were experienced as a result of unusually heavy



CONSTRUCTION LIST

NO.	DESCRIPTION	QUAN.	DESCRIPTION	QUAN.
1	BARRACKS	1	1	1
2	BARBERS	1	2	2
3	BATH	1	3	3
4	BATH & LATRINE	1	4	4
5	BATH	1	5	5
6	BATH	1	6	6
7	BATH	1	7	7
8	BATH	1	8	8
9	BATH & LATRINE	1	9	9
10	BATH & LATRINE	1	10	10
11	BATH & LATRINE	1	11	11
12	WAREHOUSE	1	12	12
13	WAREHOUSE	1	13	13
14	WAREHOUSE	1	14	14
15	POWER HOUSE	1	15	15
16	POWER HOUSE	1	16	16
17	REGIMENTAL H.Q.	1	17	17
18	REGIMENTAL H.Q.	1	18	18
19	DARK ROOM	1	19	19
20	BOMB SIGHT SHELTER	1	20	20
21	UTILITIES BLDG.	1	21	21
22	UTILITIES BLDG.	1	22	22
23	NOTION REPAIR SHOP	1	23	23
24	STOCKHOUSE	1	24	24
25	STOCKHOUSE	1	25	25
26	STOCKHOUSE	1	26	26
27	RECREATION	1	27	27
28	POST HEADQUARTERS	1	28	28
29	POST HEADQUARTERS	1	29	29
30	SOLD STORAGE	1	30	30
31	ADMINISTRATION	1	31	31
32	WELD	1	32	32
33	WELD	1	33	33
34	NURSES QUARTERS	1	34	34
35	NURSES QUARTERS	1	35	35
36	MESS	1	36	36
37	MESS	1	37	37
38	OFFICERS QUARTERS	1	38	38
39	OFFICERS QUARTERS	1	39	39
40	LANDING	1	40	40
41	LANDING	1	41	41
42	FIRE STATION	1	42	42
43	OPERATING BLDG.	1	43	43
44	OPERATING BLDG.	1	44	44
45	A.C. LUB. OIL HOUSE	1	45	45
46	WATER TOWER	1	46	46
47	WATER TOWER	1	47	47
48	WATER TOWER	1	48	48
49	WATER TOWER	1	49	49
50	CHAPLAIN'S OFFICE & QUARTERS	1	50	50
51	CHAPLAIN'S OFFICE & QUARTERS	1	51	51
52	CHEM. & MINERAL WARE	1	52	52
53	HOSP. STOREHOUSE	1	53	53
54	HOSP. STOREHOUSE	1	54	54
55	BOATS SHED	1	55	55
56	STORAGE	1	56	56
57	STORAGE	1	57	57
58	POWDER HOUSE	1	58	58
59	POWDER HOUSE	1	59	59
60	POWDER HOUSE	1	60	60
61	POWDER HOUSE	1	61	61
62	POWDER HOUSE	1	62	62
63	POWDER HOUSE	1	63	63
64	POWDER HOUSE	1	64	64
65	POWDER HOUSE	1	65	65
66	POWDER HOUSE	1	66	66
67	POWDER HOUSE	1	67	67
68	POWDER HOUSE	1	68	68
69	POWDER HOUSE	1	69	69
70	POWDER HOUSE	1	70	70
71	POWDER HOUSE	1	71	71
72	POWDER HOUSE	1	72	72
73	POWDER HOUSE	1	73	73
74	POWDER HOUSE	1	74	74
75	POWDER HOUSE	1	75	75
76	POWDER HOUSE	1	76	76
77	POWDER HOUSE	1	77	77
78	POWDER HOUSE	1	78	78
79	POWDER HOUSE	1	79	79
80	POWDER HOUSE	1	80	80
81	POWDER HOUSE	1	81	81
82	POWDER HOUSE	1	82	82
83	POWDER HOUSE	1	83	83
84	POWDER HOUSE	1	84	84
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86	POWDER HOUSE	1	86	86
87	POWDER HOUSE	1	87	87
88	POWDER HOUSE	1	88	88
89	POWDER HOUSE	1	89	89
90	POWDER HOUSE	1	90	90
91	POWDER HOUSE	1	91	91
92	POWDER HOUSE	1	92	92
93	POWDER HOUSE	1	93	93
94	POWDER HOUSE	1	94	94
95	POWDER HOUSE	1	95	95
96	POWDER HOUSE	1	96	96
97	POWDER HOUSE	1	97	97
98	POWDER HOUSE	1	98	98
99	POWDER HOUSE	1	99	99
100	POWDER HOUSE	1	100	100

LEGEND

PROGRESS  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

TYPE OF WORK: CANTONMENT, CONSTRUCTION

JUNEAU STAGING FIELD  
JUNEAU, ALASKA  
FIELD PROGRESS REPORT  
PART C  
SCALE 1" = 100'  
PERIOD: SEPTEMBER 1943  
SCALE AS SHOWN  
U. S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
P. PARK, COLONEL, CORPS OF ENGINEERS

snow and deeply frozen ground. The Juneau garrison project was completed 15 June 1943 at an estimated cost of \$1,079,650.

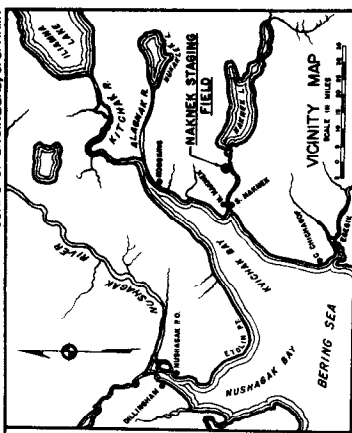
#### NAKNEK

The Naknek garrison and airfield are about 15 miles up the Naknek river from the village of Naknek on Bristol Bay. The project is ice-bound from October to May and in the winter is accessible only by plane. The topography in the vicinity of Naknek consists of relatively flat land with a growth of scrub spruce trees. The airfield is located on low, rolling, sandy soil, but the ground adjacent to the airfield is swampy.

The original program included facilities for 93 officers and 1,200 enlisted men, motor repair shops, hangars and operating facilities for the Air Corps. The 300' by 5,000' landing strips were paved with asphalt by the CAA. The NW/SE runway was extended 2,500' on the southeast end. The extension is now only suitable for winter use but it will be paved during the 1944 construction season. A tactical gas storage system was authorized. Quonset huts, Cowin huts and T/O (frigid zone) buildings were used throughout the camp.

Construction at Naknek was accomplished by Companies "A" and "B" of the 176th Engineer Regiment (GS) with a detachment of H & S Company. Lt. Colonel John M. McGreevy, CE, was the first Resident Engineer and was succeeded in turn by Major Sherman B. Anderson, CE, and Major Wilford J. Boudreau, CE.

The main problem of construction at this project was always



**NAKNEK STAGING FIELD  
NAKNEK ALASKA  
FIELD PROGRESS REPORT  
PART C**

PERIOD: Scale of Feet  
SHEET 1 OF 1

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**

WORK COMPLETED: [Solid black rectangle]

WORK UNDERWAY: [Hatched rectangle]

WORK AUTHORIZED: [White rectangle]

NO.	CONSTRUCTION DESCRIPTION	STATUS
1	BARRACKS	124
2	LATRINE	9
3	MESS	9
4	HEADQUARTERS	1
5	WATER TOWER	1
6	DRY CLEANING	1
7	SHOE REPAIR	4
8	DISPENSARY	4
9	POWER HOUSE	3
10	COMMUNICATIONS BLDG.	12
11	CO. ADM. & SUPPLY	6
12	RECREATION BLDG.	5
13	POST EXCHANGE B. COMM.	4
14	STAND BY POWER	4
15	DENTAL CLINIC	4
16	WARD	4
17	ADMIN. & CLINIC	4
18	WARD	4
19	WARD	4
20	FINANCE BLDG.	40
21	OFFICERS QTRS.	2
22	OFFICERS LAT.	2
23	LIBRARY	1
24	PATIENTS LAT.	4
25	PATIENTS BATH	1
26	AC-HOSPITAL	1
27	AC-HOSPITALS & WEATHER	1
28	AC-HOSPITAL	1
29	AEROPLANE REPAIR	40
30	MACHINE WELDING & PROPELLER	40
31	RADIO REPAIR	2
32	ENGINE REPAIR	1
33	BATTERY REPAIR	1
34	PARAGLIDE REPAIR	1
35	BOUSSIGHT REPAIR	1

BY ORDER OF THE DISTRICT ENGINEER  
SEATTLE POST, 30 SEPT. 1943

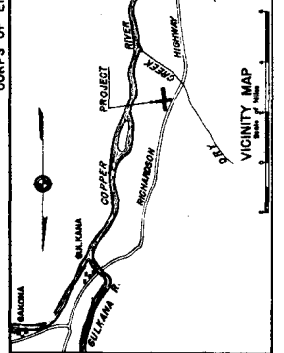
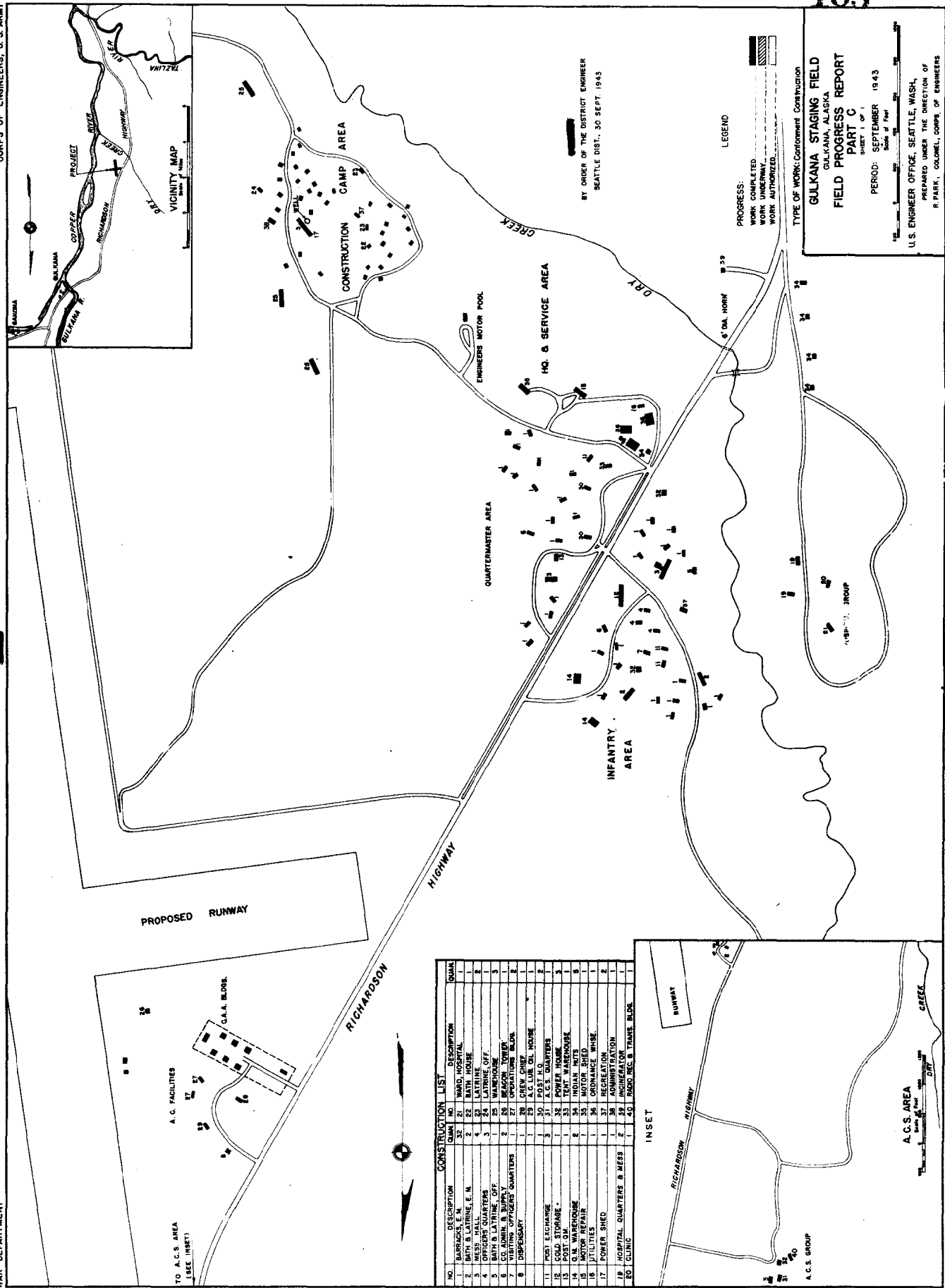
the receipt of materials and equipment. It was necessary for ocean-going vessels to stand 14 miles off the mouth of the river due to shallow coast line. All supplies were first unloaded onto barges and then towed an additional 15 miles up river to the garrison and airfield site. The 21' tide which rises and falls twice daily played a major part in the difficulty of these operations. The river is very shallow and towing could only be done during periods of high tide. Also, distribution of construction materials at the site was a problem because of the mucky terrain. The severe winter weather was a distinct detriment to speedy construction.

The project at Nalmeik commenced 1 July 1942 and was completed 22 September 1943 at an estimated cost of \$1,498,363.

#### GULKANA

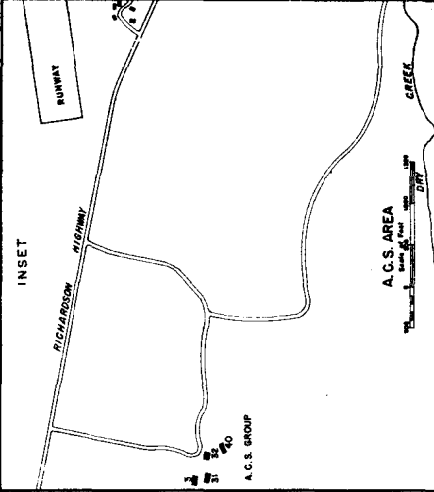
The Gulkana garrison is located 9 miles south of Gulkana on the Richardson highway, one-half mile from the CAA airfield. It is accessible by both road and air and can be reached from the Alaska Highway. Gulkana, approximately 125 miles north of the port of Valdez by highway and 175 air miles east of Anchorage, is on a comparatively flat plateau. The terrain is sparsely wooded. In summer the top soil thaws to a maximum depth of 5', the subsoil remaining frozen the year round. Building foundations were made stable by placing timber spread footing under each foundation post at a depth of about 3', or by placing mudsills flat on the ground.

The original program included facilities for 27 officers and 466 enlisted men, motor repair shops, a 14 bed hospital and facili-



**CONSTRUCTION LIST**

NO.	DESCRIPTION	QUAN.	NO.	DESCRIPTION	QUAN.
1	BARRACKS, E. N.	32	21	WARD, HOSPITAL	1
2	BATH & LATRINE, E. N.	2	22	BATH HOUSE	1
3	BATH & LATRINE, W. N.	2	23	LATRINE OFF	1
4	ENGINEERS QUARTERS	4	24	WAREHOUSE	1
5	BATH & LATRINE, OFF	1	25	WAREHOUSE	3
6	CO. ADMIN. & SUPPLY	2	26	REARON TOWER	1
7	VISITING OFFICERS QUARTERS	1	27	OPERATIONS BLDG.	1
8	DISPENSARY	1	28	COOK HOUSE	1
9	POST EXCHANGE	1	29	POST BLDG.	1
10	POST EXCHANGE	1	30	POST BLDG.	1
11	POST EXCHANGE	1	31	A.C.S. QUARTERS	1
12	GOLD STORAGE	1	32	POWER HOUSE	1
13	WATER HOUSE	1	33	WATER HOUSE	1
14	WATER HOUSE	1	34	WATER HOUSE	1
15	MOTOR REPAIR	1	35	MOTOR SHED	1
16	UTILITIES	1	36	ORNAMENCE WARE	1
17	POWER SHED	1	37	RECREATION	1
18	HOSPITAL QUARTERS & MESS	2	38	ADMINISTRATION	1
19	HOSPITAL QUARTERS & MESS	2	39	ADMINISTRATION	1
20	CLINIC	1	40	INDO. REC. & TRANS. BLDG.	1



BY ORDER OF THE DISTRICT ENGINEER  
SEATTLE DIST. 30 SEPT. 1943

LEGEND  
 WORK COMPLETED  
 WORK UNDERWAY  
 WORK AUTHORIZED

TYPE OF WORK: Containment Construction  
**GULKANA STAGING FIELD**  
 GULKANA, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 1 OF 1  
 PERIOD: SEPTEMBER 1943  
 Scale of Plan  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 S. PARK, COLONEL, CORPS OF ENGINEERS

ties for the Alaska Communication System. Quonset huts and T/O (frigid zone) buildings were used throughout the camp.

Construction was started 13 July 1942 by Company "F", less one platoon of the 176th Engineer Regiment (GS) troops with H & S detachment. Captain Scott F. Childress, CE, was the Resident Engineer.

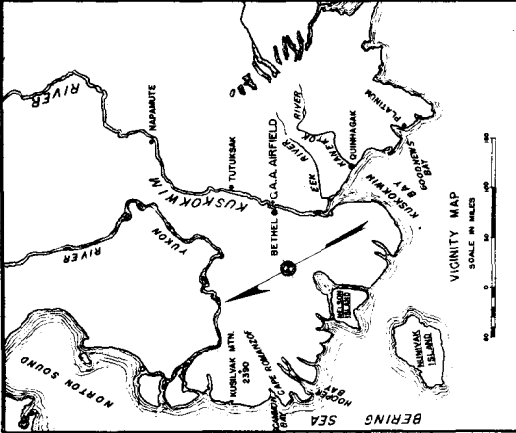
The work at Gulkana was delayed periodically by lack of building materials, and during the winter months construction was practically at a standstill due to extremely severe temperatures.

Construction was completed 5 July 1943 at an estimated cost of \$452,360.

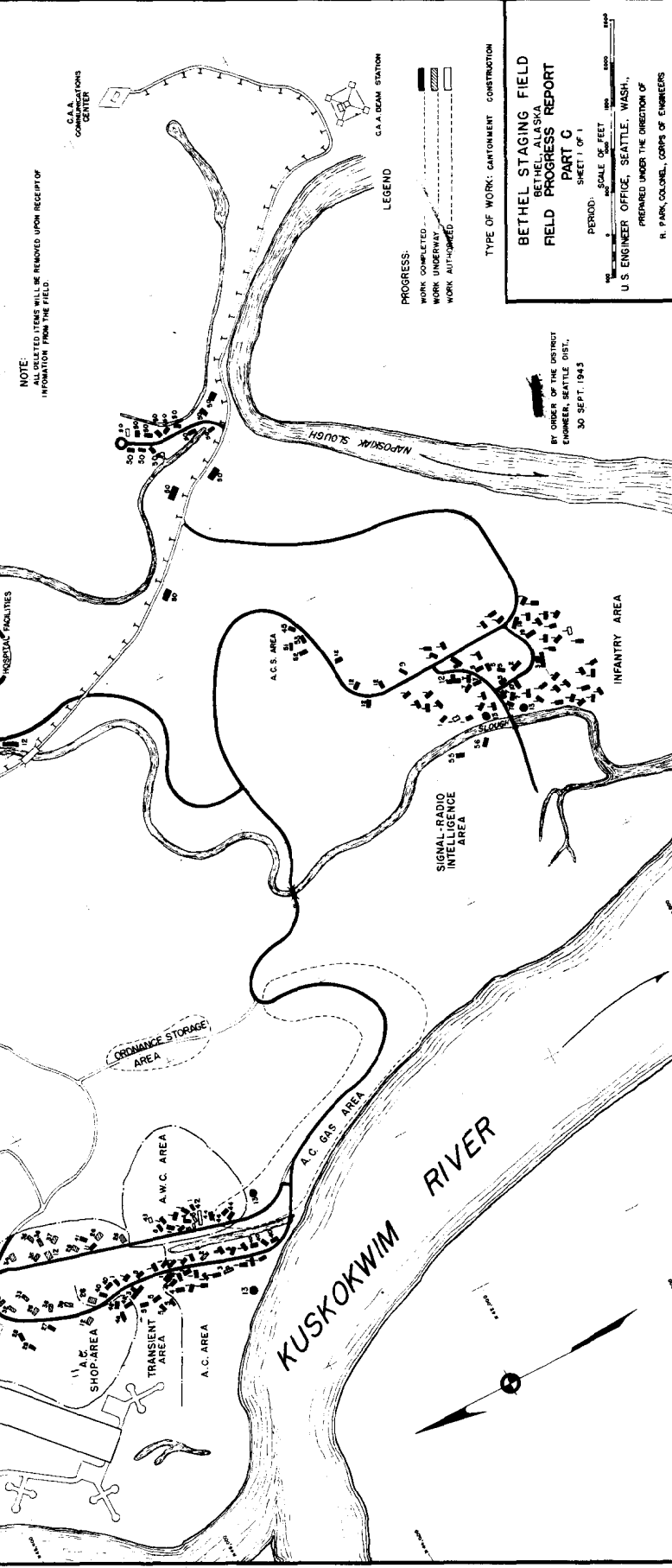
#### BETHEL

The Bethel project is located 100 miles above the mouth of the Kuskokwim River -- a river navigable to vessels drawing not more than 18' of water. Bethel is an ice-bound port inasmuch as the river is frozen from approximately October to June of each year. The terrain in the vicinity of the Bethel airfield site is extremely flat and sparsely covered with scrub willow, alder and spruce. The river is sluggish and meandering and its overflows have covered a good part of the valley with silt deposits.

The original program included facilities for 42 officers and 678 enlisted men. Motor repair shops, storage space for Ordnance and Quartermaster supplies in Cowin and CCC buildings were included. The project provided for the construction of an Infantry and Air Corps garrison. Quonset huts and T/O (frigid zone) buildings were



CONSTRUCTION LIST	
NO.	DESCRIPTION
1	BARBERS, E. R.
2	BARBERS, F. M.
3	BATH & LATHING, E. R.
4	BATH & LATHING, F. M.
5	RECREATION BLDG.
6	OFFICERS QUARTERS
7	BATH & LATHING, OFFICERS
8	WAITING OFF. QUARTERS
9	COLD STORAGE
10	PK. & CORR.
11	POWER BLDG.
12	Q. M. BLDG.
13	Q. M. OFFICE
14	WAREHOUSE
15	WARD
16	ADMIN. & CLINIC
17	ENGINE HOUSE
18	MOTOR SHED
19	MOTOR REPAIR
20	12-2500 GAL. TANK
21	400 REC. B. TRUCKS
22	TANK TRUCK FILL STAND
23	TRUCK FILL, FUEL OIL
24	BATH & LATH. OFF. & E. N.
25	DPT. CLEANING
26	A.C. GAS. AREA
27	A.C. LUB. OIL HOUSE
28	CREW CHEF
29	OPERATIONS BLDG.
30	TOOL HOUSE
31	CONSTRUCTION WISE
32	WELT. REPAIR MACH. SHOP
33	WELT. REPAIR
34	APRD. REPAIR
35	BATTERY REPAIR
36	SHEET METAL & CARP. SHOP
37	WOMEN'S SHIRT REPAIR
38	RADIO REPAIR
39	SHAMPOON H.Q. & SUPPLY
40	A.C. SUPPLY OFFICE
41	A.C. SUPPLY
42	A.C. SUPPLY
43	A.C. SUPPLY
44	A.C. SUPPLY
45	A.C. SUPPLY
46	CONTROL TOWER
47	GROUP OPER. RADIO & WEATHER
48	ORD. STORAGE
49	A.A.G. LEADS BLDG.
50	AGS. REC. B. TRUCKS
51	AGS. REC. B. TRUCKS
52	AGS. REC. B. TRUCKS
53	AGS. REC. B. TRUCKS
54	BATH & LATH. OFF. & E. N.
55	REORDER & BARRACKS
56	REORDER & BARRACKS
57	BATH
58	SUPPLY HUT
59	ADMIN. BLDG.
60	AGS. RADIO TEMP.
61	AGS. RADIO TEMP.
62	AGS. RADIO TEMP.
63	AGS. RADIO TEMP.
64	AGS. RADIO TEMP.
65	AGS. RADIO TEMP.
66	AGS. RADIO TEMP.
67	AGS. RADIO TEMP.
68	AGS. RADIO TEMP.
69	AGS. RADIO TEMP.
70	AGS. RADIO TEMP.
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72	AGS. RADIO TEMP.
73	AGS. RADIO TEMP.
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98	AGS. RADIO TEMP.
99	AGS. RADIO TEMP.
100	AGS. RADIO TEMP.



used throughout the camp. All buildings were placed on piles or posts. Timber for foundations was floated down river 85 miles to the site. The CAA built two landing strips at Bethel in the form of a cross. They are 4,500' and 5,000' by 400' with asphalt surfacing.

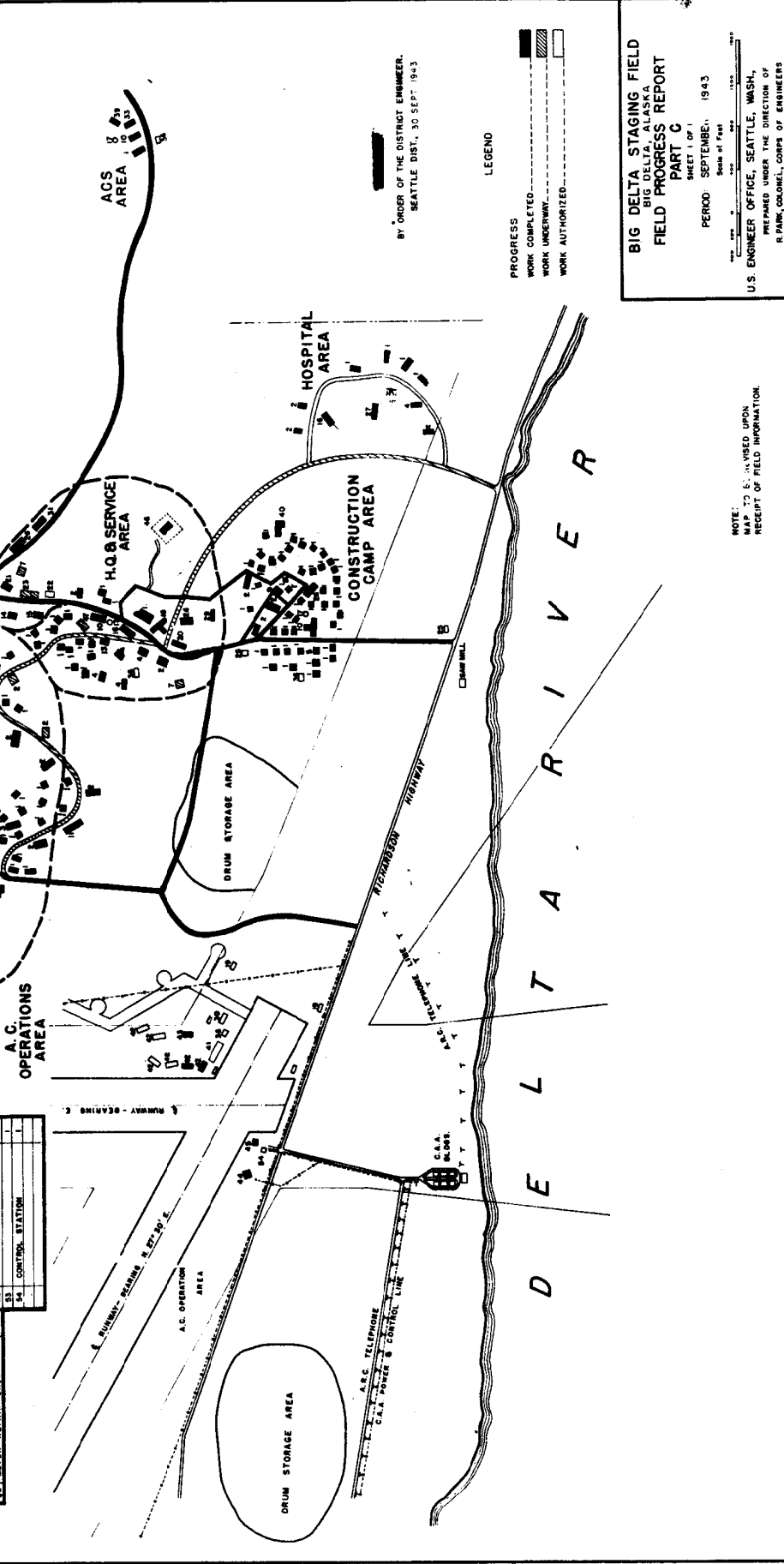
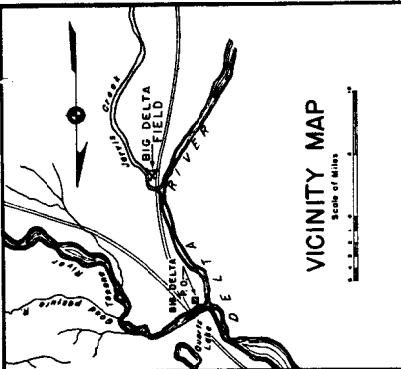
Due to the extensive rainy season, delays were encountered in hauling construction materials to the various job sites. Sleds drawn by tractors were used for this purpose. The water table is very close to the surface and great difficulty was experienced in finding areas entirely free of water for camp installations.

Construction by troops of the 176th Engineer Regiment (GS) began 15 July 1942 and continued until 6 September 1943, at an estimated cost of \$1,526,944. Major Grady C. Fuller, CE, was the first Resident Engineer, succeeded in turn by Lt. Colonel G. D. McKay, C.E., Major Menon W. Whitsett, C.E., and Major W. J. Boudreau, C.E. Due to the curtailment program much of the authorized construction was canceled in September 1943 and the Engineer troops withdrawn from the Bethel project.

#### BIG DELTA

The garrison site is 90 miles east of Ladd Field on the Tanana River and near the Richardson Highway. Predominating soil is stream worn gravel with an 13" overburden of silt and decayed vegetation. In the vicinity of Big Delta are usable stands of timber, principally spruce, which provide concealment as well as lumber.

The original program included facilities for 120 officers and



**CONSTRUCTION LIST**

NO.	DESCRIPTION	QTY	NO.	DESCRIPTION	QTY
1	BARRACKS	1	27	WATERS	4
2	WAREHOUSE	1	28	WATER	1
3	OFFICERS' QUARTERS	1	29	WATER	1
4	OFFICERS' QUARTERS	1	30	OIL LUM. HOUSE	1
5	BATH HOUSE, E.M.	1	31	MOTOR SHED	1
6	PUMP HOUSE	1	32	AMP BELL	1
7	POWER HOUSE	1	33	WATER TOWER	1
8	BATH HOUSE, OFF.	1	34	WATER TOWER	1
9	MESS	1	35	ANNUNCIATION STORAGE	1
10	MESS	1	36	SEPTIC TANK	1
11	COLD STORAGE	1	37	WATER TOWER	1
12	OFF BATH & LAVATING	1	38	STAND BY POWER	1
13	UTILITY & PAINT SHOP	1	39	REPAIR SHOP	1
14	SHOE REPAIR SHOP	1	40	REPAIR SHOP	1
15	WASHING MACHINES	1	41	WATER TOWER	1
16	WASHING MACHINES	1	42	WATER TOWER	1
17	POST H.Q.	1	43	WATER TOWER	1
18	STORAGE TANK, BARRELING	1	44	WATER TOWER	1
19	DECONTAMINATION STATION	1	45	WATER TOWER	1
20	DECONTAMINATION STATION	1	46	WATER TOWER	1
21	WATER TOWER	1	47	WATER TOWER	1
22	WATER TOWER	1	48	WATER TOWER	1
23	WATER TOWER	1	49	WATER TOWER	1
24	WATER TOWER	1	50	WATER TOWER	1
25	WATER TOWER	1	51	WATER TOWER	1
26	WATER TOWER	1	52	WATER TOWER	1
27	WATER TOWER	1	53	WATER TOWER	1
28	WATER TOWER	1	54	WATER TOWER	1

BY ORDER OF THE DISTRICT ENGINEER,  
SEATTLE DIST. 30 SEPT 1943

LEGEND

- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

**BIG DELTA STAGING FIELD**  
BIG DELTA, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
SHEET 1 OF 1  
PERIOD: SEPTEMBER, 1943  
Scale of Feet

NOTE:  
MAP TO BE RE-USED UPON  
RECEIPT OF FIELD INFORMATION.

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

634 enlisted men, motor repair shops, a 14 bed hospital, and four 25,000 gallon gasoline storage tanks. Big Delta is also a part of the Air Corps Expansion Program which authorized increased facilities for the Air Transport Command ferry route to Russia. Two runways were built by the CAA. The east-west strip is 4,450' by 300' and the northeast-southwest strip, 5,300' by 300'. A third runway 7,000' by 300' was authorized in July 1943 for increased Air Transport Command traffic. Surfacing on all runways was asphalt.

Quonset huts and T/O (frigid zone) buildings were used throughout the cantonment. Lumber from a small private mill was used in the pile bent highway bridge crossing the Tanana, and a portable mill operated by the Army Engineers provided lumber for three 20' by 100' T/O warehouses and a fire station. Locally cut lumber was also sent to the garrisons at Tanacross and Northway.

Garrison construction began 15 July 1942 by troops of the 175th Engineer Regiment (GS), with Major Sherman B. Anderson, CE, as the Resident Engineer.

Delayed shipments of essential materials prolonged the construction schedule. In August 1943 the project, then half complete, was transferred to the Northwest Service Command for all further work. The cost estimated for Big Delta is \$1,743,377.

#### NORTHWAY

Northway is located along the Air Transport Command route, 240 air miles from Fairbanks and 280 air miles from Whitehorse. Small

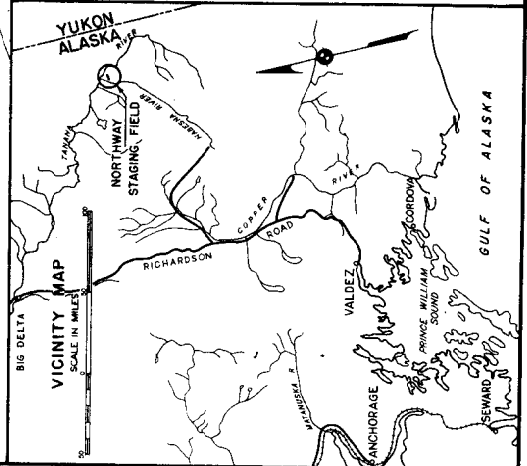
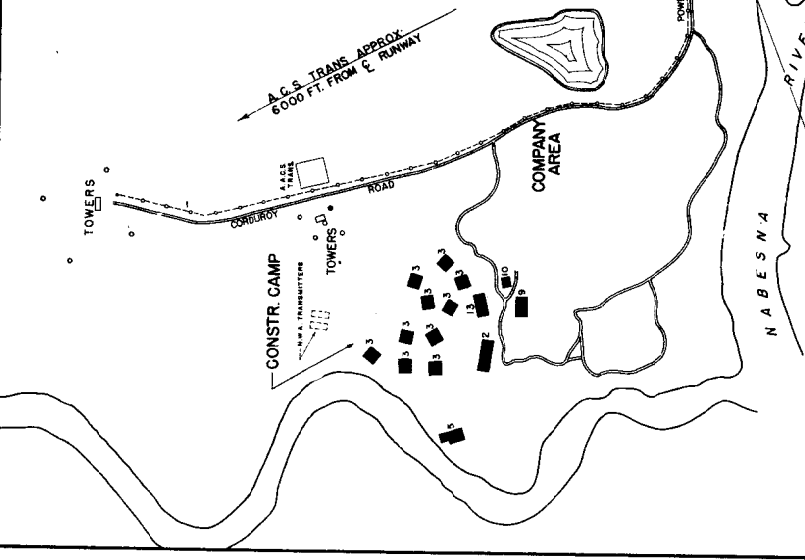
river boats of 45 ton capacity can travel up the Tanana river from Big Delta to the Nebesna river, thence approximately 7 miles upstream to the Northway garrison. The airfield and garrison lie on a flat area containing many small lakes. Abundant timber is available and was utilized to a great extent to provide materials for garrison construction. The terrain consists of permanently frozen alluvial sand and gravel, topped with muskeg.

The original program included facilities for 13 officers and 140 enlisted men. A 4 bed hospital and Air Corps operation building. This project was included in an expansion program by the Northwest Service Command to provide increased facilities for the Air Transport Command ferry route to Russia. The runway when originally built was 350' by 5,300'; however, it was later extended by the CAA to 7,500' and it will be paved in the summer of 1944. Gasoline is stored mainly in drums. Quonset huts and T/O (frigid zone) buildings were used throughout the camp.

Construction at Northway started 18 July 1942 by a platoon of Company "F" of the 176th Engineer Regiment (GS). Lt. Donald E. Blotky, CE, was the Resident Engineer.

The frigid temperatures encountered at this project were probably more severe than on any other construction job in Alaska. Sixty degrees below zero was not unusual. Permanently frozen ground, poor transportation facilities and inaccessibility of the site (by air only in winter) caused considerable delay.

NO.	DESCRIPTION	QUANTITY
1	BARRACKS	8
2	MESS HALL	2
3	BARRACKS (WINTERIZED TENTS)	10
4	DISPENSARY	1
5	LATRINE	2
6	OPERATIONS	1
7	CREW CHIEF	1
8	A.C. LUB. OIL HOUSE	1
9	WAREHOUSE	2
10	POWER HOUSE (TENT)	1
11	POWER HOUSE	1
12	BATH HOUSE	1
13	ADM. BLDG.	1
14	RECREATION HOUSE	1
15	WELL	2



**LEGEND**

PROGRESS:

- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

TYPE OF WORK: Containment construction

**NORTHWAY STAGING FIELD**  
 TETLIN, ALASKA  
**FIELD PROGRESS REPORT**  
 PART C  
 SHEET 1 OF 1  
 PERIOD: SEPTEMBER 1943  
 SCALE OF FEET: 1" = 100'  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

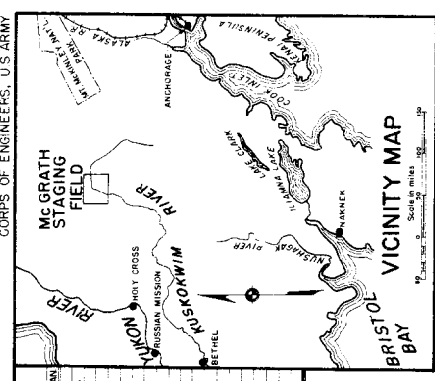
BY ORDER OF THE DISTRICT ENGINEER,  
 SEATTLE DISTRICT, 30 SEPT. 1943

The originally approved project was essentially completed 1 June 1943 on which date all new work at this base was made the responsibility of the Northwest Service Command. The estimated cost is \$585,340.

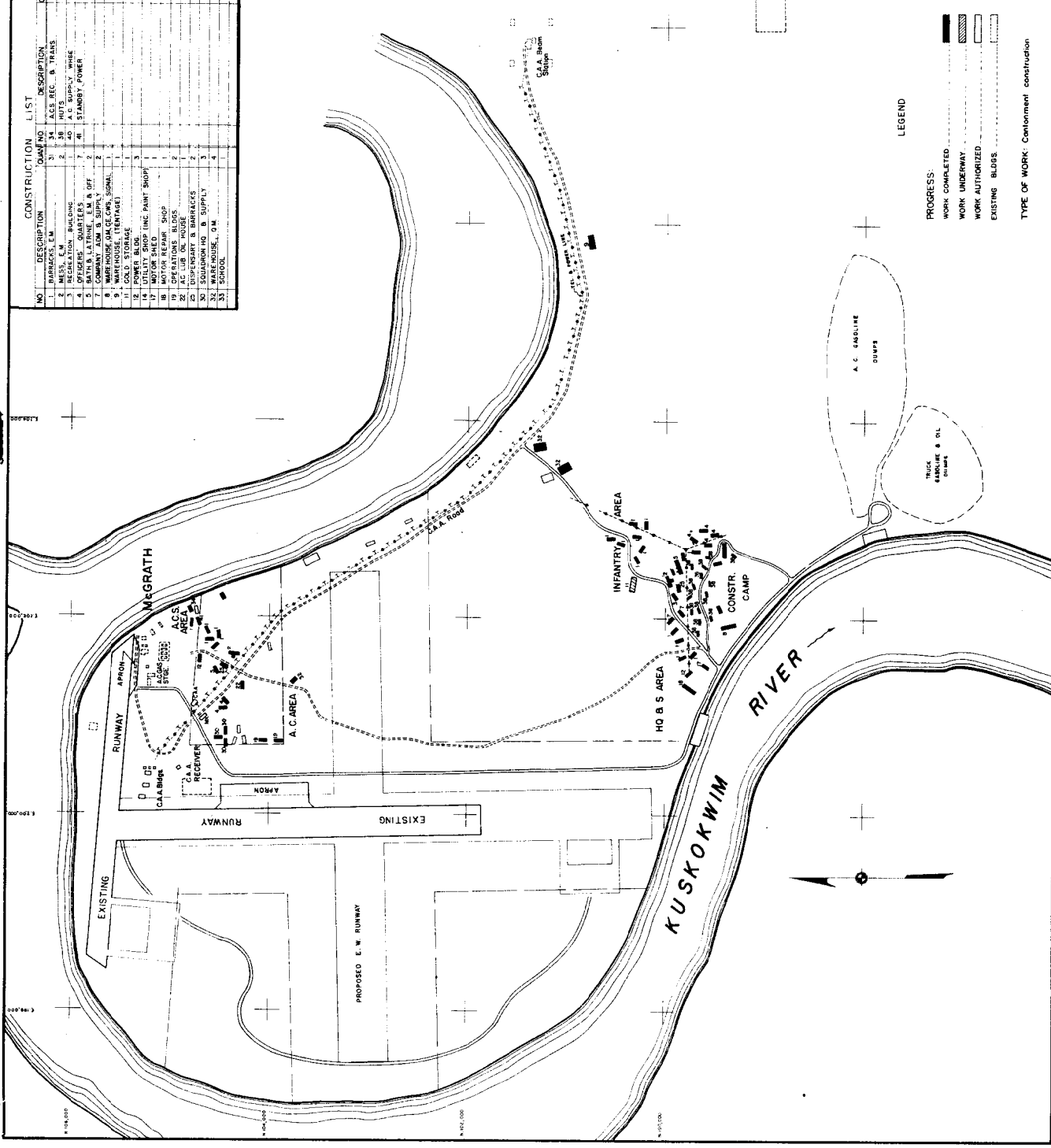
#### McGRATH

The McGrath garrison is located in the interior of Alaska on the Kuskokwim River. This river is also the principal supply route to the garrison and is navigable for shallow river craft from about 20 May to 20 September yearly. The McGrath airfield is in direct line of flight between Anchorage and Nome as well as Fairbanks and Bethel. During the winter months planes or dog sleds are the only means of access. The topography in the vicinity of McGrath consists of flat bottom land, swamps and lakes. Stands of spruce and cottonwood are found in this area. The construction sites are located on thawed ground.

The original facilities contained housing for 33 officers and 148 enlisted men, motor repair shops and a hospital unit. Air Corps gasoline is stored in drums. In addition a tactical system of five 20,000 gallon tanks with fueling facilities have been leased from commercial interests. The CAA constructed cross runways 300' by 3,200' and 6,600', both paved with asphalt. Housing was composed of Quonset huts, CCC, and T/O (frigid zone) buildings. All buildings not provided with concrete floor and footings were erected on pile foundations.



NO.	DESCRIPTION	QUANT.	CONSTRUCTION	LIST	DESCRIPTION	QUANT.
1	BARRACKS, EM	3	1	1	AGES REC. B. TRANS	1
2	REGIMENTAL BUILDING	1	2	2	A.C. SUPPLY WARE	2
3	OFFICERS' QUARTERS	7	3	3	STANDBY POWER	3
4	OFFICERS' QUARTERS	7	4	4		
5	OFFICERS' QUARTERS	7	5	5		
6	WAREHOUSE (A.C. SUPPLY)	1	6	6		
7	WAREHOUSE (A.C. SUPPLY)	1	7	7		
8	WAREHOUSE (A.C. SUPPLY)	1	8	8		
9	WAREHOUSE (A.C. SUPPLY)	1	9	9		
10	WAREHOUSE (A.C. SUPPLY)	1	10	10		
11	WAREHOUSE (A.C. SUPPLY)	1	11	11		
12	WAREHOUSE (A.C. SUPPLY)	1	12	12		
13	WAREHOUSE (A.C. SUPPLY)	1	13	13		
14	UTILITY SHOP (INC. PAINT SHOP)	1	14	14		
15	MOTOR SHED	1	15	15		
16	SHIP	1	16	16		
17	SHIP	1	17	17		
18	SHIP	1	18	18		
19	SHIP	1	19	19		
20	SHIP	1	20	20		
21	SHIP	1	21	21		
22	SHIP	1	22	22		
23	SHIP	1	23	23		
24	SHIP	1	24	24		
25	SHIP	1	25	25		
26	SHIP	1	26	26		
27	SHIP	1	27	27		
28	SHIP	1	28	28		
29	SHIP	1	29	29		
30	SHIP	1	30	30		
31	SHIP	1	31	31		
32	SHIP	1	32	32		
33	SHIP	1	33	33		
34	SHIP	1	34	34		
35	SHIP	1	35	35		



**LEGEND**

PROGRESS:

- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- EXISTING BLDGS

TYPE OF WORK: Contention construction

BY ORDER OF THE DIST ENG  
SEATTLE DIST., SUB. 2, 1943  
NOTE:  
TO BE REVISED UPON RECEIPT  
OF FIELD INFORMATION.

**McGRATH STAGING FIELD**  
McGRATH, ALASKA  
**FIELD PROGRESS REPORT**  
PART C  
SHEET 1 OF 1  
PERIOD: AUGUST 1943  
SCALE OF FEET: 1" = 1000'  
U.S. ENGINEER OFFICE, SEATTLE, WASH., AUGUST 1943  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

A platoon of Company "E" of the 176th Engineers (GS) troops started construction on 30 July 1942. Lt. Eugene R. Ialas, CE, was the first Resident Engineer, succeeded by Major Menon W. Whitsett, CE.

Inaccessibility by any means other than river and air transportation, plus poor road conditions at the site constituted the major construction problems. Distribution of construction materials was very difficult at all times.

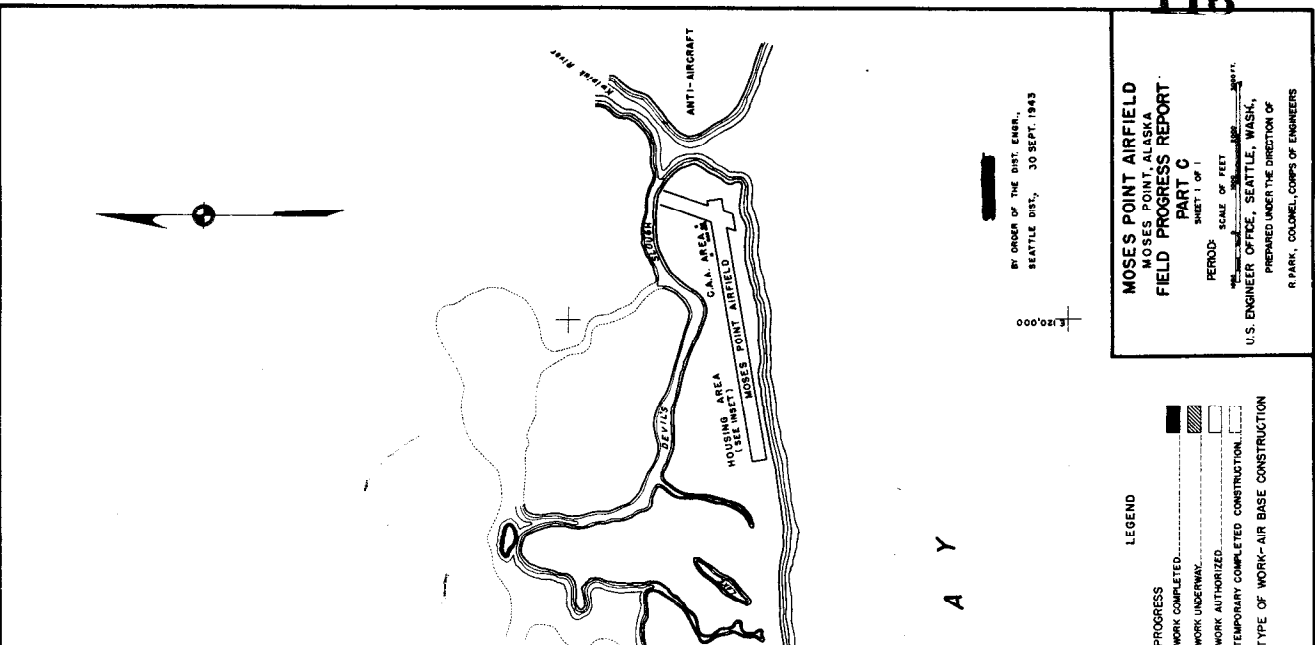
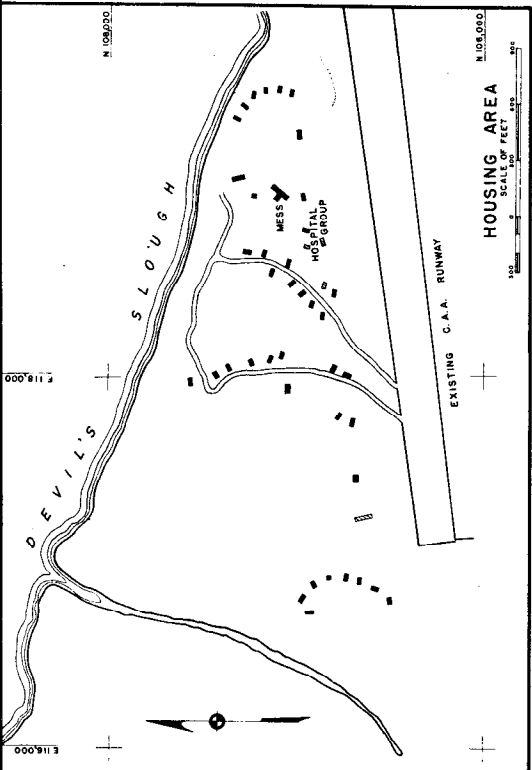
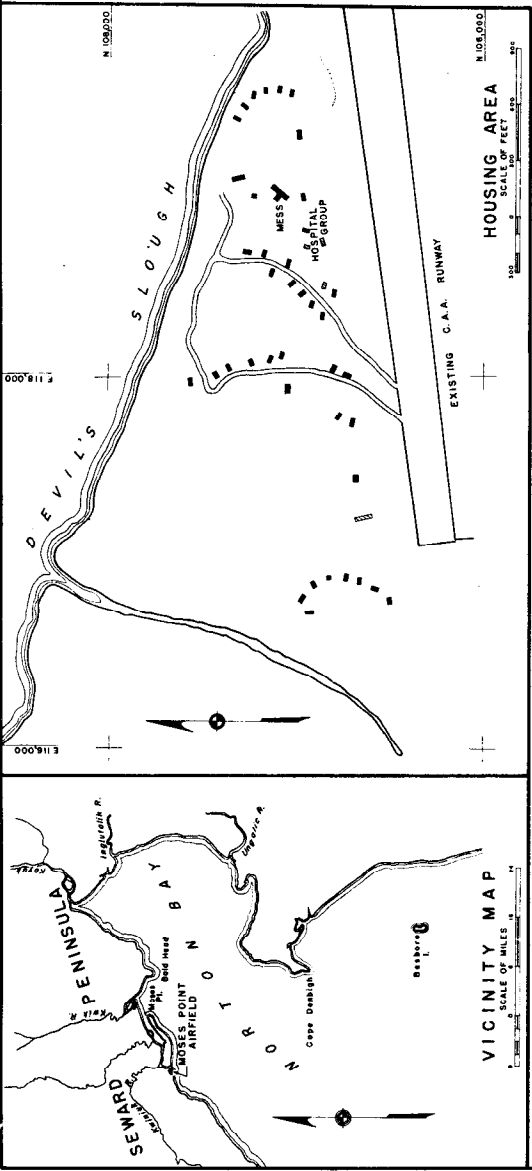
The McGrath project, at an estimated cost of \$710,646, was completed 31 July 1943.

#### MOSES POINT

Moses Point is located on Norton Sound at the mouth of the Kwiniuk river approximately 100 miles east of Nome. The Moses Point runway, built by the CAA, serves as an emergency landing field on the Seward Peninsula.

The original program included facilities for 98 officers and 1,100 enlisted men, motor repair shops and a 50 bed hospital. By authority of the Western Defense Command in a letter to the District Engineer, dated 28 September 1942, the strength and capacity of the Post was reduced to 12 officers and 138 enlisted men. Only a 6 bed hospital was approved in the curtailed program.

Construction was accomplished by a crew averaging 33 men from Company "B" of the 297th Infantry which is made up of men formerly in the Alaska National Guard. Captain J. P. McDermott, CE, was the



**LEGEND**

PROGRESS

- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TEMPORARY COMPLETED CONSTRUCTION
- TYPE OF WORK-AIR BASE CONSTRUCTION

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPT. 1943

**MOSES POINT AIRFIELD**  
MOSES POINT, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
SHEET 1 OF 1  
PERIOD: SCALE OF FEET  
U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

Resident Engineer. Actual erection of housing began 20 September 1942. All Quonset huts, Cowin huts and a messhall were ready for use 15 November 1942. All buildings have been dispersed in the vicinity of the CAA airport.

Delays in work were caused by shortage of materials and extremely cold weather. High winds are prevalent at Moses Point and were a constant problem until the building shells were completed. All materials were unloaded at Iron Creek, six miles from the finally approved site. Before work could start it was necessary to build six miles of road and transfer the supplies to the new location. Supplies were lightered by barges from transports standing two miles offshore.

All authorized work was finished following arrival of supplies and material from Nome in the spring of 1943, at an estimated cost of \$387,000.

#### GALENA

The Galena garrison is located on the right bank of the Yukon river approximately half way between Nome and Fairbanks. The ground consists of stream worn gravel with an average of 14" overburden of silt and decayed vegetation. The area is covered with a small amount of merchantable timber which affords concealment during the growing season and some protection from the winter storms. In addition to the original construction program, this project was included in an expansion program to provide increased facilities for

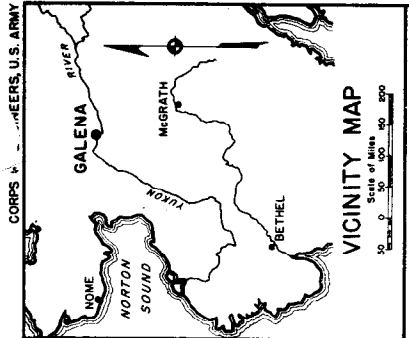
the Air Transport Command ferry route to Russia.

The original program included facilities for 36 officers and 302 enlisted men, motor repair shops and a 12 bed hospital. The original east-west runway was extended to 7,500' in November 1943 to be available for use during the winter of 1943-44. A second runway was also being built under CAA with contract by the Summers Construction Company of Juneau, Alaska. A 200' by 202' wood truss hangar was constructed by the Engineers for use in 1944. Quonset huts, Pacific huts and T/O (frigid zone) buildings were used throughout the camp.

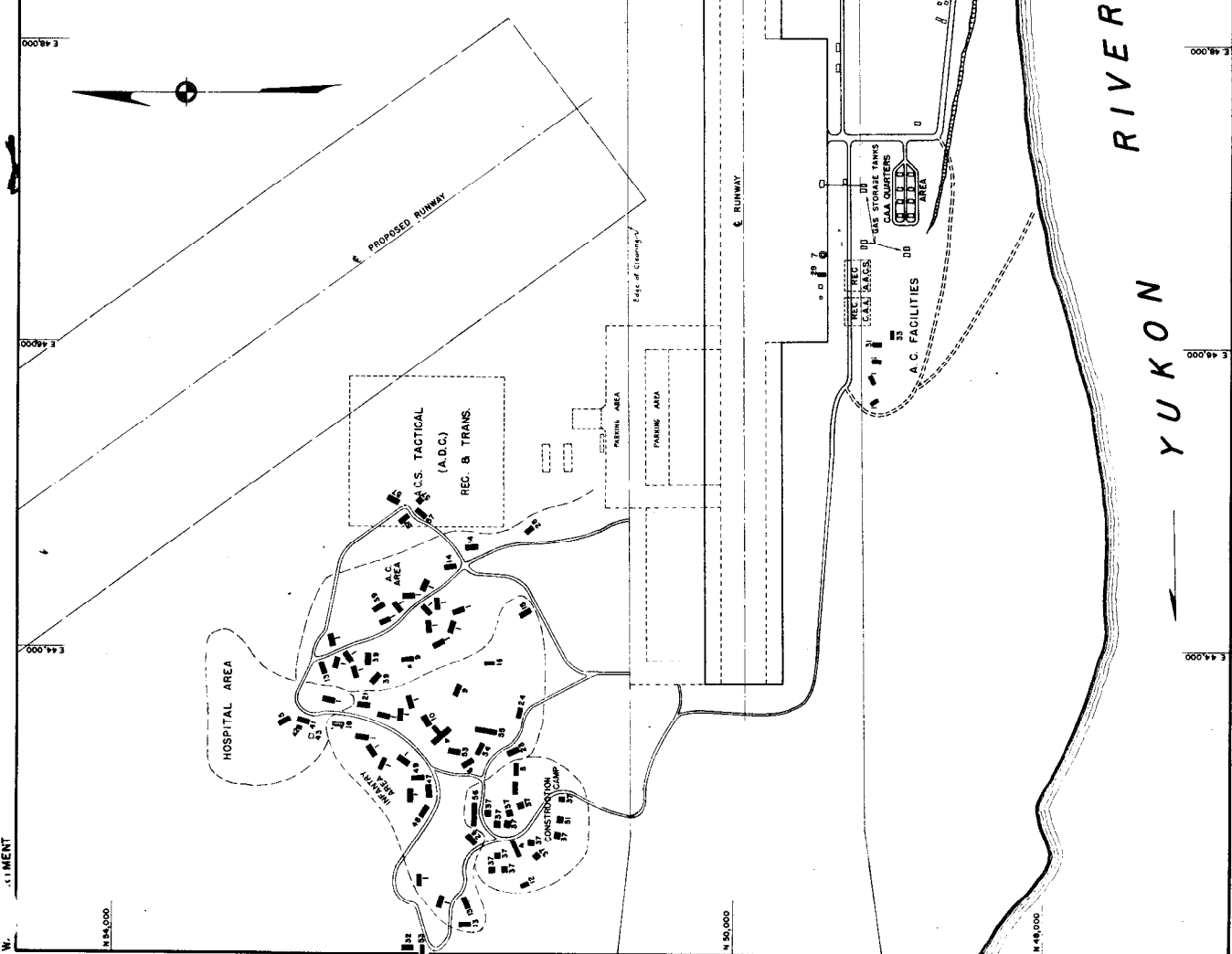
A platoon of Company "C" of the 176th Engineer (GS) troops started construction 17 September 1942. Following approval of the expansion program 17 June 1943, the balance of Company "C" was moved to Galena to expedite construction. Captain Herbert C. O'Neil, CE, is the Resident Engineer.

The isolation of this project and its accessibility by water transportation and plane only, make construction a slow process. It is 366 river miles down the Tanana and Yukon rivers from the railhead at Nenana. Only two small river steamers and several small barges are available to haul cargo to the site. The summer of 1943 saw some 2,000 tons of freight hauled downstream by this slow and cumbersome method. The Tanana River (tributary of the Yukon) is shallow and boats frequently run aground.

The original program has been merged with the Air Transport Command program, Plans "B" and "C", and the entire project is expected to be completed 30 August 1944 at an estimated cost of \$713,971.



NO.	DESCRIPTION	CONSTRUCTION QUANT.	LIST NO.	DESCRIPTION	QUANT.
1	BARACKS	10	26	SUPPLY OFFICE, A.C.	1
2	BARRACKS	10	27	WEATHER & OPERATIONS	1
3	BESS HALL	1	30	CREW CHIEF	1
4	BESS HALL	1	31	ENGINEER	1
5	BESS HALL	1	32	LABORATORY, A.C.	1
6	BATH	1	34		
7	BATH & LATRINE, OFF.	1	35		
8	BATH & LATRINE, E.W.	1	36		
9	BATH	1	37	PACKPAT HUTS	12
10	BATH	1	38		
11	BATH	1	39	BRANDON, A.C. & SUPPLY	3
12	BATH	1	40	MAIN SURVEY & WORKHOUSE	1
13	WAREHOUSE, A.C.	1	41	LATRINE, PATIENTS	1
14	WAREHOUSE, A.C.	1	42	BATH, PATIENTS	1
15	WAREHOUSE	1	43		
16	WAREHOUSE	1	44		
17	WAREHOUSE	1	45		
18	FIRE STATION	1	46		
19		1	47	CRIPED	1
20		1	48	POST OFFICE	1
21	SHOE REPAIR	1	49	POST H.Q.	1
22	MOTOR REPAIR	1	50	U.S.F.P.	1
23	MOTOR REPAIR	1	51		
24	MOTOR REPAIR	1	52		
25	MOTOR REPAIR	1	53	POWER HOUSE	2
26	MOTOR REPAIR	1	54	OFF. ENGINEER	1
27	MOTOR REPAIR	1	55	CONSTRUCTION WARE.	1
28	MOTOR REPAIR	1	56	A.C.S.	4
29	MOTOR REPAIR	1	57		



LEGEND

PROGRESS  
 WORK COMPLETED  
 WORK UNDERWAY  
 WORK AUTHORIZED

TYPE OF WORK: CANTONMENT CONSTRUCTION

**GALENA STAGING FIELD**  
 GALENA, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET OF C

PERIOD: October 1943

Scale of Feet: 0 100 200 300 400 500

BY ORDER OF THE DIST. ENG.  
 SEATTLE DIST., 20 SEPT. 1943

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

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## TANACROSS

Tanacross is a small station located approximately 150 miles east of Fairbanks. The general topography around Tanacross consists of land formed by glacial deposits of alluvial sands and gravels with a 6" tundra cover.

The Tanacross project was included in an expansion program being accomplished by the Northwest Service Command for the Air Transport Command to provide increased facilities for the ferrying of Lend-Lease planes to Russia. The program included minimum facilities for two officers and 48 enlisted men. The CAA built two runways at Tanacross; they are 5,000' and 3,500' by 300' and are surfaced with gravel. A road was built between the airfield site and the Alcan Highway which runs about two miles west of the garrison. Quonset huts and T/O (frigid zone) buildings were used throughout the camp although Stout houses, 16' by 16' were erected for use by the Air Corps as operations buildings. Water is available from wells. An unusual feature of this area is the warm ground springs. Because of them water-borne sewage facilities are operative throughout the entire year.

Construction started 2 November 1942 by one platoon of Company "F" of the 176th Engineer Regiment (GS) with a detachment from H & S. Captain William T. Bostick, CE, was the Resident Engineer.

Due to severe winter conditions and difficulty in keeping supply routes open, the original project was greatly delayed in completion.

Construction at Tanacross was completed 1 June 1943, estimated cost of \$130,000, at which time this base was made the responsibility of the Northwest Service Command.

## WHITTIER PROJECT

The reasons for construction of the railroad between Portage on the Alaska Railroad and Whittier at the head of Passage Canal on Prince William Sound, are given in the chapter on Tunnel Construction. It can briefly be said here, however, that the purpose of this construction was to provide a shorter route from the Gulf of Alaska to the interior. Further, that the existing distance between Seward and Anchorage, 114.8 miles, would be shortened by some 38 miles, in addition to providing a new and improved deep water outlet for Alaska's only major established railroad.

The authority for construction for the railroad, in addition to the tunnel and for operating facilities at the head of Passage Canal, is contained in the 5th Supplemental National Defense Appropriation Act 1941, approved 5 April 1941. This act provided for an appropriation of \$5,300,000. The Office of the Chief of Engineers decided that the work should be done by contract. On 5 June 1941 a Cost-Plus-a-Fixed-Fee contract was negotiated with the West Construction Company for grading, bridges and tunnels at the estimated contract cost of \$3,110,264. Subsequently supplemental agreements to the prime contract, in the amount of \$7,724,236, were made with the same contractor, mainly for the purpose of additional grading, construction of terminal facilities at Whittier, additional utilities for operating personnel housing and other miscellaneous features.

Generally the construction of this project was divided into three phases; first and second, railroad and tunnel construction, and the third and last phase was the construction of the railroad terminal and port operating facilities as well as garrison housing. The authority for this latter additional work was contained in the 1st indorsement dated 23 February 1943, from the Western Defense Command to the Alaska Defense Command, subject: "Housing Facilities - Whittier".

Specifically, the program for the construction at Whittier at the head of Passage Canal included the following main features: a terminal dock with adequate warehousing, cold storage, and trackage, rail repair facilities, coal bins, sand house, oil house, sorting yards, adequate housing utilities and recreational facilities for railroad employees and port operating personnel.

The terminal dock was commenced in June, 1942, and completed in May, 1943. All piling were creosoted and it was necessary to deposit 50,000 cubic yards of beach gravel for support. Overburden was shallow with rock underlying. A depressed track in addition to a 70 ton stiffleg derrick was constructed on the dock.

For the railroad terminal and servicing building a coach and engine house, depot, powerhouse and heating plant, cold storage building and miscellaneous shops were provided. Various other section houses and messhalls were constructed for the accommodation of railroad employees. The housing provided was also suffi-

cient to accommodate 52 officers and 1,100 enlisted men. Theatre of Operations type and hut construction was used throughout. The garrison area is situated in the lands which had been originally set aside as a town site area. (Construction of this town was deferred for the duration of the war.) A 50 bed hospital with adequate utilities, including a central heating plant to accommodate the terminal buildings as well as the garrison was provided. A gravity water system consisting of a small concrete dam, with storage reservoir of over 200,000 gallons, furnishes the main source of water. In addition there are two deep water wells, each providing 400 gallons per minute for stand-by. A separate salt water system was installed for fire protection.

The West Construction Company and units of the 42d Engineer Regiment ( G. S. ) constructed the terminal and port facilities, garrison housing and utilities. Resident Engineers have been Mr. F. A. Hansen, Major Caleb B. Burgoyne, CE, and Lt. Colonel J. Burleson, CE.

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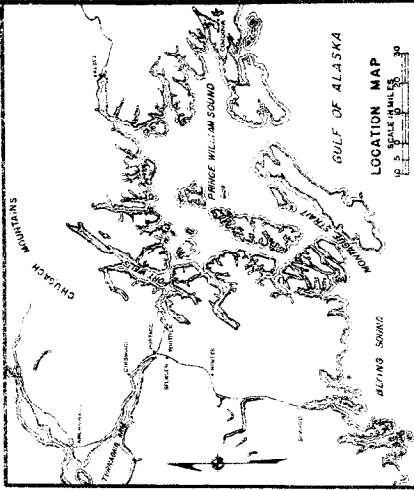
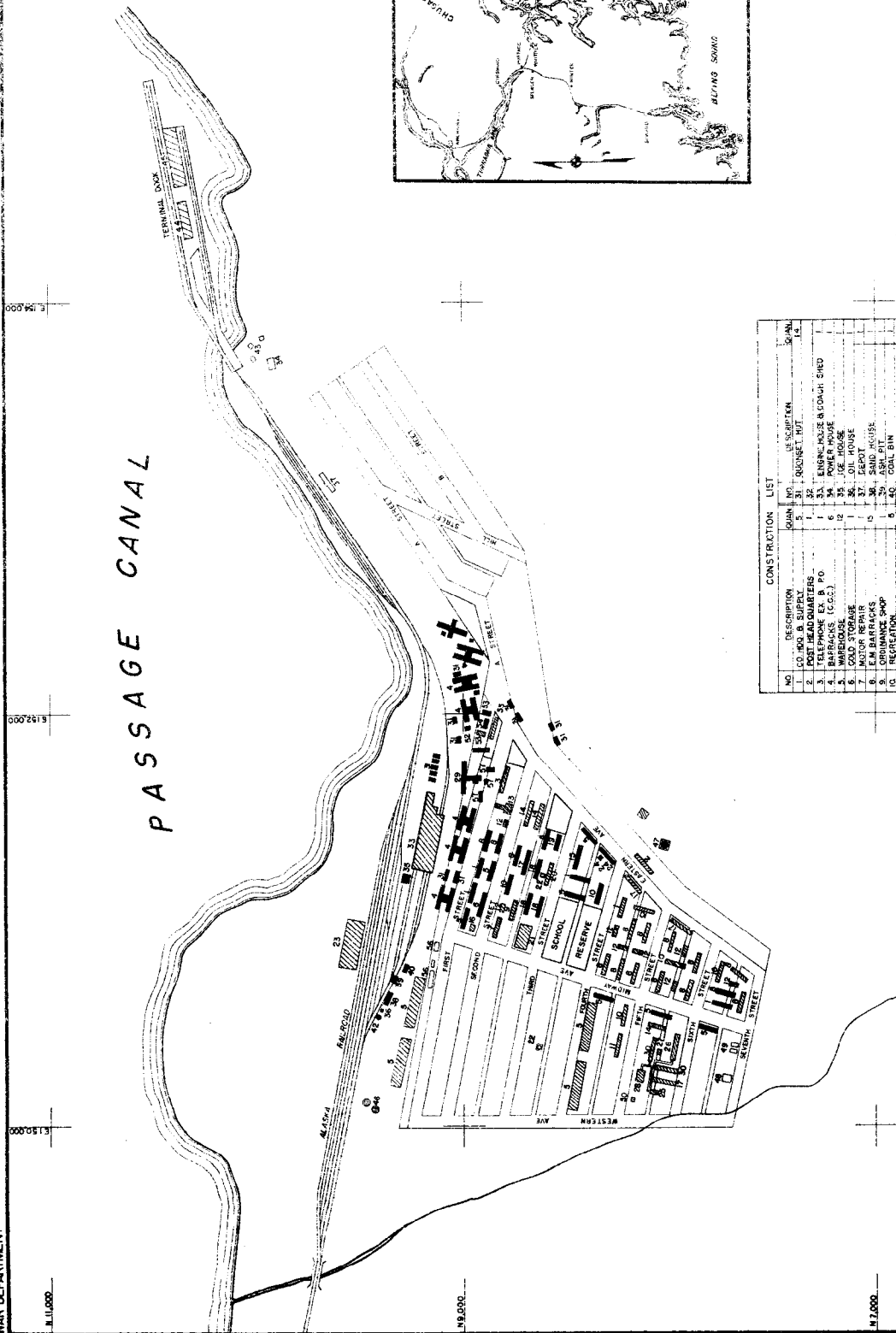
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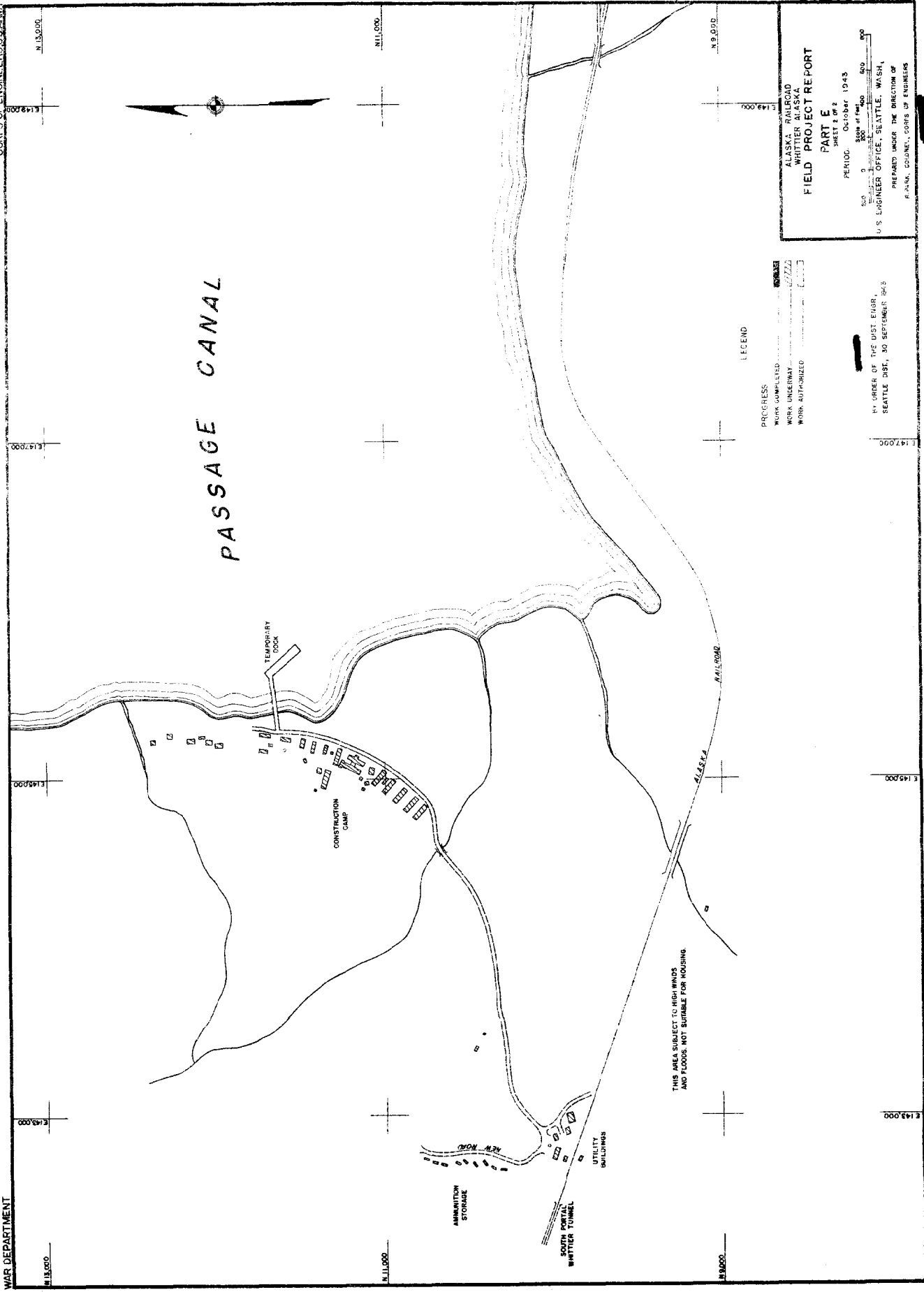
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NO.	DESCRIPTION	QUAN.	UNIT	US DESCRIPTION	QUAN.	UNIT
1	CO. HQ. & SUPPLY	5	31	QUONSET HUT	15	
2	POST HEADQUARTERS	1	32	ENGINE HOUSE & LOCOM. SHED		
3	BARBERS (C.O.C.)	6	34	POWER HOUSE		
4	WAREHOUSE	12	35	ICE HOUSE		
5	COLD STORAGE	1	36	OIL HOUSE		
6	LEAD STORE	1	37	SAW HOUSE		
7	LEAD STORE	1	38	SAW HOUSE		
8	LEAD STORE	1	39	SAW HOUSE		
9	LEAD STORE	1	40	SAW HOUSE		
10	RECREATION	1	41	WATER TOWER		
11	RECREATION	1	42	WATER TOWER		
12	LATHING & BATH BUILDING ROOM	1	43	DOLLS SERVICE CAMP		
13	FIRE STATION	1	44	LOCAL & TRANSFER WHEEL		
14	OFF. BARBERS & BATH & LAUNDRY	3	45	POWER P. PLANT		
15	POST OFF. B. E. M.	1	46	FUEL OIL TANK		
16	POST EXCHANGE	1	47	WATER TANK, SOGG. BEL. WAGON		
17	MESS OFF. B. E. M.	3	48	ROOT HOUSE		
18	LULLIES	1	49	POST EXCHANGE		
19	POST EXCHANGE	1	50	POWER PLANT		
20	BICYCLE REPAIR & SHOP	1	51	MILITARY POLICE		
21	ALLIANCE HALL	1	52	CHUKCHI BARBERS		
22	WELL & PUMP HOUSE	1	53	CHUKCHI BARBERS		
23	POST EXCHANGE PLANT	2	54	CHUKCHI WOMEN MESS		
24	POST EXCHANGE	1	55	AGG. WAREHOUSE		
25	AGG. WAREHOUSE	1	56	MESS HALLS		
26	MESS HALLS	1	57	JUMP. KITCHENS		
27	MESS OFF. B. E. M. & C. V.	1	58	WARD		
28	WARD	2	59			
29			60			
30						

LEGEND  
 PROGRESS  
 WORK UNDERWAY  
 WORK AUTHORIZED

ALASKA RAILROAD  
 WHITTIER, ALASKA  
**FIELD PROJECT REPORT**  
**PART E**  
 SHEET 1 OF 2  
 PERIOD: OCTOBER 1943  
 Scale of Feet: 1" = 100'  
 PREPARED UNDER THE DIRECTION OF  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 K. PARK, COLONEL, CHIEF OF ENGINEERS

BY ORDER OF THE DIST. ENGR.,  
 SEATTLE DIST., 30 SEPT 1943



ALASKA RAILROAD  
WHITTIER ALASKA  
**FIELD PROJECT REPORT**  
PART E  
SHEET 2 OF 2  
PERIOD: October 1943  
SCALE: 1" = 200' of Ground  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

LEGEND  
PROGRESS  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

BY ORDER OF THE DIST ENGR,  
SEATTLE DIST., 30 SEPTEMBER 1943

## FORT GLENN PROJECT

After thorough reconnaissance of the Aleutian Islands and the Alaska Peninsula in the vicinity of Dutch Harbor, it was decided to build airfields at Port Hieden, Cold Bay, and on Umnak Island for the protection of the Navy base at Dutch Harbor against enemy attack, and for the defense of Alaska. During the Japanese attack on Dutch Harbor 4-6 June 1942, the fighter and bomber planes from the newly constructed base on Umnak Island were instrumental in driving off the enemy. Fort Glenn is about one third the distance from the Alaska mainland to Russia and China. The garrison and airfield site is near Otter Point, on the east end of Umnak Island. This island is approximately 80 miles west of Dutch Harbor and 800 miles from the Alaska mainland.

The War Department authorized construction of Fort Glenn in 1st indorsment dated 9 December 1941, to basic letter from the Western Defense Command, dated 23 July 1941, subject: "Air Defense of Naval Base at Dutch Harbor and of Alaska."

Original plans for Fort Glenn provided for 121 officers and 2,491 enlisted men. This garrison included Air Corps bomber and fighter squadrons, Anti Aircraft squadrons, Field Artillery, Infantry, Engineer troops, and a construction camp for civilian employees. A small hospital, shops and technical facilities were also provided. The original airfield plan included three runways with provisions for Air Corps gasoline storage, operations reserve and bomb and ammunition storage.

As construction proceeded, additional units, housing and necessary facilities were authorized so that by December 1942, 11 months after construction started, the authorized garrison was 4 times the size of the original. The total program provided housing and facilities for 10,579 officers and enlisted men, plus a medical detachment and civilian construction employees. Storage was built for 2,100,000 gallons reserve and tactical Air Corps gasoline, 1,000,000 gallons of Quartermaster gasoline and 1,690,000 gallons of diesel oil. Two satellite fields, with a total of 3 runways each 6,000' long, and warehouse storage of 204,898 square feet were later authorized.

Major additions approved for Fort Glenn during 1943 included additional warehousing and cold storage, barge dock, tanker moorage, two runways at the main field, increase of north satellite field to 7,500' in length, electrical distribution system and a gravity water supply.

The harbor facilities at Chernofski, on Unalaska Island, consisted of a ship's dock and two barge docks. This port is 12 miles from the Fort Glenn garrison and airfield. Equipment and supplies unloaded at Chernofski are transported by barge to Fort Glenn. At Chernofski Harbor, additional warehousing and cold storage, a second ship's dock, a barge dock and water supply were later authorized as additions to the original program.

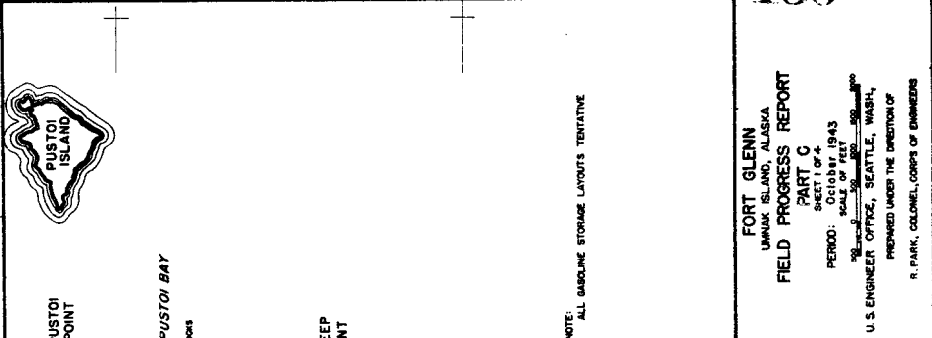
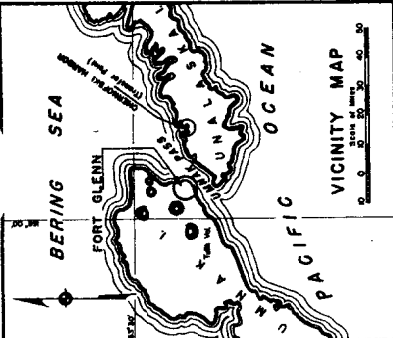
Two barge docks and a ship's dock at Pustoi Bay (Umnak) were wrecked by a storm the 25 September 1942. Rebuilt, they were again in use by the end of the year.

The work was accomplished by the use of troop labor and force account (civilians). The 802nd and the 807th Engineer Aviation Battalions, augmented by civilians, commenced the original program. Contingents of troops, including one battalion of the 93rd Engineer Regiment, (CS) (Colored), had detachments on the construction program at different times. The peak of construction was reached in September, 1943, with a total of 1,342 troops and civilians employed. The first Resident Engineer was Lt. Colonel C. H. Whitesell, Jr., CE, succeeded in turn by Lt. Colonel A. A. Dessler, CE, Colonel Roy W. Leibsle, CE, Major Edward H. Dillon, CE, and Major Karl T. Klock, CE.

The exposed position of Pustoi Bay, on Unnak Island, necessitates the barging of materials and equipment from Chernofski Harbor on Unalaska Island to Fort Glenn on Unnak Island, thus requiring 5 handlings. These handlings by ship cable slings and cranes caused excessive breakage. In the case of shiplap and 1" lumber, the breakage ran as high as 45 percent. Due to storms many barges loaded with materials and equipment were lost in these transfers.

The Fort Glenn Project was scheduled for completion by October, 1944; however, due to excellent progress during the summer of 1943 and the deletion of various features, this date was materially advanced. The estimated cost was \$17,796,943.

25RS, U.S. ARMY



NOTE: ALL GASOLINE STORAGE LAYOUTS TENTATIVE

**FORT GLENN**  
UNALAKLEET ISLAND, ALASKA  
**FIELD PROGRESS REPORT**  
PART C  
SECTION 4  
PERIOD: 10/1/50 - 10/31/50  
SCALE OF FEET: 1" = 100'

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**

PROGRESS  
WORK COMPLETED: [Solid black area]

WORK UNDERWAY: [Hatched area]

WORK AUTHORIZED: [Dashed line]

TEMPORARY COMPLETED CONSTRUCTION: [Dotted line]

TYPE OF WORK - AIR BASE CONSTRUCTION

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST. 3 OBSERVATION

MATCH SHEET NO. 2

MATCH SHEET NO. 3

CORPS OF ENGINEERS, U.S. ARMY

MATCH SHEET NO. 1

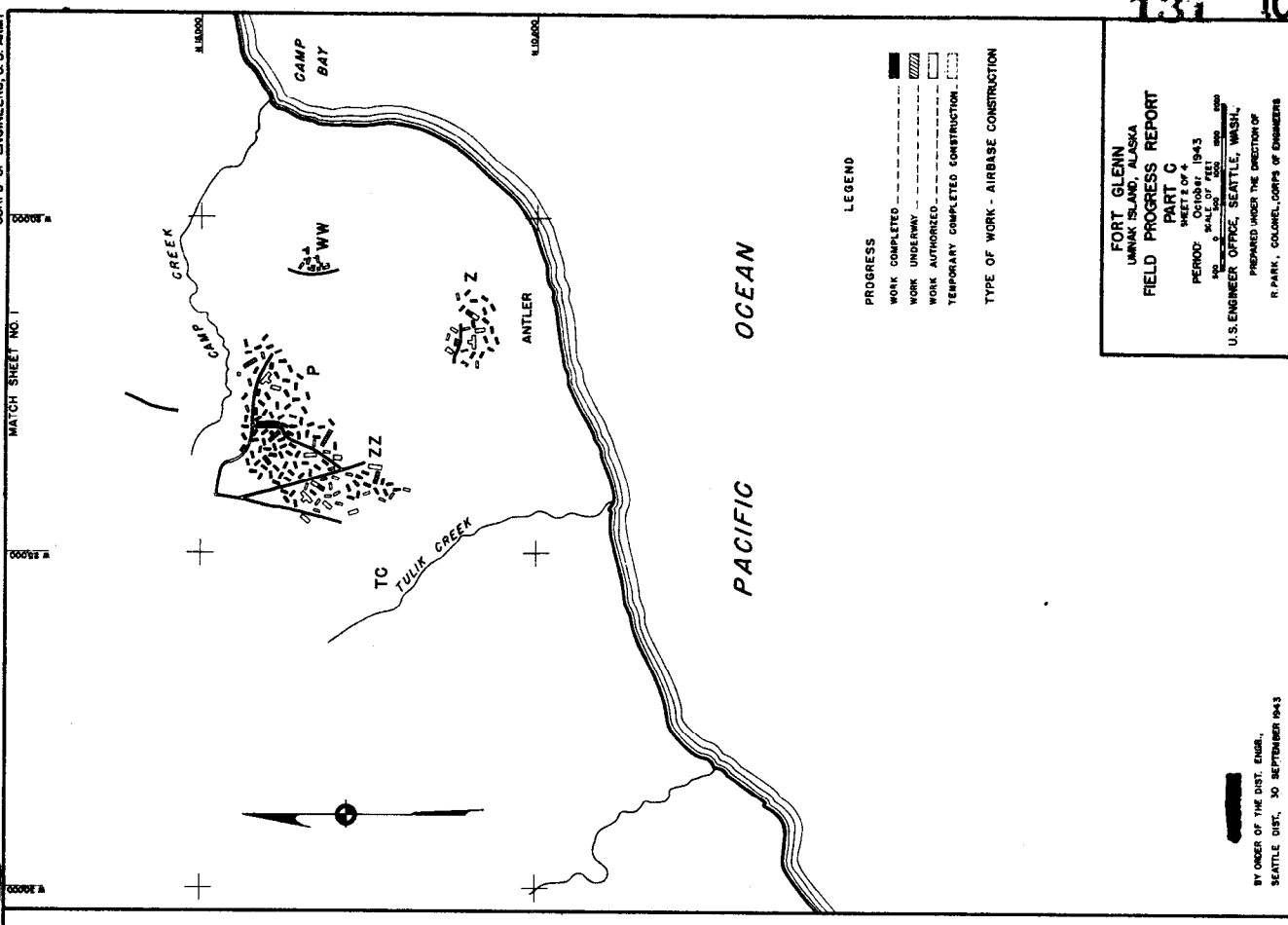
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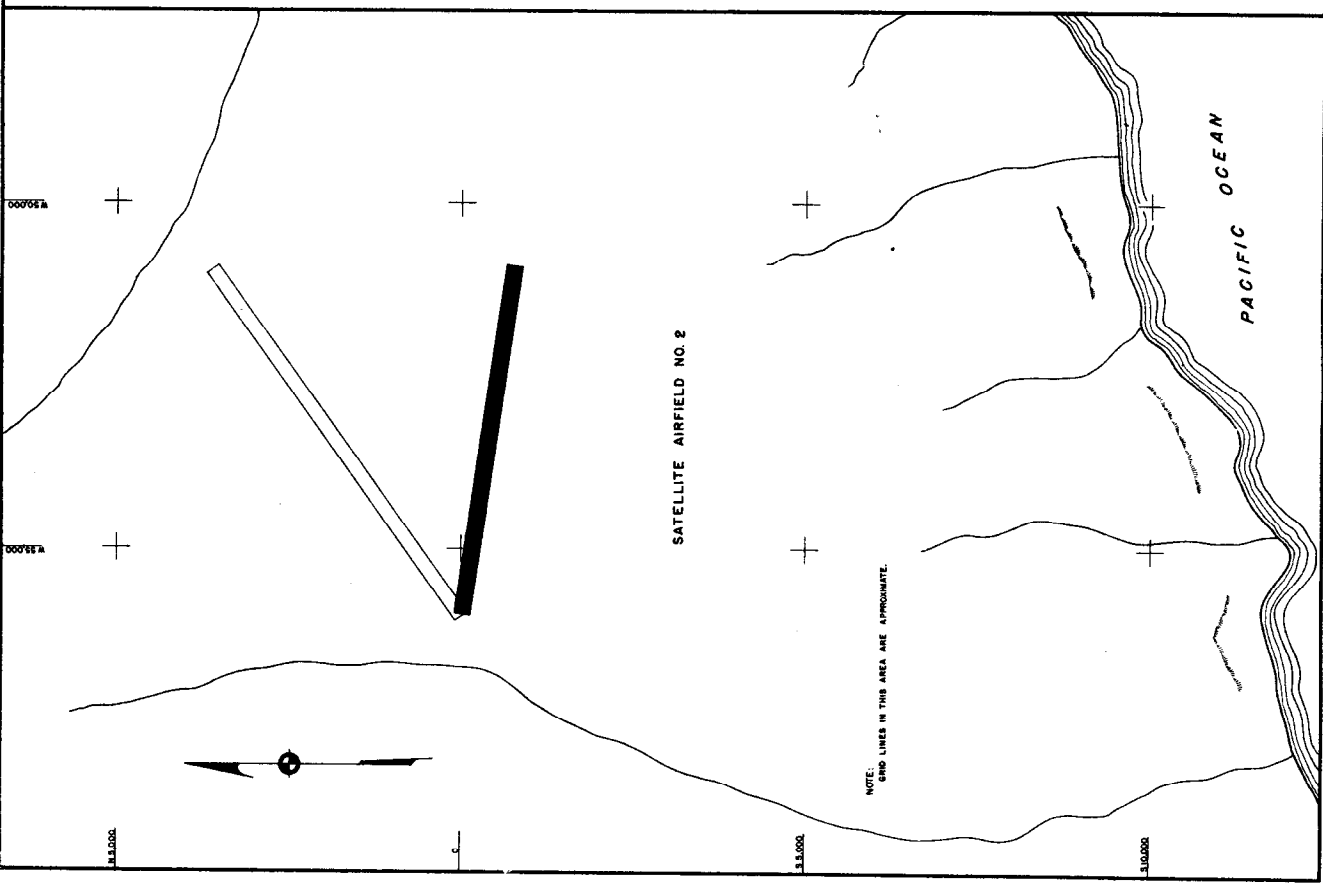
00000 A

WAR DEPARTMENT



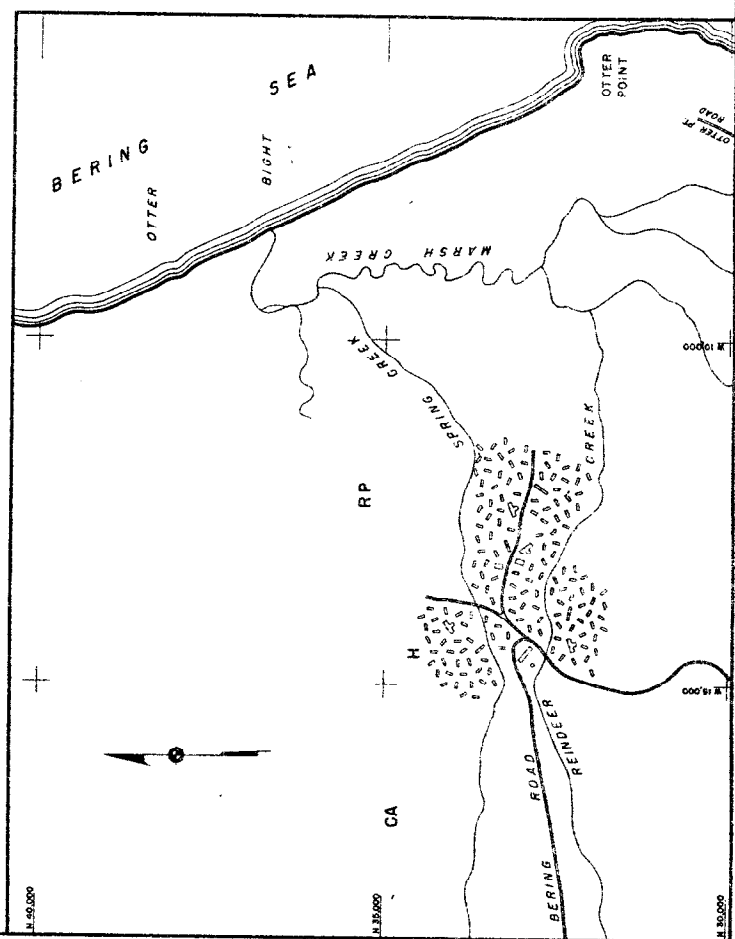
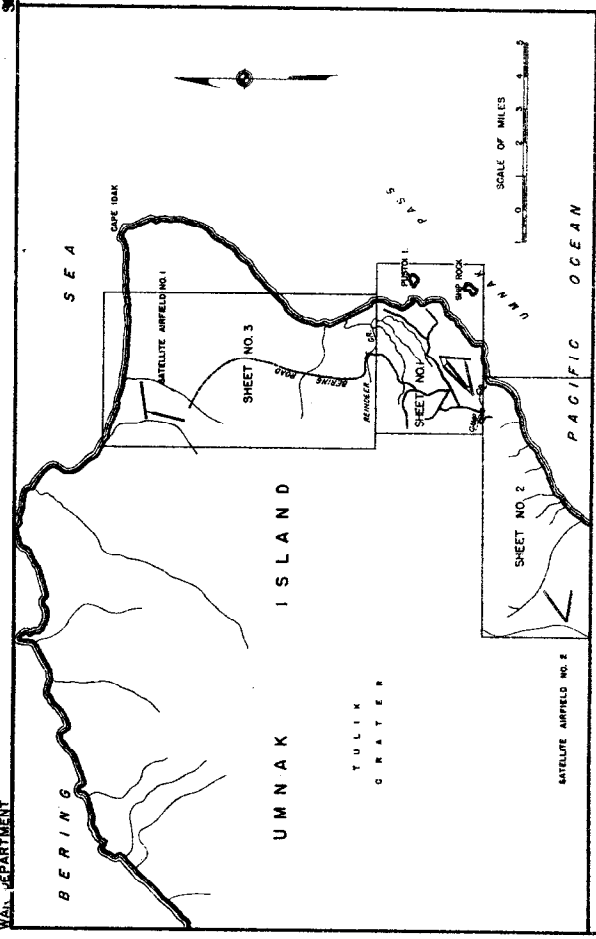
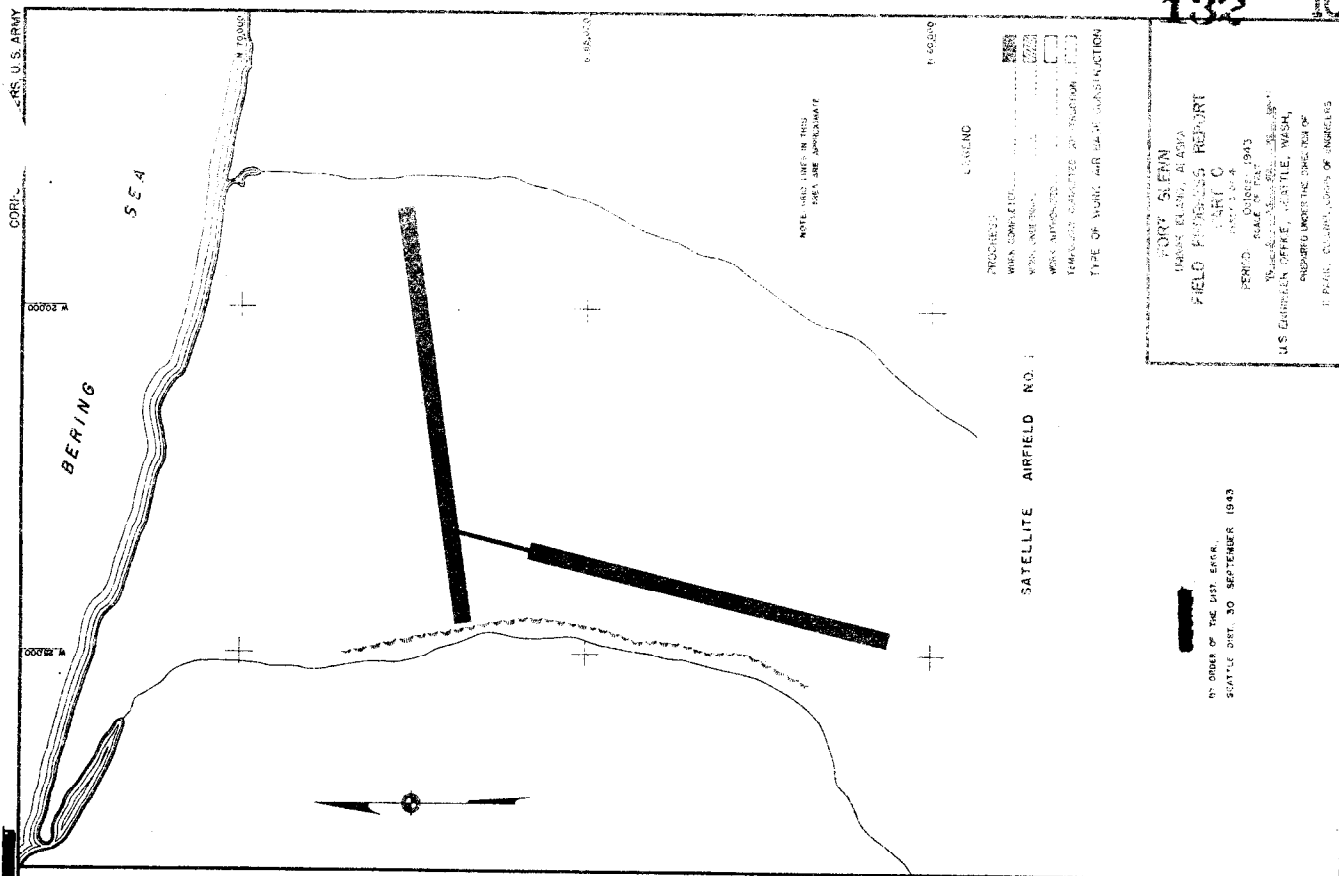
**FORT GLENN**  
**UNAK ISLAND, ALASKA**  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEETS OF 1943  
 PERIOD: 1942-1943  
 SCALE OF FEET  
 1" = 1000'  
 PREPARED UNDER THE DIRECTION OF  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 R. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.  
 SEATTLE DIST., 30 SEPTEMBER 1943



00000 A

00000 A



PROGRESS:  
 WORK COMPLETED: [ ]  
 WORK IN PROGRESS: [ ]  
 WORK SUSPENDED: [ ]  
 TYPE OF WORK: [ ]  
 TYPE OF WORK: [ ]  
 TYPE OF WORK: [ ]

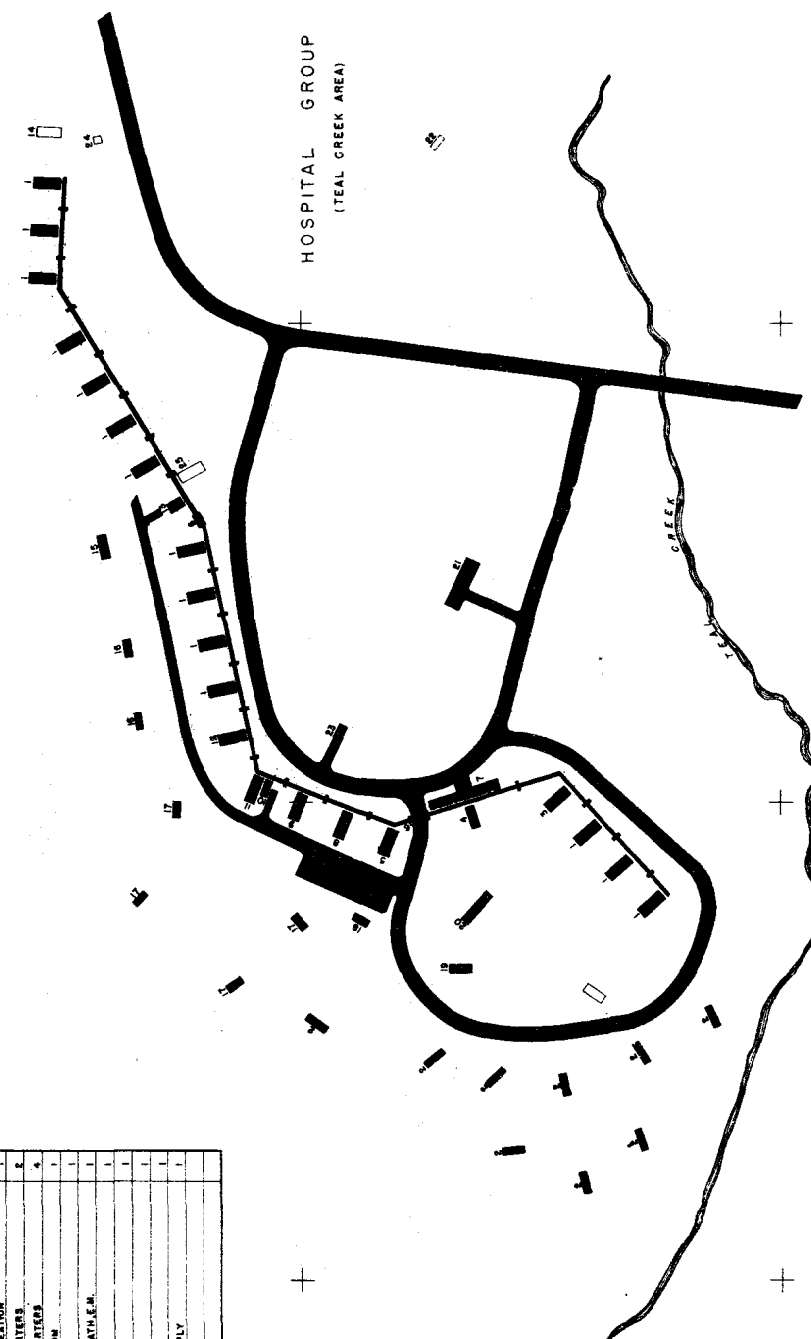
FORTY SEVEN  
 UNITED STATES OF AMERICA  
 FIELD ENGINEERING REPORT  
 PART C  
 PERIOD: [ ]  
 SCALE: [ ]  
 U.S. ENGINEERING OFFICE, WASHINGTON, D.C.  
 ENGINEERING UNDER THE SUPERVISION OF  
 U.S. ARMY CORPS OF ENGINEERS

BY ORDER OF THE DIST. OFF.  
 SATELLITE DIST. 30 SEPTEMBER 1943

MAIL DEPARTMENT  
 U.S. ARMY CORPS OF ENGINEERS

CORPS OF ENGINEERS, U.S. ARMY

DEPARTMENT		CONSTRUCTION LIST	
1	WARDS	10	
2	BARRACKS	9	
3	HOSPITAL RECREATION	1	
4	OFFICERS & NURSES MESS	1	
5	ADMINISTRATION	1	
6	FIRE BREAK	2	
7	HOSPITAL MESS & KITCHEN	1	
8	PHARM, RECREATION & DISPENSARY	1	
9	DENTAL CLINIC & X-RAY LAB.	1	
10	BOILER ROOM	1	
11	SURGERY	1	
12	EYE, EAR, NOSE & THROAT	1	
13	NURSES BATHHOUSE	1	
14	PSYCHO. WARD	1	
15	NURSES RECREATION	1	
16	NURSES QUARTERS	2	
17	OFFICERS QUARTERS	4	
18	OPERELY ROOM	1	
19	RECREATION	1	
20	LATRINE & BATH S.M.	1	
21	WAREHOUSE	1	
22	SEPTIC TANK	1	
23	SHOP	1	
24	MORQUE	1	
25	MEDICAL SUPPLY	1	



HOSPITAL GROUP  
(TEAL CREEK AREA)

LEGEND  
 PROGRESS  
 WORK COMPLETED: [Solid black rectangle]  
 WORK UNDERWAY: [Hatched rectangle]  
 WORK AUTHORIZED: [White rectangle with border]  
 FIREWALL LOCATION: [Line with cross-ticks]

FORT GLENN  
UNAKIK ISLAND, ALASKA  
FIELD PROGRESS REPORT  
PART C  
 PERIOD: OCTOBER 1943  
 SHEETS OF 4  
 PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORP. OF ENGINEERS

BY ORDER OF THE DIST. ENGR.  
SEATTLE DIST., 30 SEPTEMBER  
1943

## FORT RANDALL PROJECT

Cold Bay, the site of Fort Randall, is located on the Alaska Peninsula between Port Heiden and Dutch Harbor. It is 200 miles southwest of the former and 185 miles northeast of the latter. The location of the airfield is on a protected bay on the Pacific side of the western end of the Alaska Peninsula, affording air coverage on the Pacific as well as on the Bering Sea. The airfield is a link of great strategic significance and has an important tactical role in the air defense of the Aleutian Islands and Alaska mainland.

Authority for the project is contained in the Actions of the 76th Congress of the United States of America (Public No. 703) approved 2 July 1940, wherein the Secretary of War was authorized to use the moneys appropriated for the War Department for the fiscal year ending 30 June 1941 in building up of the national defense, and under the provision of Section 102 (Public 781), approved 9 September 1940. References to the foregoing are in letter dated 9 July 1941, from the Alaska Defense Command, to the Western Defense Command, and a letter dated 20 December 1941, from the Western Defense Command to the Division Engineer, North Pacific Division.

The original program provided for the construction of housing for a garrison of 130 officers and 2,059 enlisted men, a staging field for all types of aircraft, cantonment buildings, E/W runway of 5,000' length with adjoining revetments and taxiways, Air Corps gasoline facilities consisting of a 925,000 gallon operations reserve and a 150,000 gallon tactical storage and fueling system.

Construction of dock and housing facilities and the construction of hangars, technical facilities and operation and maintenance shops for the Air Corps was also a part of the program. A 400 bed hospital has been added. The garrison was increased to 424 officers and 8,510 enlisted men, and a north-south runway added. The planned harbor facilities were increased to provide simultaneous docking space for 3 ships.

The Civil Aeronautics Administration had commenced construction of an airfield at Fort Randall. Some construction work was in progress on the runways when the national emergency made it advisable in February 1942, for the Army to take over this construction and carry it to completion.

The work for the entire project provided housing, hospital facilities, warehouses in the amount of 151,240 square feet floor space, cold storage facilities in the amount of 44,800 cubic feet, three Kodiak "T" hangars with the necessary technical facilities and Link Trainer building for complete Air Corps operation and maintenance. The length of runways was increased to 7,500' and the width increased to 500'. Emulsified asphalt was applied to surfaces of runways. Ample fire protection has been added to the whole project by the installation of adequate fire fighting equipment. Several radar stations have been added to complete the protective measures of the garrison.

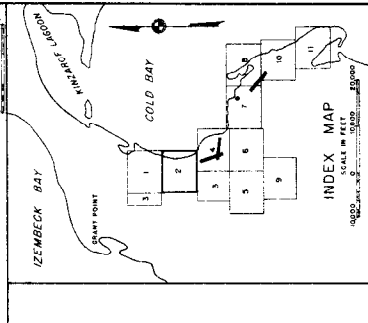
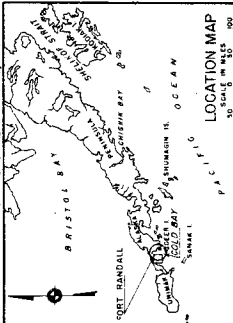
Several million board feet of lumber received from the Russian Government under the Lend-Lease program was stockpiled at this project.

The construction was carried out by Government plant with troop and hired labor. Resident Engineers at Fort Randall have been Brigadier General E. W. Jones, Colonel F. S. Blinn, Lt. Colonel William H. Cromwell and Lt. Colonel Walter W. Hodge. Mr. N. Lester Troast has been the principal civilian engineer assistant.

Many difficulties delayed construction at this project. Several fires destroyed some housing and mess hall facilities. Severe storms during the winter of 1942 and 1943, hindered and delayed the construction of dock facilities. The supply of materials was retarded by the diversion of shipping space to accommodate cargo for other ports which become ice-bound early in the winter. The diversion of troops from construction during alert periods retarded the progress of work, and adverse weather conditions hindered work during the winter season.

The final date of completion of the Fort Randall project was set for 30 December 1943, except for a small amount of runway surfacing which was delayed until 1944 due to weather conditions. Approximately \$20,000,000 is the total estimated cost of the Fort Randall project.





BY ORDER OF THE DIST ENGR.  
 SEATTLE DIST. 30 SEPTEMBER 1943

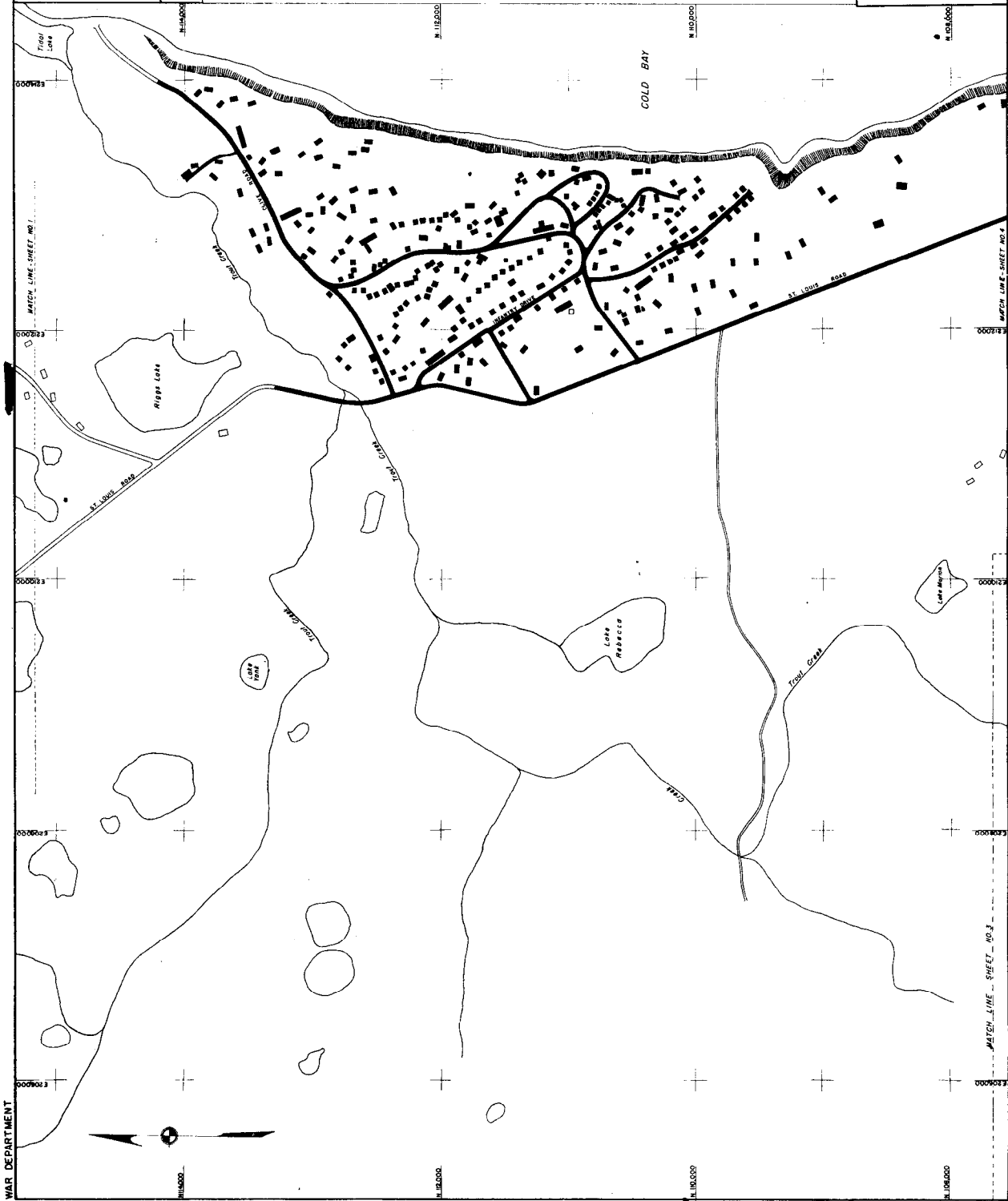
LEGEND

PROGRESS

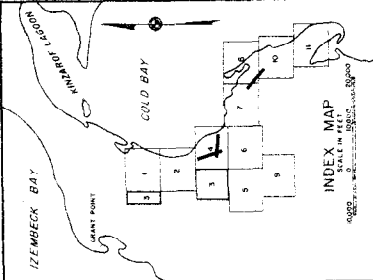
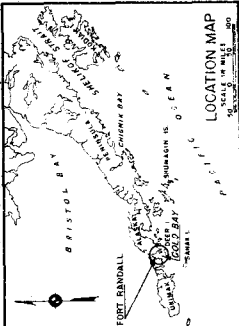
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Airbase Construction

138 14

FORT RANDALL  
 COLD BAY, ALASKA  
 FIELD PROGRESS REPORT  
 PART C  
 SHEET 2 OF 11  
 PERIOD: September - October 1943  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 H. PARK, COLONEL, CORPS OF ENGINEERS



CORPS OF ENGINEERS, U.S. ARMY



BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST. 30 SEPTEMBER 1943

LEGEND

- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Airbase Construction

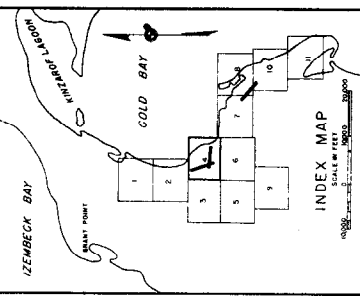
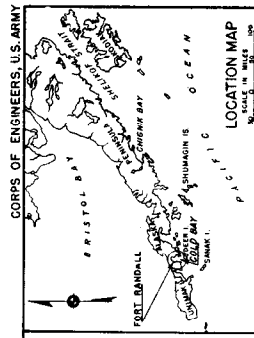
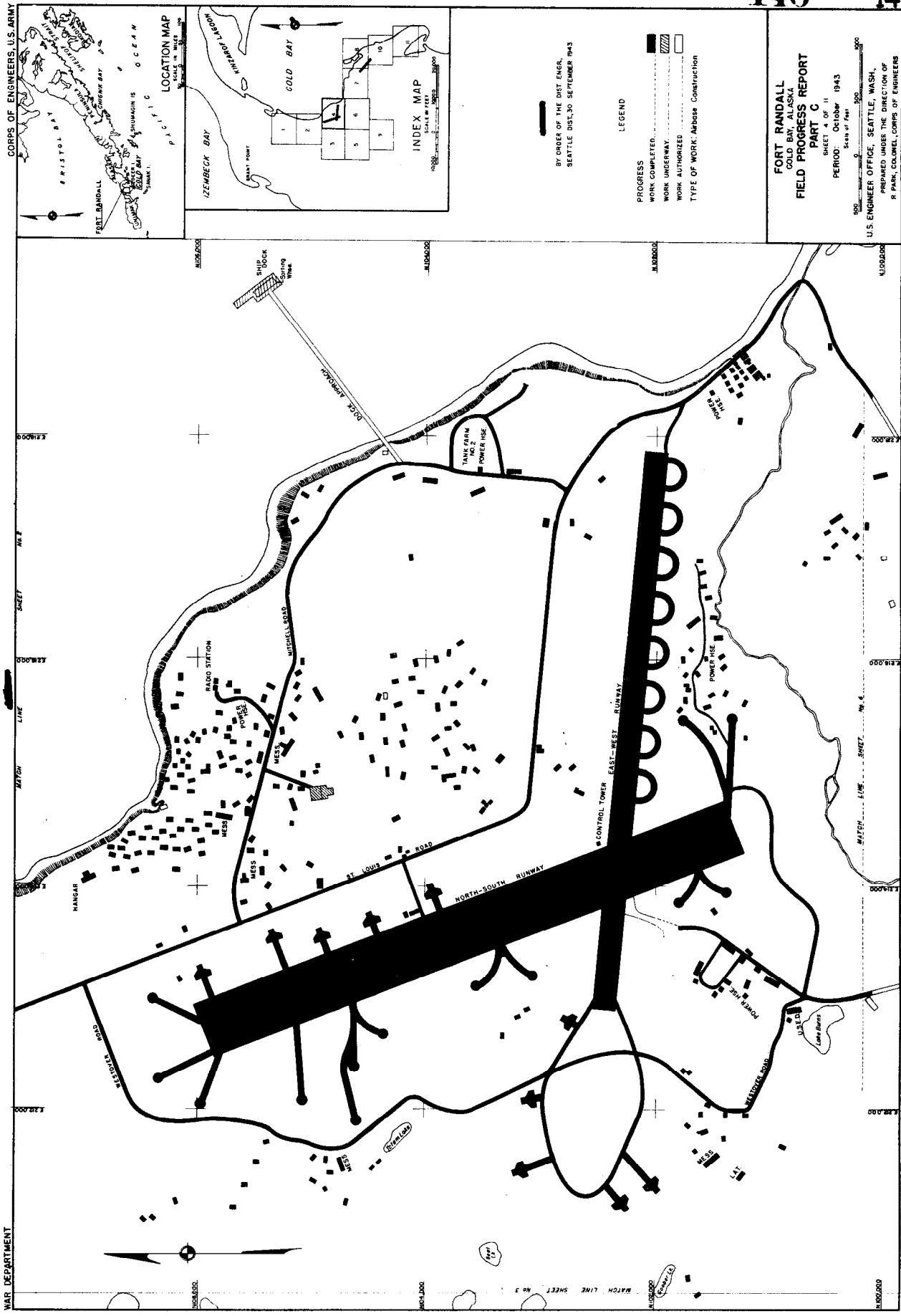
FORT RANDALL  
COLD BAY, ALASKA  
FIELD PROGRESS REPORT

PART C  
SHEET 3 OF 11

PERIOD: October 1943  
Scale of 1:50,000

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
CORPORATION OF ENGINEERS  
R. PARK, SEATTLE, CORP. OF ENGINEERS





BY ORDER OF THE DIST ENGR,  
SEATTLE DIST, 30 SEPTEMBER 1943

LEGEND

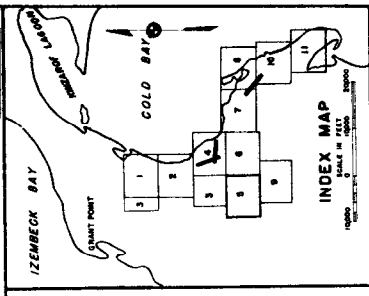
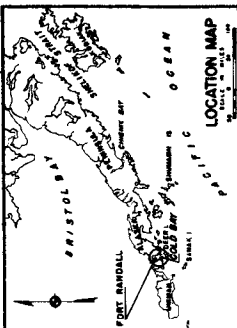
- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Airbase Construction

FORT RANDALL  
COLD BAY, ALASKA  
FIELD PROGRESS REPORT  
PART C

SHEET 4 OF 11  
PERIOD: October 1943  
Scale of Feet  
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY



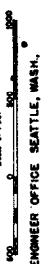
BY ORDER OF THE DIST ENGR,  
SEATTLE DIST, 30 SEPTEMBER 1943

LEGEND

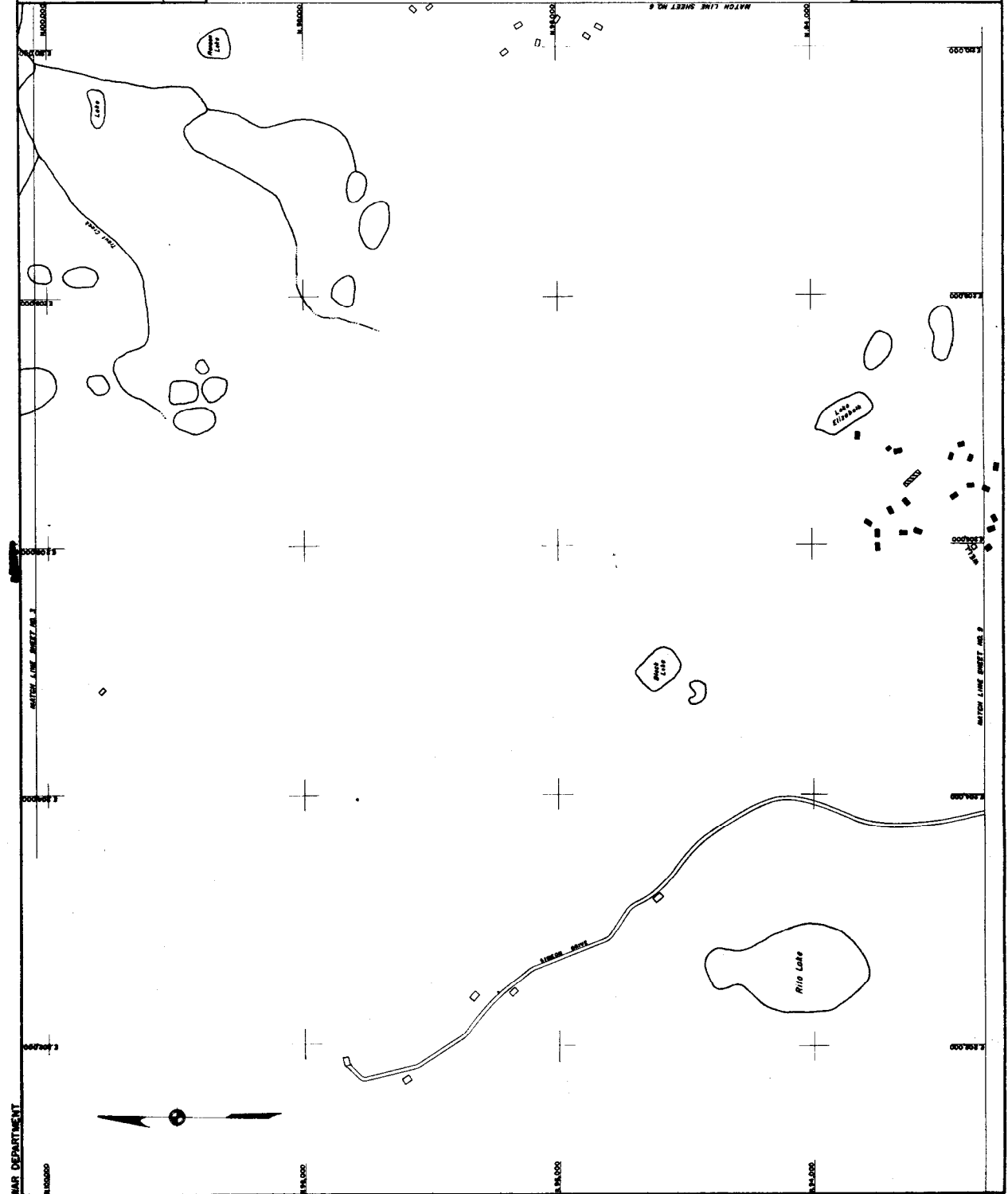
- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Airbase Construction

FORT RANDALL  
COLD BAY, ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 5 OF 11

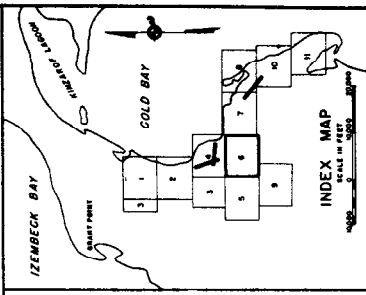
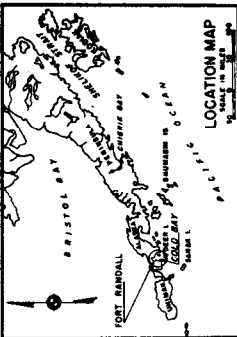
PERIOD: October 1943



U.S. ENGINEERS OFFICE SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. H. M. COLWELL, CHIEF OF ENGINEERS



CORPS OF ENGINEERS, U.S. ARMY



BY ORDER OF THE DIST ENGR,  
SEATTLE DIST., SEPTEMBER, 1943

LEGEND

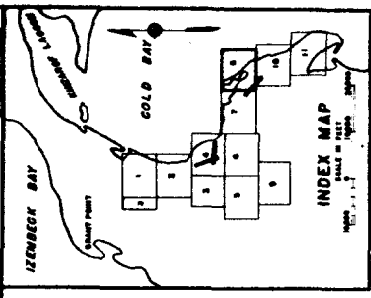
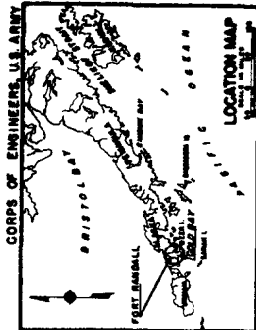
- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Airbase Construction

**FORT RANDALL**  
COLD BAY, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
SHEET 6 OF 11  
PERIOD: DEC 1943  
Scale of Plot: 500'

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. MARK, COLONEL, CORPS OF ENGINEERS



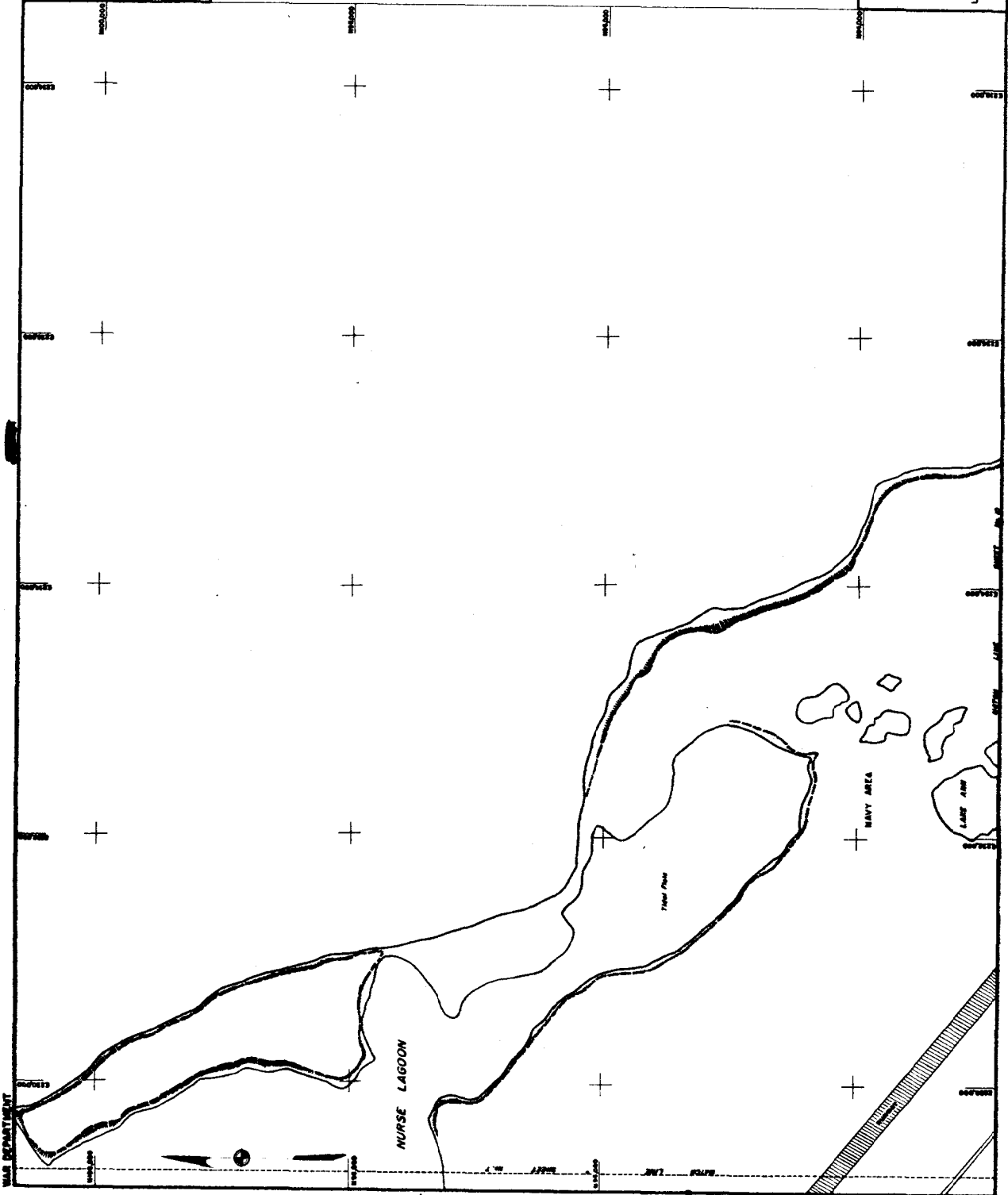


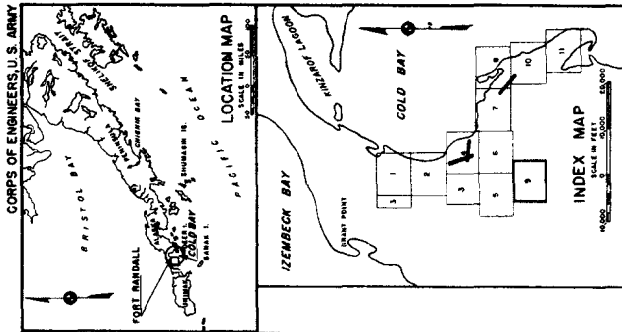


BY ORDER OF THE DIST ENGR,  
SEATTLE DIST. NO. SEPTEMBER 1943

- LEGEND
- PROGRESS
  - WORK COMPLETED
  - WORK UNDERWAY
  - WORK AUTHORIZED
  - TYPE OF WORK: Airbase Construction

FORT RANDALL  
GOLD BAY, ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 8 OF 11  
PERIOD: Oct. 1943  
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE SUPERVISION OF  
A. WALKER, CHIEF ENGINEER OF DISTRICT





BY ORDER OF THE DIST ENGR,  
SEATTLE DIST. 30 SEPTEMBER 1943

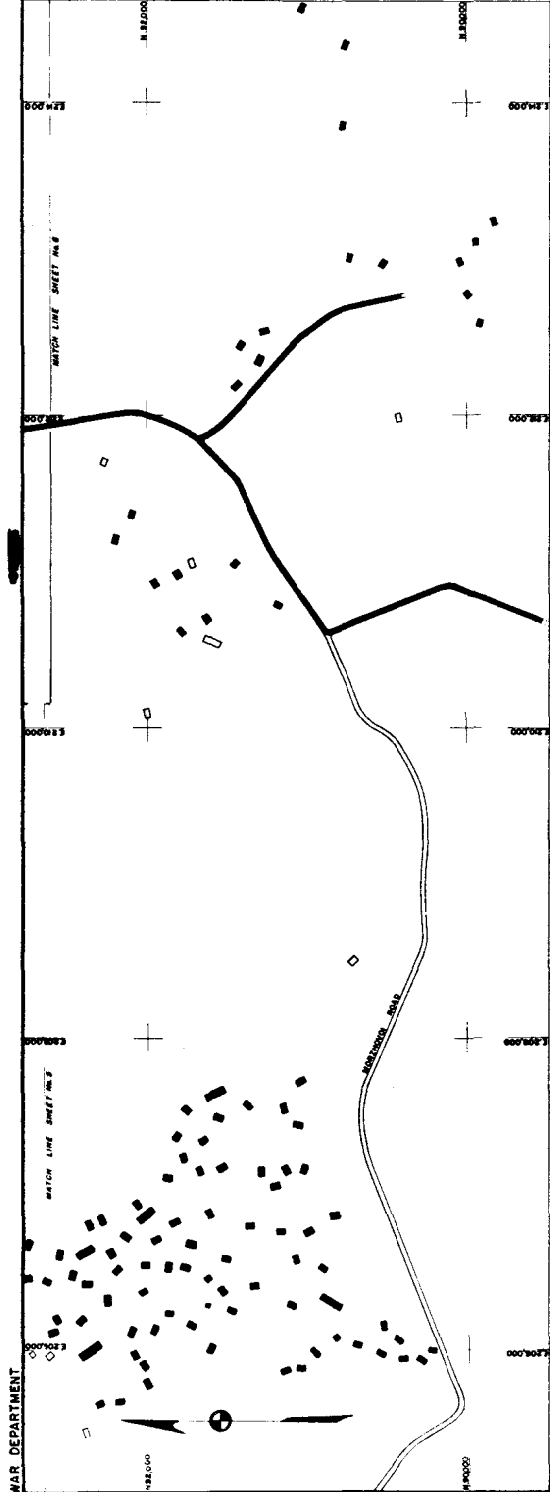
LEGEND

- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Above Construction

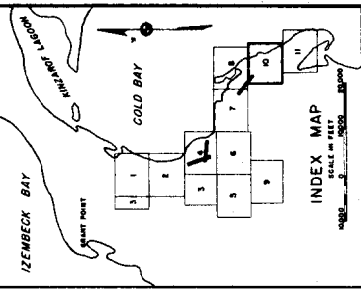
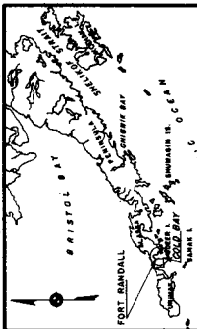
FORT RANDALL  
CORPS OF ENGINEERS  
FIELD PROGRESS REPORT  
PART C

PERIOD: 1 October '43  
SHEET: October '43  
SCALE OF DRAW: 1:25,000

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
A. PAUL, COLONEL, CORPS OF ENGINEERS



CORPS OF ENGINEERS, U.S. ARMY



BY ORDER OF THE DIST ENGR,  
SEATTLE DIST. 30, SEPTEMBER 1943

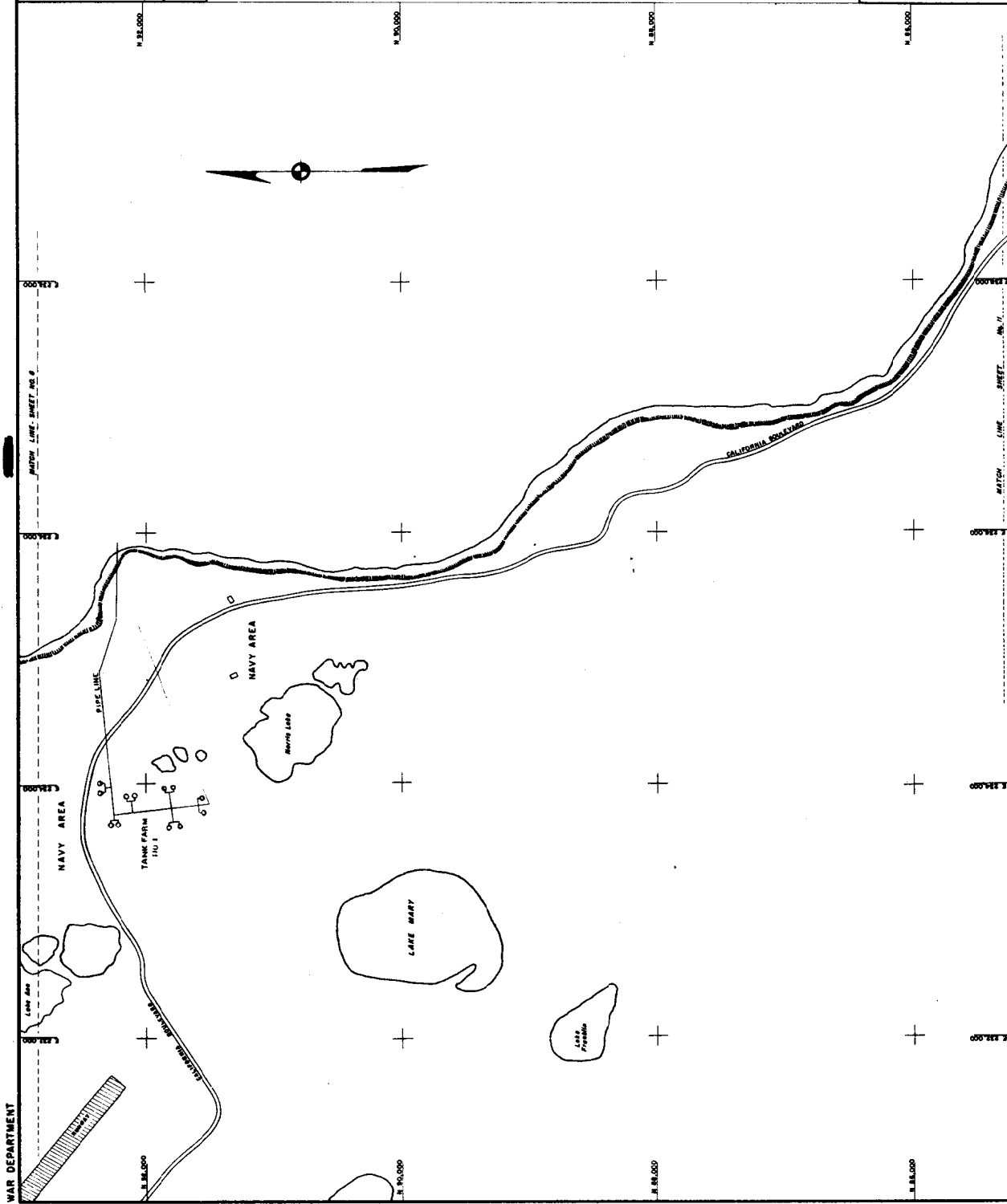
LEGEND

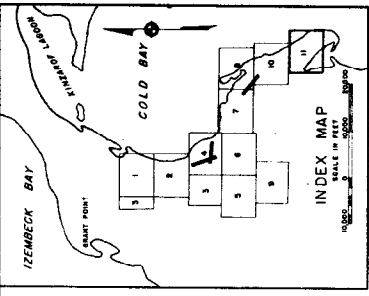
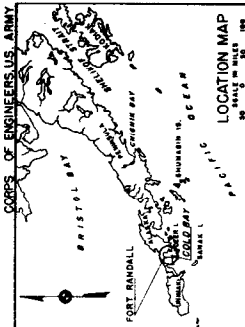
- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED
- TYPE OF WORK: Airbase Construction

FORT RANDALL  
FIELD PROGRESS REPORT  
PART C

SHEET 10 OF 11  
OCTOBER 1943  
SCALE: 1" = 500'

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. HARR, COLONEL, CORPS OF ENGINEERS



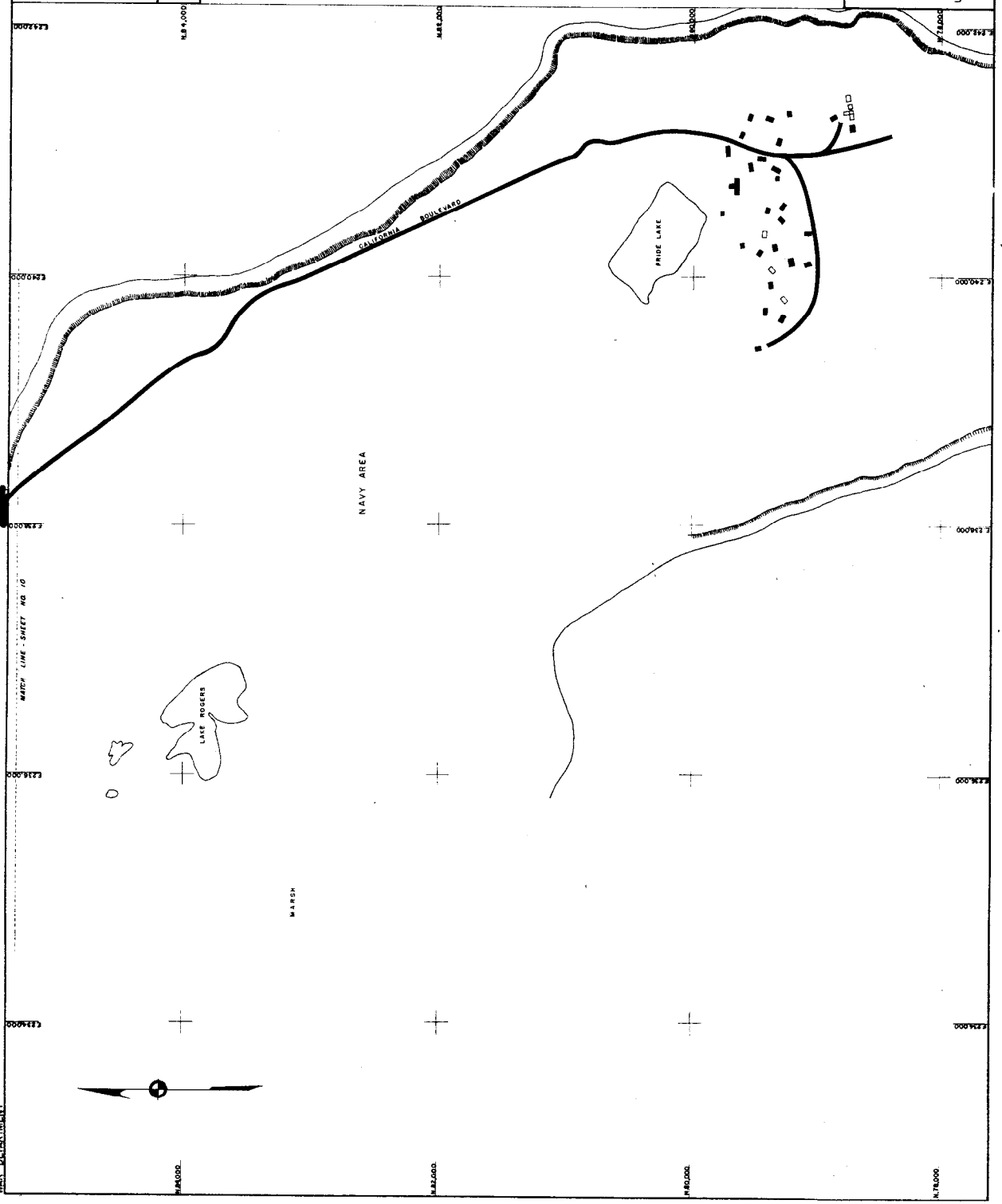


BY ORDER OF THE DIST ENGR,  
SEATTLE DIST, 30 SEPTEMBER 1943

- LEGEND
- PROGRESS
  - WORK COMPLETED
  - WORK UNDERWAY
  - WORK AUTHORIZED
  - TYPE OF WORK: Airbase Construction

FORT RANDALL  
COLD BAY AIRBASE  
FIELD PROGRESS REPORT  
PART C  
SUBMITTED: October 11, 1943  
PERIOD: October 11, 1943

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PAINE, COLONEL, CORPS OF ENGINEERS



## CHILKOOT BARRACKS

Approval was granted to augment existing facilities at Chilkoot Barracks, an established Army post having a small protective garrison. Chilkoot Barracks is located approximately 15 air miles south of Skagway, at Portage Cove on the Chilkat Peninsula, and is one-half mile from the town of Haines.

Authority for the project is contained in a letter dated 31 October 1942, from the Western Defense Command, to the Division Engineer, Portland, Oregon, subject: "Program for Additional Construction in Alaska."

The program at Chilkoot Barracks provided for construction of additional warehouses, concrete igloo, fencing, camouflage and the extension of existing water, electrical, sewer and road systems. This project is principally accessible by boat and pontoon equipped planes. The 60 mile gravelled road system was expanded by construction of a primary gravelled highway from Haines to connect with the Alaska Highway near Lake Kluane.

Housing and utilities at this station are adequate for a permanent garrison of approximately 570 officers and men. The water supply is from Lilly Lake, approximately 4 miles from the post, with a storage reservoir of 1,335,000 gallons, storage tank of 60,000 gallons, and a filter and chlorination plant of 155,000 gallon capacity per day. Electricity is provided by three 50 kw diesel generators. The station hospital is a modern frame structure with a capacity of 30 beds.

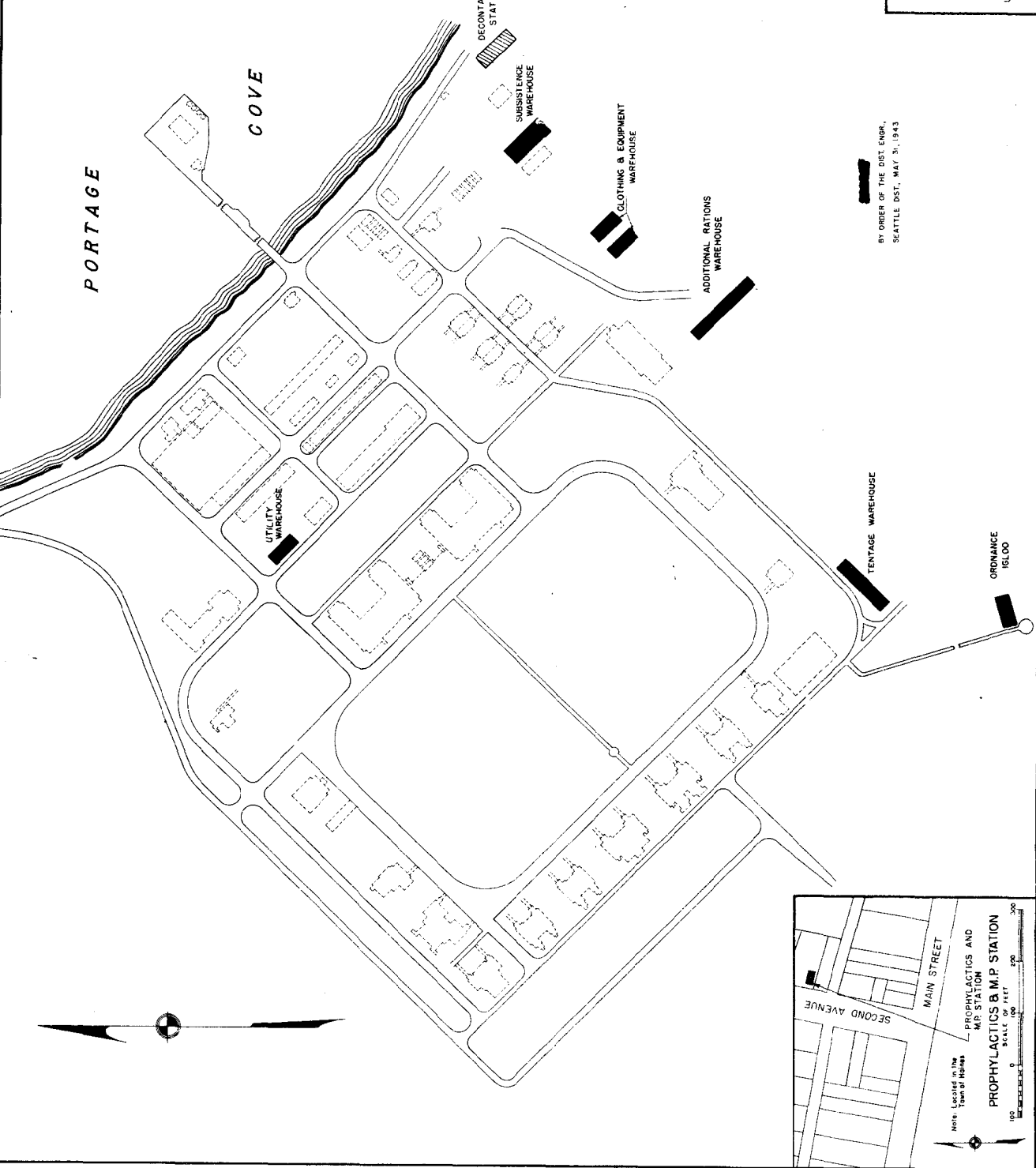
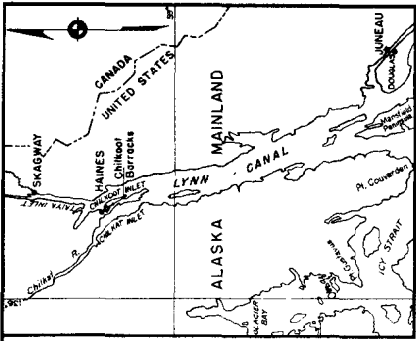
Construction started on 2 April 1942, all work being accomplished with hired labor and a small detachment of the 297th Infantry. Captain Phil F. Gehri, C.E., was the Resident Engineer.

There were no unusual features of construction at this project. Construction progress on the project was hampered by shortage of shipping facilities, making it difficult to obtain adequate supplies of construction materials. Some additional delay was attributed to the severe winter weather of 1942-1943.

All construction at Chilkoot Barracks (approximately 90 percent complete) was transferred to the Northwest Service Command, 15 May 1943. The estimated cost was \$115,000.

WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY



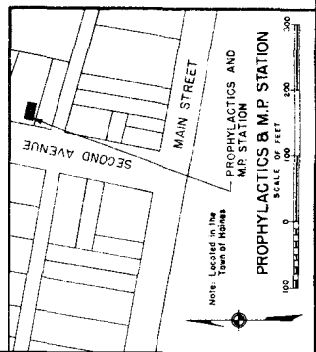
NOTE  
Existing buildings shown thus [dashed line symbol]

- LEGEND
- PROGRESS
- WORK COMPLETED [solid black rectangle]
  - WORK UNDERWAY [hatched rectangle]
  - WORK AUTHORIZED [dashed line rectangle]
- TYPE OF WORK: WAREHOUSE & ORDNANCE STORAGE FACILITIES

BY ORDER OF THE DIST ENGR,  
SEATTLE DIST., MAY 31, 1943

CHILKOOT BARRACKS  
ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 1 OF 1  
PERIOD MAY 1-31, 1943  
SCALE OF FEET  
0 100 200 300

U. S. ENGINEER OFFICE, SEATTLE, WASH., MAY, 1943  
HEADQUARTERS, SECTION OF  
ALASKA, ENGINEER CORPS OF ENGINEERS



## FORT RAYMOND PROJECT

Fort Raymond was established to provide a protective garrison for the City of Seward, harbor facilities and the rail terminus serving the interior of Alaska. Fort Raymond, at Seward, is located on the coast of southern Alaska at the head of Resurrection Bay. Seward is 114.8 track miles from Anchorage.

Authority for the construction of Fort Raymond is contained in a letter from the Adjutant General to the Chief of Engineers dated 4 June 1941.

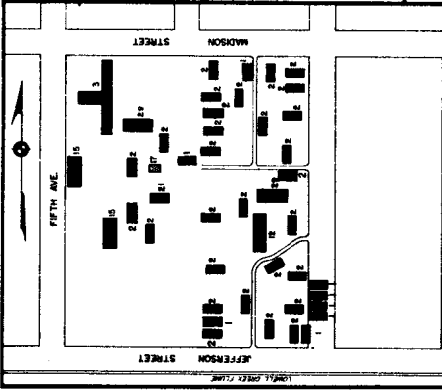
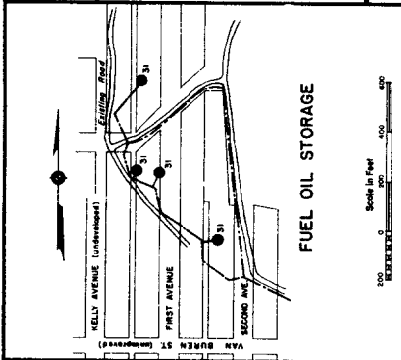
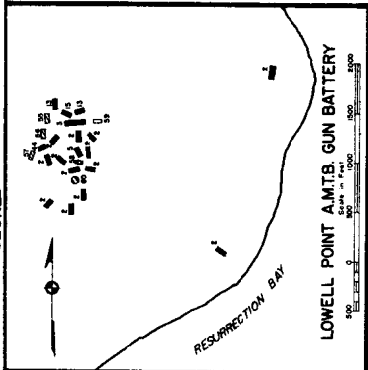
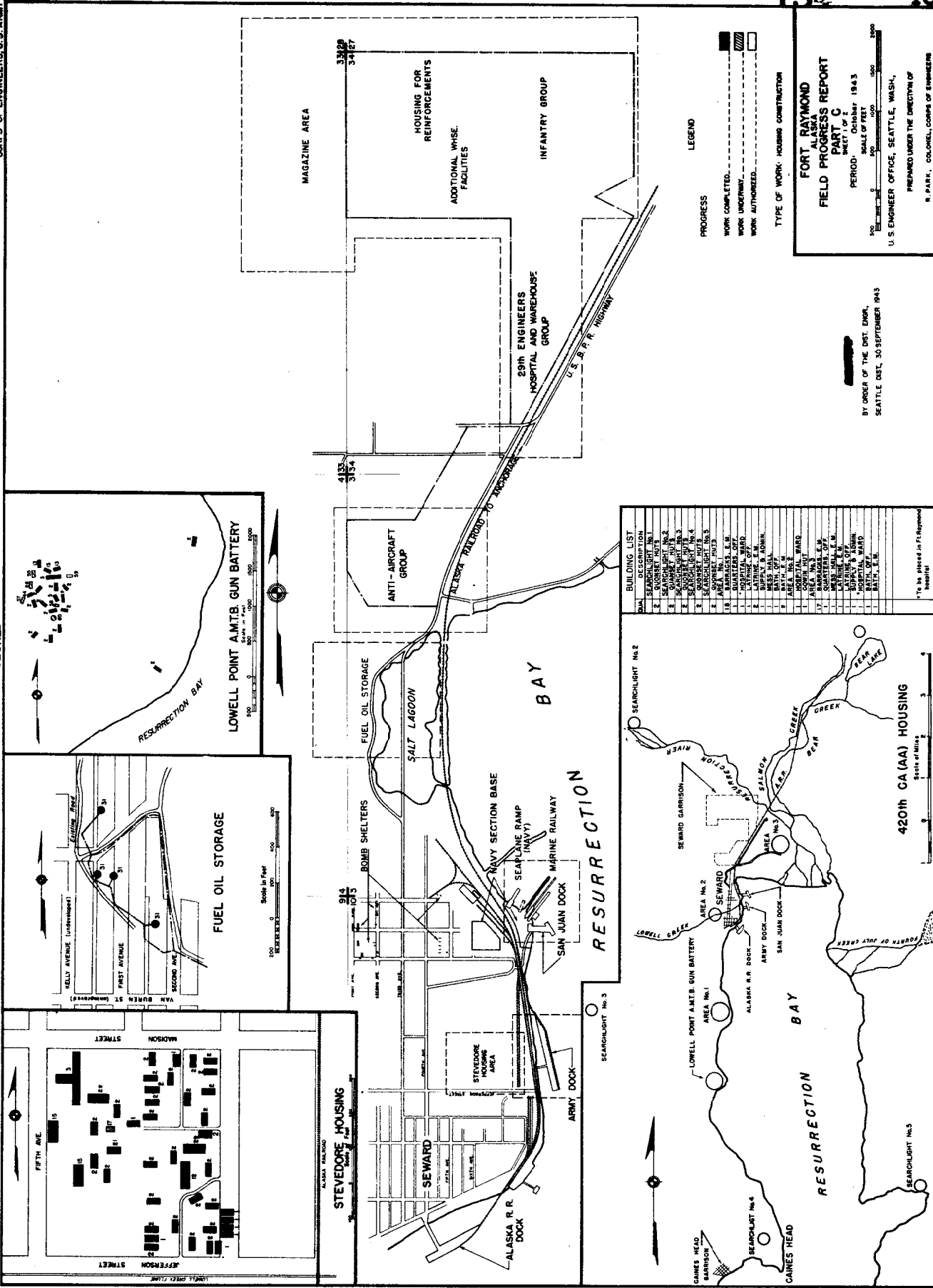
Housing sufficient to accommodate 171 officers and 3,278 enlisted men was authorized for various units of Infantry, Quartermaster, Military Police, Medical Corps, Coast Artillery (harbor defense and anti-air-craft), and Engineer regiments. Mobilization, Quonset hut, T/O, and CCC-type construction were provided for the various units. Other housing, together with the necessary technical installations and utilities, were provided for the outlying harbor defense batteries under subsequent directives. In addition, harbor facilities and improvements, consisting of the rehabilitation of the San Juan Dock centrally located in the Seward Harbor waterfront, construction of the Army dock, 90' by 830', and construction of a complete marine ways were authorized. Alterations to the San Juan dock and installation of facilities to handle the discharge of fuel oil from tankers in the harbor to storage tanks distributed in the town area were constructed. Construction of the Army dock located south of the San Juan dock included two each 45' by 210' transit sheds, depressed tracks extending to the end of the transit sheds, and two crossovers on the dock track to expedite

the unloading and trans-shipment of cargo by rail into the interior of Alaska. A 22 ton stiffleg derrick has been installed on the south end of the Army dock to accommodate the loading of heavy equipment. A marine way designed to accommodate a 500 ton vessel 175' long was subsequently authorized, together with repair facilities consisting of the following: Hoist house, machine shop, steel fabricating shop, pipe, sheet metal and electric shop, carpenter shop, paint shop, riggers loft and a riggers storage. Water, electrical distribution, sewer and road systems were also included in the construction program. In addition to the city water system, three driven wells were provided in the Fort Raymond garrison area, each with a capacity of 400 gallons per minute. Due to power demands for the garrison and the harbor facilities it was necessary to install three 200 KW power units in Seward, transmission lines were installed to the post proper where four 200 KW units were installed. The completed project provides 75,061 square feet of warehouse space, 58,615 cubic feet of cold storage space and 4,630 square feet of ordnance warehouse space. These figures do not include space designated for specific purposes for the hospital, transit sheds, etc.

The initial construction camp, as well as succeeding construction for the Fort Raymond garrison, was completed by U.S.E.D. hired labor under the jurisdiction of a Resident Engineer, augmented by some of the newly arrived Engineer units. Resident Engineers were Captain Burford M. Tanner, Mr. Tauf Charneski, Mr. James B. True, Major Judson W. Clark, and Major H. G. Sheldon.

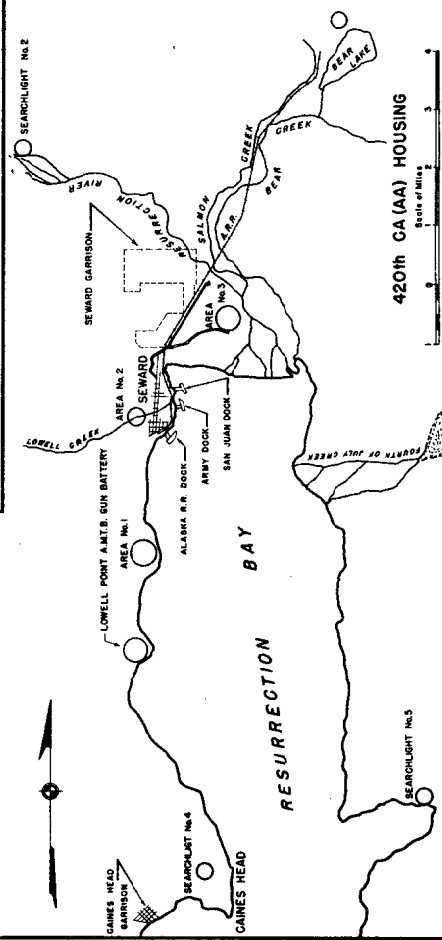
No serious difficulties were encountered in the construction of the various features.

The completion date of this project was set as of 1 November 1943, with an estimated cost of \$6,641,495.



**BUILDING LIST**

NO.	DESCRIPTION
1	SEARCHLIGHT No. 1
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99	SEARCHLIGHT No. 99
100	SEARCHLIGHT No. 100



**LEGEND**

PROGRESS

WORK COMPLETED

WORK UNDERWAY

WORK AUTHORIZED

TYPE OF WORK - HOUSING CONSTRUCTION

**FORT RAYMOND**  
ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
PERIOD: 1st October 1943  
SCALE OF FEET  
100 200 300 400 500 600 700 800 900 1000

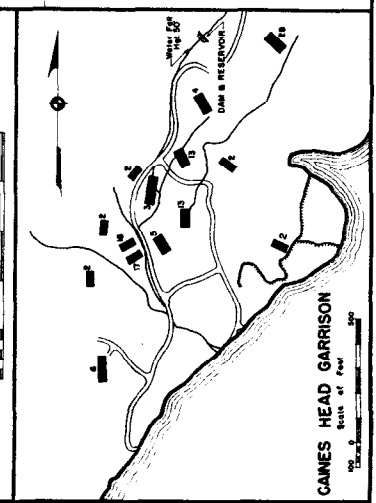
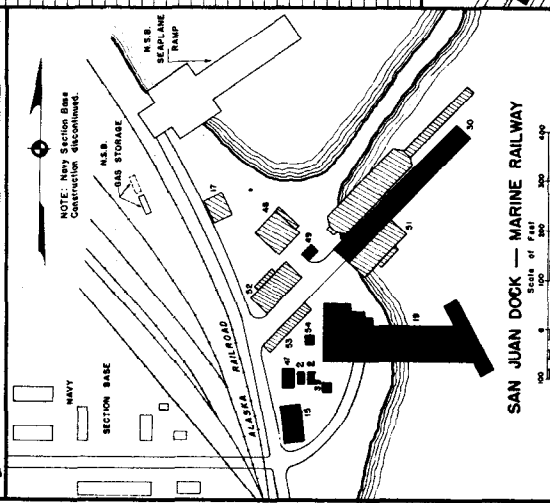
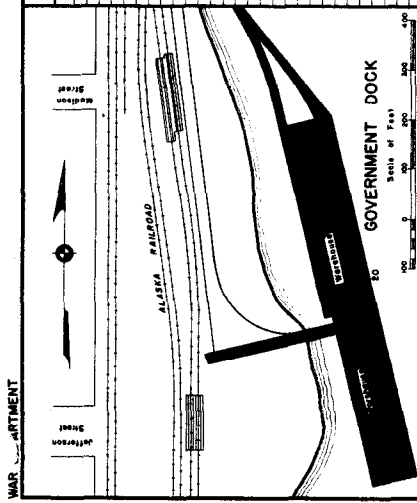
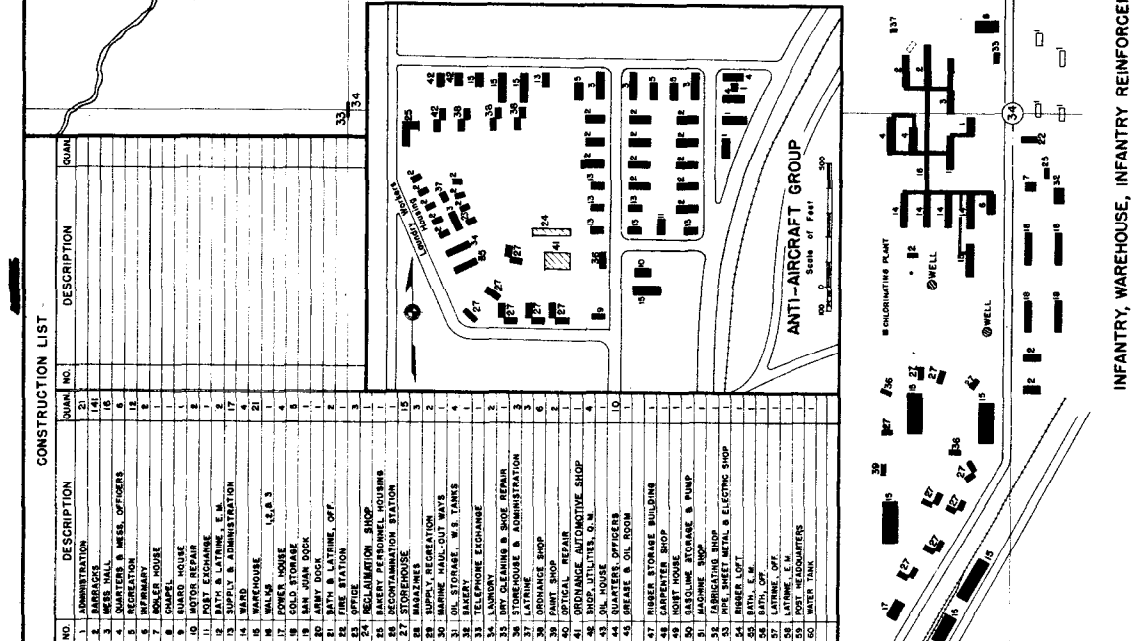
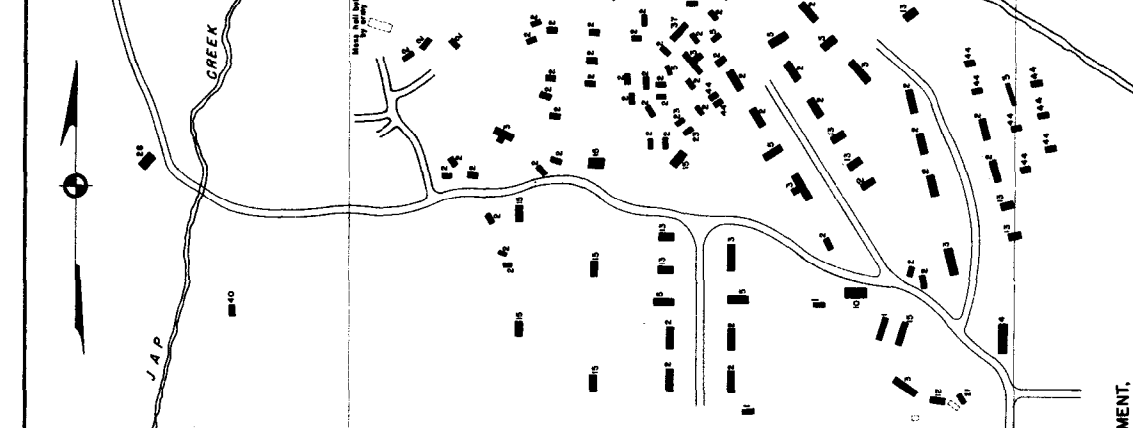
U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR,  
SEATTLE DIST, 30 SEPTEMBER 1943

To be placed in Field Progress Report

CORPS OF ENGINEERS, U.S. ARMY

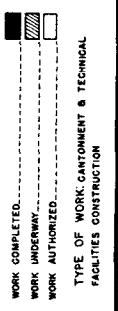
FORT RAYMOND  
ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 1 OF 2  
PERIOD: October 1943  
SCALE AS SHOWN  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS



CONSTRUCTION LIST

NO.	DESCRIPTION	QUAN.	DESCRIPTION	QUAN.
1	ADMINISTRATION	21		
2	BARBERSHOP	1		
3	BARBERSHOP	1		
4	BARBERSHOP	1		
5	BARBERSHOP	1		
6	RECREATION	1		
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INFANTRY, WAREHOUSE, INFANTRY REINFORCEMENT, HOSPITAL, 29th ENGINEERS, AND MAGAZINE AREA



BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPTEMBER 1943

## JUNEAU PORT PROJECT

In order to provide an immediate temporary barging terminal, pending construction of the Alaska Barge Terminal at Excursion Inlet, it was necessary to expand port facilities at Juneau. The dock and storage space would later supplement the main facilities.

Authority for the project is contained in the 2nd indorsement from the Commanding General, Western Defense Command, to the Division Engineer, Portland, Oregon, 26 July 1942, subject: "Sub-port of Embarkation, Establishment of Temporary Barging Terminal, Juneau, Alaska."

Original directives provided for construction of an extension to the existing government dock, replanking and widening the existing wharf from 40' to 100', and increasing the length from 600' to 800', construction of a barge grid 45' by 335' and an apron to facilitate unloading of barges; construction of a warehouse to provide 65,000 square feet of covered storage space; placing fill for open storage adjoining dock and warehouse; installation of a 30 ton stiffleg derrick on the dock; repairing and altering existing buildings to provide additional warehouse space and office space for the port operating personnel. Subsequent approved features consisted of construction of a two-lane access road from the open storage area to Willoughby Avenue (an adjacent street), rehabilitation of the Fenner warehouse adjoining the dock extension, alteration of a plumbing supply building as a utilities shop, and construction of an open storage area of 15 acres, together with an unloading ramp and a system of tie-up dolphins and

piles for mooring barges at a location one mile south of the main terminal. In connection with the dock and warehouse features, water and electrical distribution systems were installed as required.

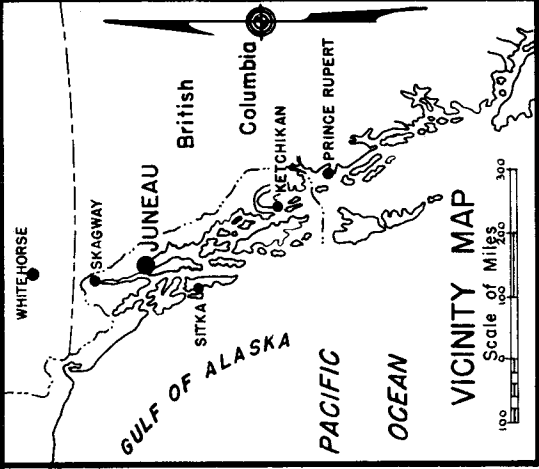
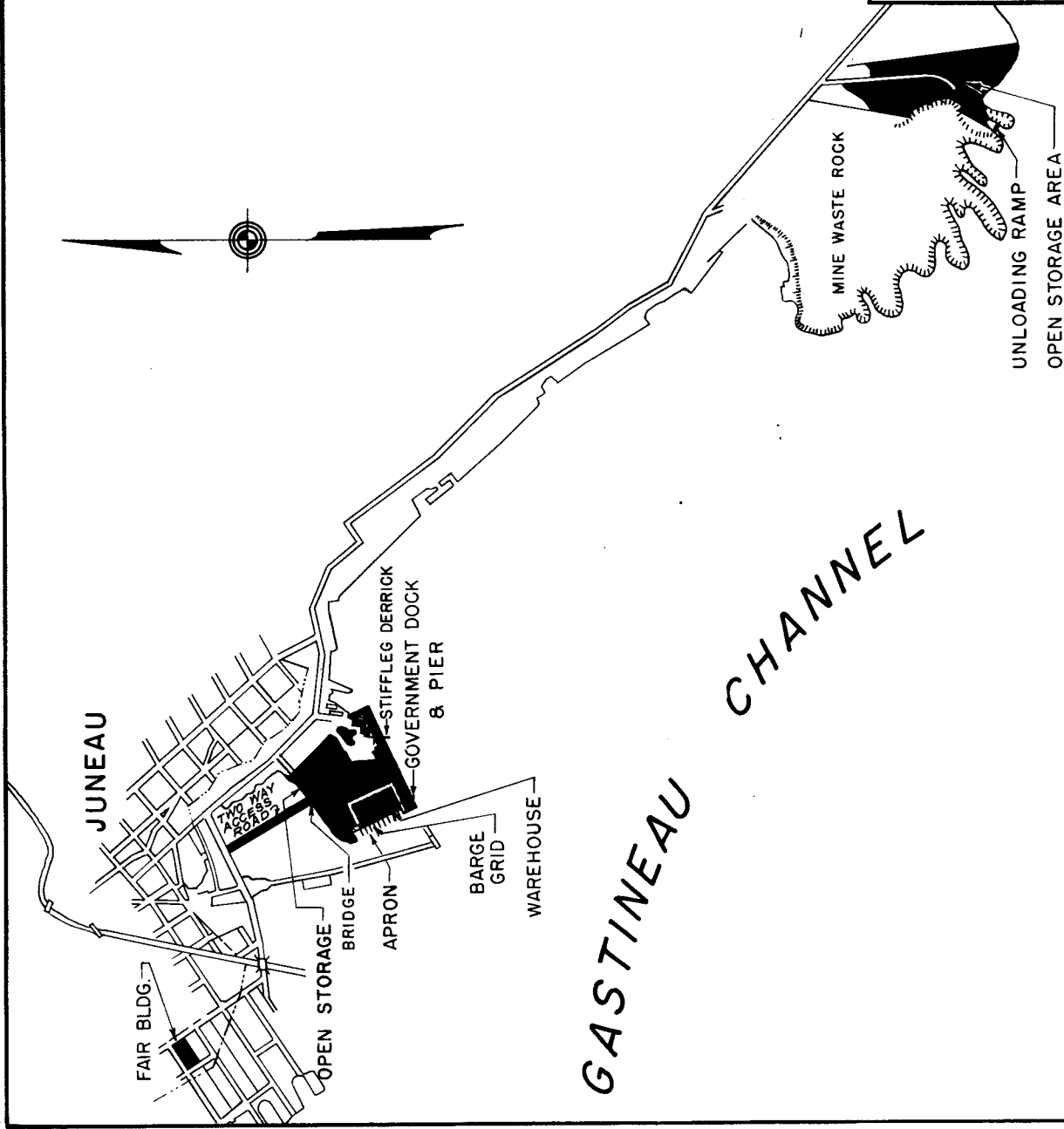
Alterations and rehabilitation of the wharves proceeded as planned, with repair work conducted in such a manner that wharf frontage and space was available at all times for berthing of ships and handling of cargo. Filling of the area for open storage was continued, portions of the area being made available for cargo storage as filling progressed. Work on the warehouse proceeded somewhat slower than has been anticipated, but it was completed and ready for occupancy 10 April 1943. Original plans provided for a warehouse to be built on open piles with wood floor; however, solid fill under the building with reinforced concrete floors throughout was authorized. Installation of the 30 ton stiffleg derrick was completed 17 December 1942.

Initial work on the open storage fill area was initiated 2 July 1942. First surveys and planning were accomplished by field parties under the supervision of the District Engineer, Seattle. Mr. James W. Huston was Resident Engineer for the construction.

The outstanding factor hindering work on all features was the delay in shipping needed materials to the project.

The project was completed 10 April 1943, and all features were transferred to the Commanding Officer, Juneau Sub-port of Embarkation.

The completed facilities include 105,800 square feet of warehouse storage space, 352,900 square feet of open storage area, 80,000 square feet of dock space, and office space sufficient to care for the needs of the operating personnel. Approximate cost of the project was \$1,500,500.



██████████

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., APR. 30, 1943

### LEGEND

#### PROGRESS

- WORK COMPLETED ██████████
- WORK UNDERWAY - - - - -
- WORK AUTHORIZED ▨▨▨▨▨▨

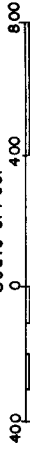
#### TYPE OF WORK: Port Expansion

## JUNEAU PORT EXPANSION JUNEAU, ALASKA FIELD PROGRESS REPORT PART C

SHEET 1 OF 1

PERIOD: APR. 1 - 30, 1943

Scale of Feet



U.S. ENGINEER OFFICE, SEATTLE, WASH., APR. 1943

PREPARED UNDER THE DIRECTION OF

R. PARK, COLONEL, CORPS OF ENGINEERS

159

## SEWARD FIXED HARBOR DEFENSES

The Seward Fixed Harbor Defenses provides for the construction of Army garrisons at Caines Head and Rugged Island, together with fixed harbor defense installations for the defense of Resurrection Bay and the Port of Seward. Seward, an Ocean terminal of the Alaska Railroad, is located at the head of Resurrection Bay. The fixed harbor defenses were constructed on the north slope bordering this bay and on the islands at its mouth.

Authority for the construction of Seward Fixed Harbor Defenses was by 1st indorsement dated 13 September 1942, from the Western Defense Command to the Chief of Staff, U. S. Army, to basic letter dated 27 July 1942, from the Alaska Defense Command to the Western Defense Command, subject: Project Report, Harbor Defenses of Seward.

Fixed defense installations include 6" batteries located at Caines Head and Rugged Island together with searchlight positions and supporting fire control appurtenances and necessary housing at Rocky Point, Topeka Point, Carol Cove, Chamberlain Point, Barwell Island and Alma Point. Seacoast radar installations have been provided for at Patsy Point and South Beach. Four high lines have been installed at Barwell Island, Chamberlain Point, Carol Cove and Alma Point for construction and maintenance purposes. Facilities were planned for 40 officers and 787 enlisted men. Docking facilities include one small boat pile driven dock 40' by 100' at

North Beach and two barge landings (rock crib construction) at Mary Bay and Topeka Point. Outpost and garrison roads ( $7\frac{1}{2}$  miles) were approximately 85 per cent complete in October 1943.

Construction of the fixed defense installations at Seward began on 20 July 1942 under Contract W-869-eng-6917 by the West Construction Company, with civilian forces under the jurisdiction of Captain Burford M. Tanner, succeeded in turn by Mr. Tauf Charneski, Mr. James B. True, Major Judson W. Wark and Major H. G. Sheldon.

The construction of concrete buildings for the Alaska fixed defenses at isolated points, inaccessible at times by water transportation, together with difficulties in getting materials to construction sites located in faces of cliffs and mountain tops, has taxed engineering and construction skill as well as requiring the best of equipment. Lack of adequate shipping facilities, materials and equipment, together with scarcity of manpower have materially delayed the work.

Barwell Island, Rugged Island, Topeka Point, Rocky Point and Caines Head, all in the vicinity of Seward on the southern coast of the Alaska mainland, are predominantly granite, rising abruptly out of deep water and terminating in precipitous points and escarpments. This is typical of the entire coastline near Seward on Resurrection Bay. In fact, it is so rugged and formidable as to preclude the possibility of landing and sustaining troops in any force, without very elaborate preparations, equipment and

supply lines. It is even difficult and hazardous to land a survey party except during calm weather and during certain stages of the tide. The places where such landings can be made are few. The most difficult place to effect a landing is on Barwell Island. This is a very small island composed of a mass of steep, bald-faced granite mountain peaks, surrounded by deep water right up to its edges. This is one place where a man, if he is agile and somewhat skilled in mountain climbing can make a landing from a skiff, and using both his hands and knees climb to the top. Construction on this island was started by landing one man with a rope and life jacket. Air for the first rock drilling came from a compressor operated on a barge. A high line was installed as the means of unloading equipment, materials and supplies from barge to island. Since this island is exposed to all the fury of storms in the Gulf of Alaska, all such operations were confined to both good weather and calm water.

Battery 293 is located near the eastern limits and on the highest point of Caines Head, with an elevation of approximately 675 feet, eight miles south of Seward, Alaska, on the west shore of Resurrection Bay. Battery 294 is located on the southernmost extension of Rugged Island on Resurrection Bay, at an elevation of 750 feet, eighteen miles south of Seward. The surface of Rugged Island is composed of large, irregular shaped granite boulders tightly wedged but with noticeable interstices between, with little or no top soil. The boulders range in size from one half to 100 or more

tons.

There was no satisfactory landing beach in Mary Bay, so the contractor had to operate jack-hammers from a compressor setting on a barge anchored in the bay, to excavate a landing area for his materials and equipment. Land transportation was most difficult due to the steep and rugged character of the terrain. Therefore, all materials, equipment and supplies had to be lifted from water level to elevation of approximately 750 feet by a tramway system. Most equipment had to be delivered piece-meal from Seward to the job site and reassembled. They were dragged up the slope, using the tramways and a 50-ton hoist. The West Construction Company constructed one leg of the tramway system from the beach to the warehouse area and the other leg from this point to the battery site.

To obtain aggregate for concrete and road surfacing, the contractor constructed a rock crusher at the battery site. Water was obtained from McAllister Valley and pumped to concrete batching plants located at the HDCP and battery areas. Since it was well nigh impossible to install a water line from McAllister Valley to the storage tanks at the garrison areas, due to exorbitant construction costs as well as adverse terrain conditions, a special barge was ordered and used to haul water from the beach off McAllister Valley to the contractor's crib dock for pumping into tanks at the beach and at the HECF and battery garrisons.

In comparison with Rugged Island, construction for the Caines Head Battery was somewhat simple, although the West Construction Company had to pioneer a winding road from North Beach to the battery site before blasting operations could be started for the massive concrete construction. Aggregate for construction and road surfacing was obtained from South Beach where the contractor set up a screening plant. However this supply had to be supplemented by aggregate which was barged from Thumb Cove, across the Channel from Caines Head.

All cement, construction equipment, gun carriages and the 42-ton cast steel gun shields had to be barged from Seward to the various job sites. Concrete aggregate as well as water had to be barged to Barwell Island, Chamberlain Point, Carol Cove, Alma Point and Topeka Point, where they were hauled to construction sites using high lines.

Construction for the fixed defenses has been difficult, expensive, and hazardous. Water transportation presented the most hazardous problem due to frequency and suddenness of storms, deep water, and rugged coastline where no beaches are available to provide facilities for the rapid and easy unloading of cargo.

Field estimates indicate February 1944, as the anticipated completion date for all work. Estimated cost of construction is \$4,727,000.

## FORT MORROW PROJECT

Fort Morrow is located about 200 miles northeast from Cold Bay at Port Heiden, on the Bristol Bay side of the Alaska Peninsula. The Civil Aeronautics Administration made some location surveys for a landing field in this locality, prior to the national emergency, and the data gathered was furnished to the Army for their use. The first reconnaissance at Port Heiden was made during January 1942, with a view to establishing an airfield with the necessary protective garrison on the Bristol Bay side of the Alaska Peninsula, and to form a part of the air defense of the Naval Base at Dutch Harbor and of Alaska. The recommendation made upon completion of the survey was to establish a landing field with the necessary attendant garrison and facilities for 15 officers and 439 enlisted men. Funds in the amount of \$1,475,198 were requested for immediate construction needs. The location of this landing field forms a vital link in the air defense of the Naval Base at Dutch Harbor, and of Alaska.

Fort Morrow was authorized in a letter from the Adjutant General to the Chief of Engineers, dated 31 December 1941, subject: "Program for additional Construction in Alaska."

The job provides for the construction of a new garrison and staging field, and actual construction began in July 1942. The program called for cantonment buildings, docking facilities, and storage of aviation gasoline in drums. The program provided housing, hospital facilities, 46,880 square feet of warehouses, 36,000 cubic feet cold storage, a Kodiak "T" hangar with the technical facilities to

provide Air Corps operation and maintenance. The E/W runway was increased from the original 5,000' by 150' to 7,500' by 500' and the N/S runway is now 5,000' by 400'. The harbor facilities consist of a barge dock 45' by 210' with an approach that is 30' by 325'. Owing to the shallow water extending out from the beaches, it was necessary to use barging operations in handling shipments.

The construction was carried out by Government plant with troop and hired labor.

Resident Engineers at Fort Lorrow have been Captain John L. Baum, C.E., Lt. A. L. Donaldson, C.E. and Lt. Cral B. Dold, C.E.

Blizzards and below zero temperatures caused the ground to freeze to a depth of 30", retarding the progress of runway construction.

The unloading of supplies and equipment from transport vessels some four miles distant from shore, and their resulting lighterage operations, were handicapped by frequent high winds and low temperatures. Transports arriving during the fall season often could not unload, due to the freeze-up of the bay. The water-borne freight could be delivered during 6 months of the year only. This considerably delayed construction of the entire project. Due to the floating ice blown in from Bristol Bay, one barge dock was destroyed; however, it was rebuilt during the summer of 1943.

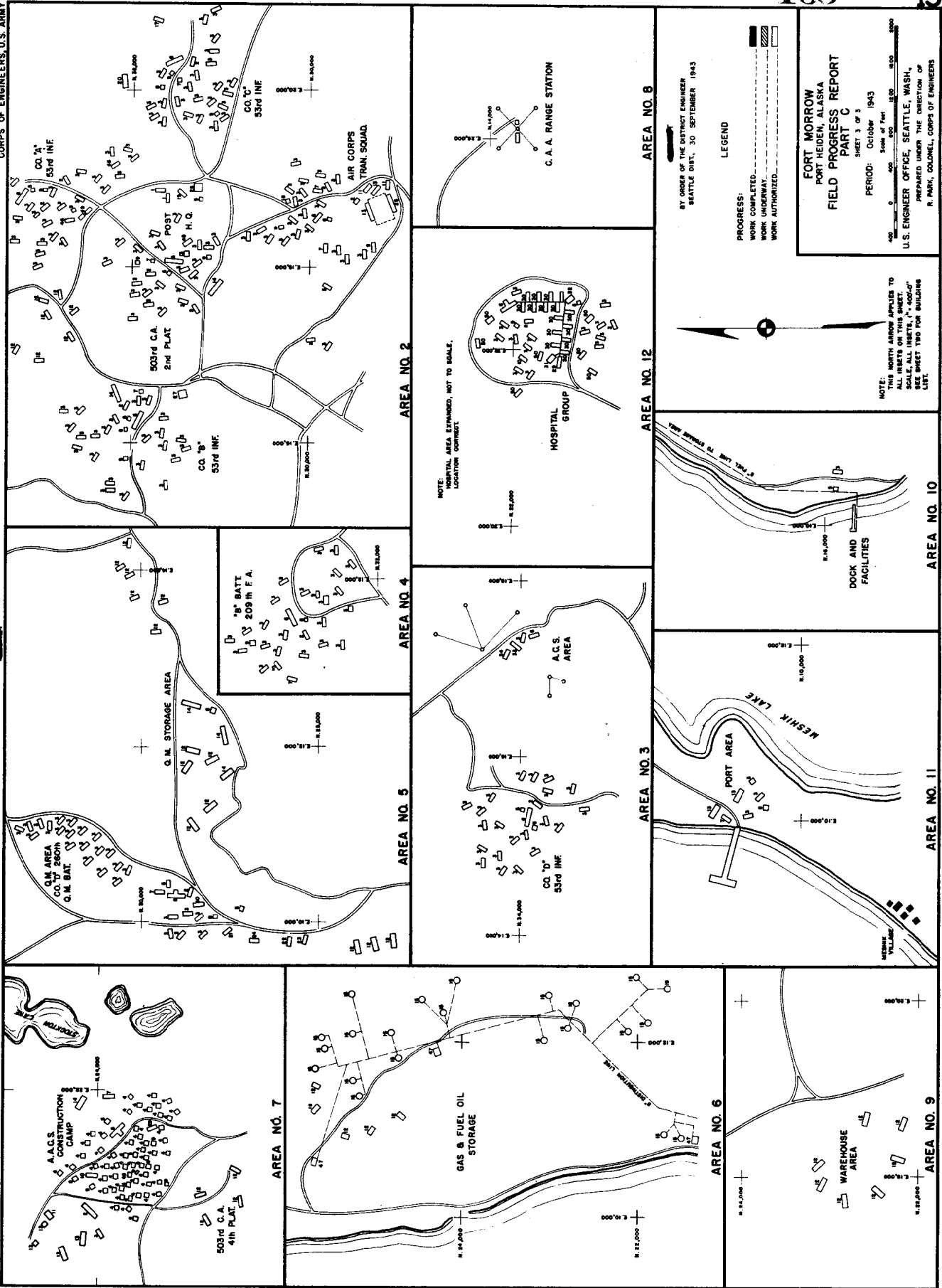
Due to a considerable reduction in the authorized garrison strength, a curtailment program was initiated during the summer of 1943, eliminating various authorized features, and the completion date for the entire project (with minor exceptions) was estimated to be 1 December 1943. The approximate cost of the project was \$5,575,971.





CORPS OF ENGINEERS, U.S. ARMY

WAR DEPARTMENT



## EXCURSION INLET PROJECT

The Excursion Inlet project (Alaska Barge Terminal) was to provide a transshipping point at the northern terminus of the Seattle, Prince Rupert, Icy Strait barge line and to shorten the haul of ocean-going ships carrying cargo to southwestern Alaska ports of Dutch Harbor, Kodiak and the Aleutian outposts. Thus a vast amount of cargo previously hauled by ocean vessels direct to these ports from the States could be handled by barges to Excursion Inlet from which port it could be loaded direct to transports, and the travel of transports could be materially reduced in time and number and shipments expedited to the various distant ports. The coast of southeastern Alaska is indented with many inlets, one of which is Icy Straits approaching the port of Juneau. An arm of this Strait is known as Excursion Inlet. The Alaska Barge Terminal was to be constructed at the head of this Inlet.

This project was authorized by the Western Defense Command in 1st indorsement dated 31 July 1942 to basic letter from the Seattle Port of Embarkation to the Western Defense Command dated 26 July 1942, subject: Sub-Port of Embarkation, Icy Straits.

Upon completion of the necessary surveys, preliminary plans were made to construct a transshipping terminal on the east shore of Excursion Inlet in Icy Straits about midway between Juneau and Cape Spencer (on the Gulf of Alaska) suitable for accommodating 9 ocean vessels. In accordance with these plans, the District Engineer

effected a Cost-Plus-a-Fixed-Fee contract with Guy F. Atkinson Company of San Francisco, 3 August 1942, in the estimated amount of \$18,059,000 for construction of facilities consisting of the following: 3 separate dock units 100' by 1,000' each with 3 ramps (2 of the dock units to be provided with a 100' by 400' and a 40' by 140' grid barge dock), 8 transit sheds, 6 cold storage buildings, an ordnance dock with 4 warehouses, 2 oil docks and 530,000 square feet of open storage area adjoining dock units; a bunker oil, fuel oil and gas tank farm area with a capacity of 1,500,000 gallons; a 70 ton stiffleg derrick on one ship dock with mobile cranes of 20 ton and 45 ton capacities on the other two dock units; and housing for the port operating and protective garrison personnel including a 200 bed hospital, utilities, communications, roads and other facilities for a minimum of 2,500 officers and enlisted men originally contemplated for this project. A subsequent directive authorized the construction of marine repair facilities, housing and other facilities incidental to the increased operating and protective garrison of 210 officers and 3,520 enlisted men.

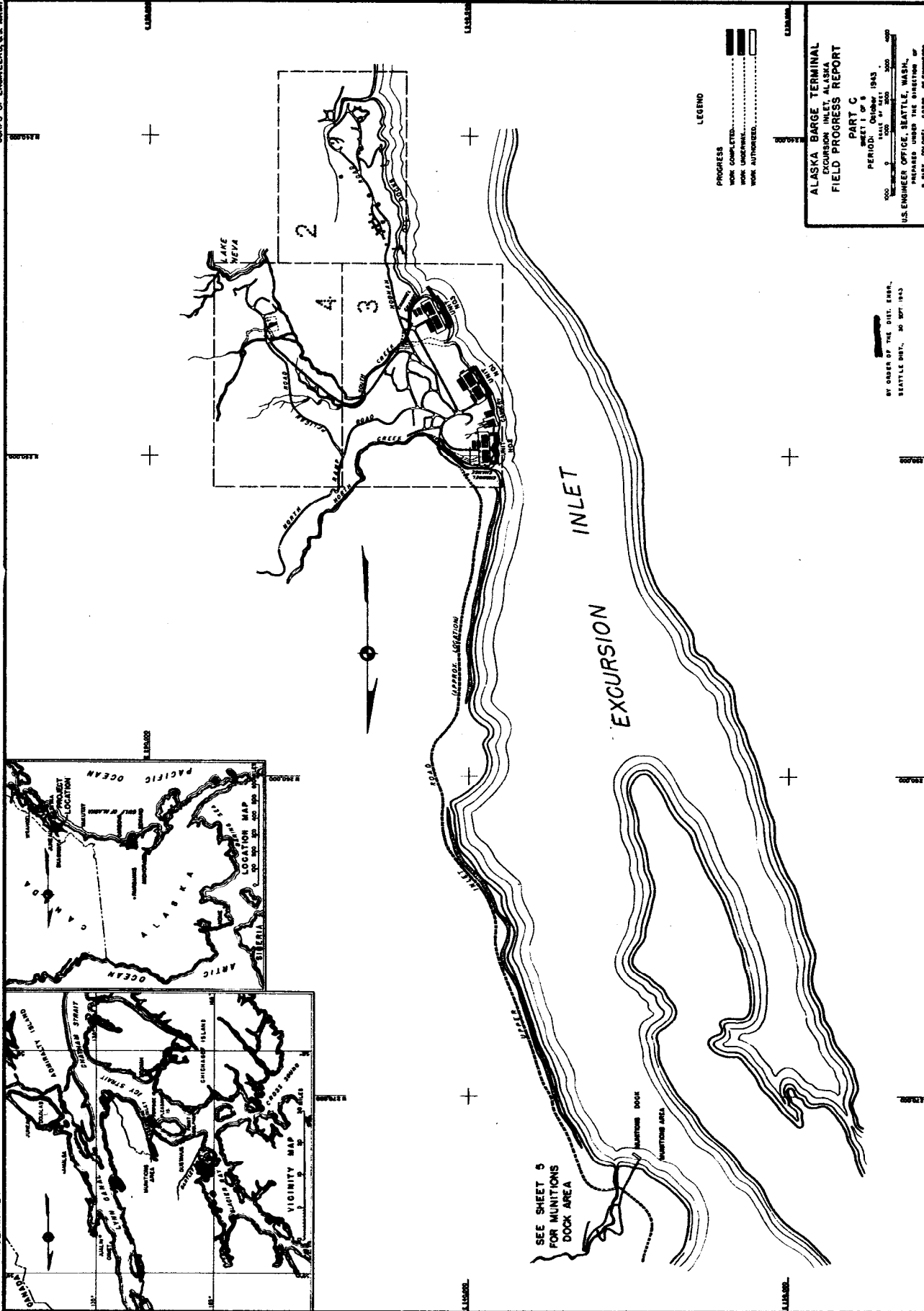
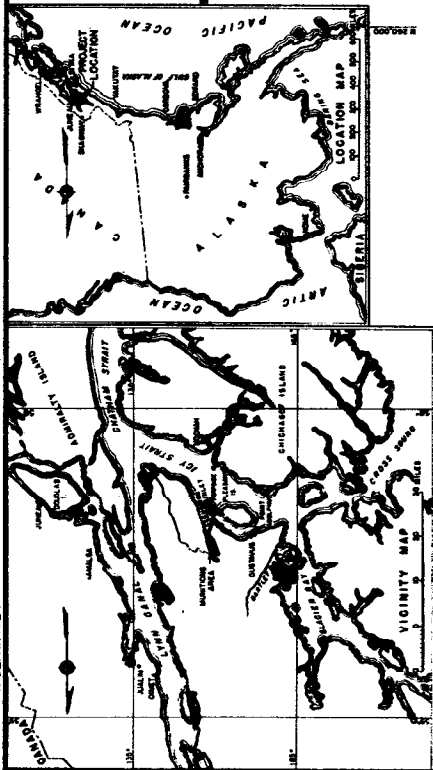
Contractor forces started work on the project 25 August 1942 with work concentrated on the ship and barge docks in order to utilize these features as soon as possible. Cold storage and warehouse facilities were constructed at the dock units to care for the storage of cargo for transshipment. In view of the continuous use of untreated piling over a period of sixteen years by the adjacent Astoria-Puget Sound Cannery, all piling used for the

barge and ship docks was untreated. Material locally available and easily accessible from southeastern Alaska mills was utilized. In addition, two small sawmills were erected and operated continuously by the Engineer troops at the site, cutting lumber from adjoining forests and furnishing the project with considerable rough lumber. The 331st Engineer Regiment (GS), under command of Colonel Roy W. Leibsle, CE, was used for the construction of most of the protective garrison housing, hospital construction and other miscellaneous utilities work, roads, and bridges. At the peak of construction in March 1943, a crew of 2,760 contractor forces and 850 officers and enlisted men was employed at this project.

No unusual difficulties were encountered in the construction of the ship dock units or other industrial features.

Major K. T. Klock, CE, was the Resident Engineer until his transfer to the Ft. Glenn project 1 November 1943. He was relieved by Captain Reginald L. Dicks, CE.

The project was substantially completed on 15 November 1943, requiring fifteen months for construction. The estimated cost was \$17,300,000.



LEGEND

PROGRESS

WORK COMPLETED.....

WORK UNDERWAY.....

WORK AUTHORIZED.....

ALASKA BARGE TERMINAL  
EXCURSION INLET, ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 1 OF 4  
PERIOD: October 1943  
SCALE OF FEET  
0 100 200 300 400 500 600 700 800 900 1000

BY ORDER OF THE DIST. ENGR.  
SEATTLE DIST., 30 SEP 1943

SEE SHEET 5  
FOR MUNITIONS  
DOCK AREA



8-144-002

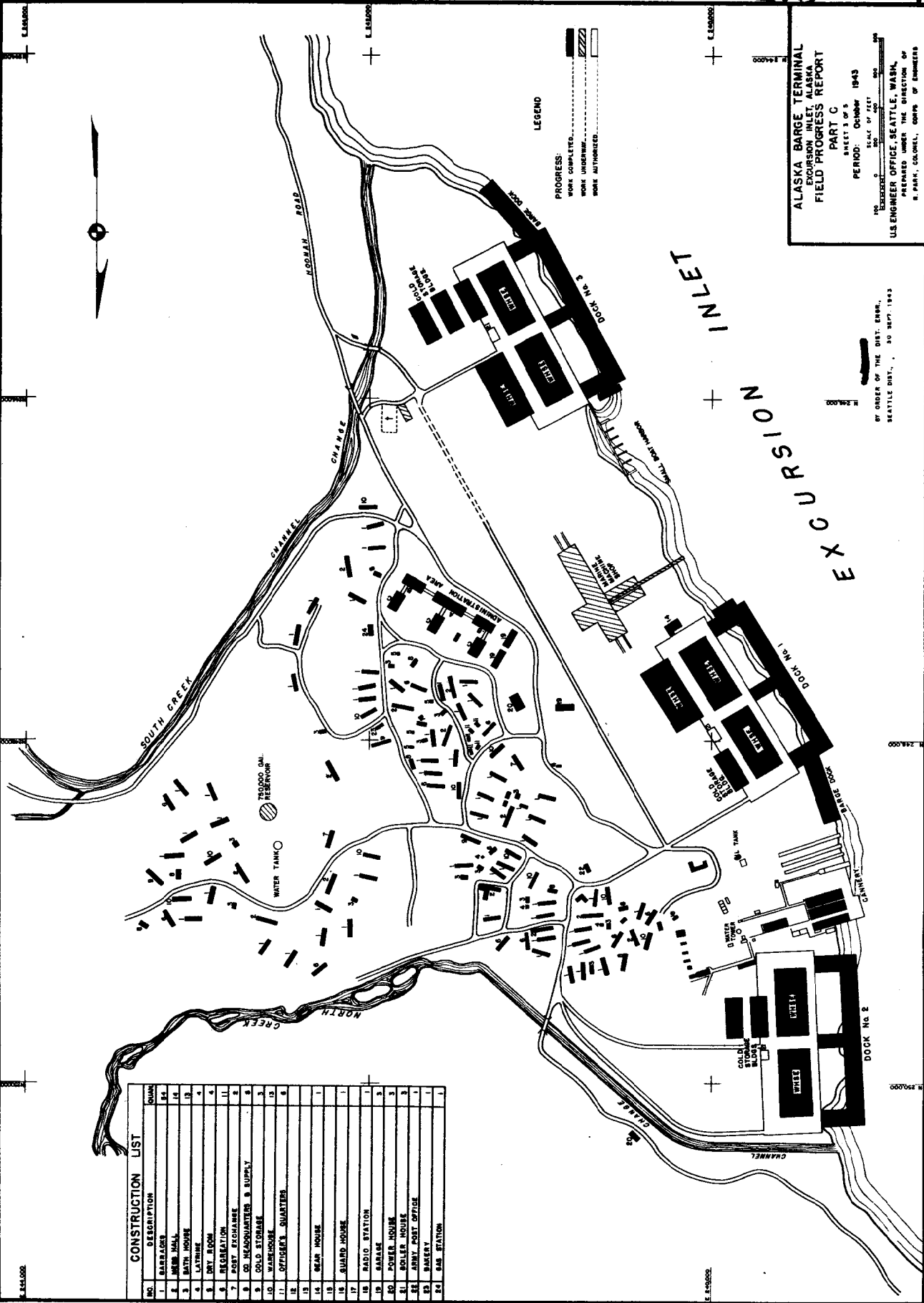
LEGEND



CONSTRUCTION LIST

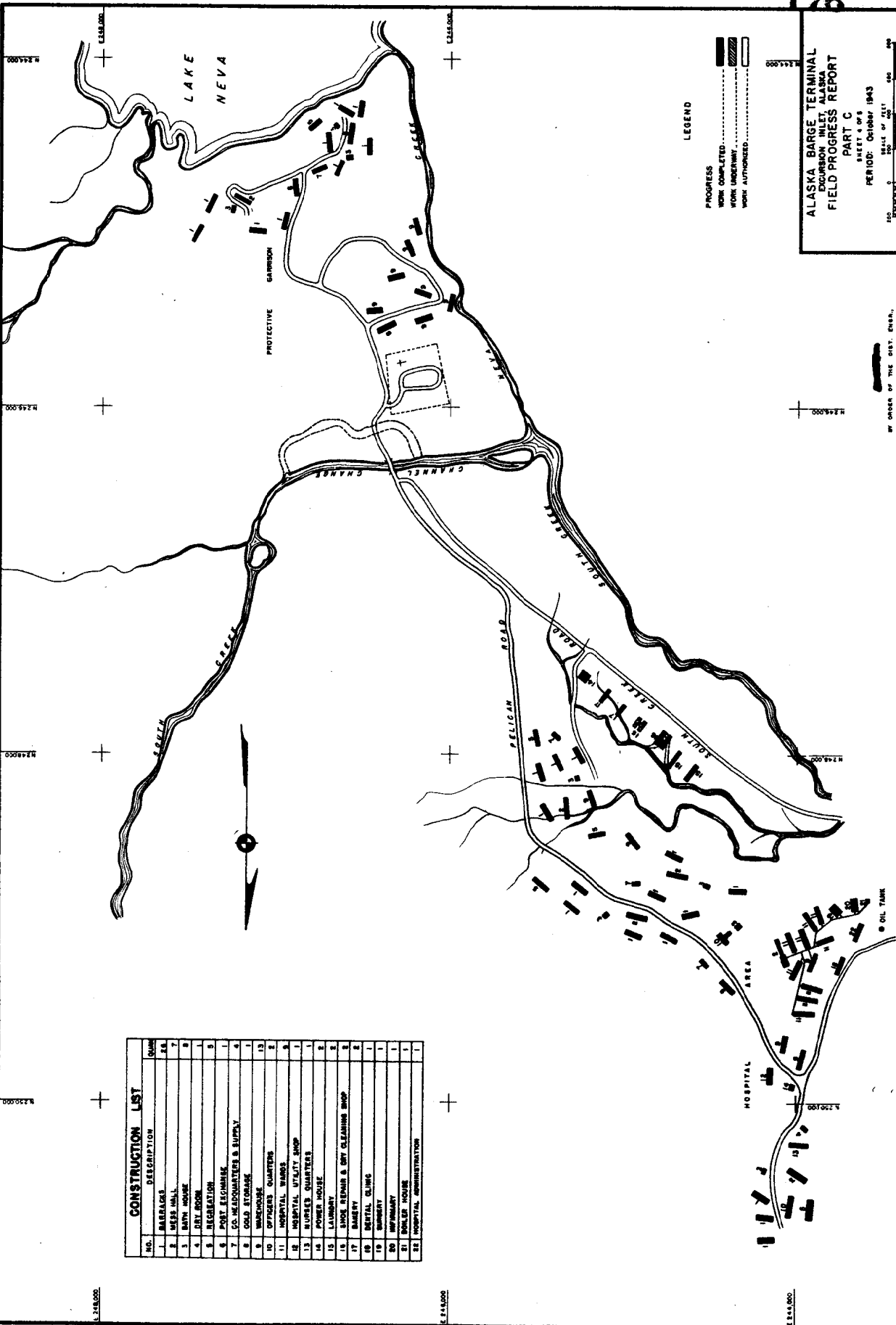
NO.	DESCRIPTION	STATUS
1	BARRACKS	24
2	WATER TANK	14
3	BATH HOUSE	19
4	LATHING	4
5	DRY ROOM	4
6	REGIMENT	11
7	POST EXCHANGE	8
8	CO HEADQUARTERS & SUPPLY	8
9	COLD STORAGE	3
10	WATERHOUSE	13
11	OFFICER'S QUARTERS	6
12		6
13	SEAR HOUSE	1
14	GUARD HOUSE	1
15	RADIO STATION	1
16	CHANGSE	3
17	POWER HOUSE	3
18	ROLLER HOUSE	3
19	DRY POST OFFICE	1
20	BAKERY	1
21	BAR STATION	1

LEGEND  
 PROGRESS:  
 WORK COMPLETED  
 WORK UNDERWAY  
 WORK AUTHORIZED



ALASKA BARGE TERMINAL  
 EXCURSION INLET, ALASKA  
 FIELD PROGRESS REPORT  
 PART C  
 SHEET 3 OF 5  
 PERIOD: October 1943  
 SCALE: OF FEET  
 U.S. ENGINEER OFFICE SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.,  
 SEATTLE DIST., 30 SEP. 1943



NO.	DESCRIPTION	QTY	UNIT
1	BARACKS	7	EA.
2	MESS HALL	1	EA.
3	BATH HOUSE	1	EA.
4	DRY ROOM	1	EA.
5	RECREATION	1	EA.
6	POST BLOOMSB.	1	EA.
7	CO. HEADQUARTERS & SUPPLY	1	EA.
8	WAREHOUSE	1	EA.
9	OFFICERS QUARTERS	1	EA.
10	HOSPITAL	1	EA.
11	HOSPITAL WAREHOUSE	1	EA.
12	HOSPITAL UTILITY SHOP	1	EA.
13	WOMEN'S QUARTERS	1	EA.
14	POWER HOUSE	1	EA.
15	LAUNDRY	1	EA.
16	SHOE REPAIR & OIL CLEANING SHOP	1	EA.
17	BAKERY	1	EA.
18	DETAIL CLING	1	EA.
19	SUMMARY	1	EA.
20	INFIRMARY	1	EA.
21	BOILER HOUSE	1	EA.
22	HOSPITAL ADMINISTRATION	1	EA.

LEGEND

- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

ALASKA BARGE TERMINAL  
 EDCURSION INLET, ALASKA  
 FIELD PROGRESS REPORT  
 PART C  
 SHEET 4 OF 9

PERIOD: October 1943  
 SCALE OF LIST  
 PREPARED UNDER THE DIRECTION OF  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 R. PARR, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.  
 SEATTLE DIST., 30 SEPT. 1943



LEGEND

PROGRESS:  
 WORK COMPLETED: [Solid black rectangle]  
 WORK UNDERWAY: [Hatched rectangle]  
 WORK AUTHORIZED: [Dashed line rectangle]

**ALASKA BARGE TERMINAL  
 EXCURSION INLET, ALASKA  
 FIELD PROGRESS REPORT  
 PART C**

PERIOD: October, 1943  
 PREPARED BY: [Redacted]  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 E. MARK COLWELL, CHIEF OF ENGINEERS

BY ORDER OF THE DIST. ENGR,  
 SEATTLE DIST., 30 SEPTEMBER 1943

1272

4

## ADAK

The project of Adak was established primarily to construct an air base from which offensive aerial action could be carried out against the then existing Japanese installations on Kiska and Attu Islands. The location and natural harbor permitted use of Adak as a staging area for large task forces to be used in anticipated amphibious operations. Adak is the second largest island of the Aleutian group and is located approximately 400 miles west of Umnak Island and approximately 200 miles east of Kiska.

The Western Defense Command authorized construction of Adak by letter to the Alaska Defense Command dated 15 August 1942, subject: "Housing and Utilities for Construction, Ground and Air Forces. Subsequent authorizations provided for substantial garrison increases, also for more permanent technical facilities.

The initial construction program included one 5,000' fighter-bomber strip and necessary housing for air and ground forces. Shortly thereafter the program was expanded to include two 7,500' steel mat runways, necessary taxiways and revetments, 8 Kodiak T-hangars, 2 Yakutat portable steel hangars, housing for 15,000 officers and men, a 500 bed hospital and 100 miles of roads. Adak rapidly developed into the largest of Aleutian projects and authorization for additional construction continued until at present (November 1943) the construction program includes two ships docks and two lighterage docks with adjacent sorting sheds and water supply, marine barge ways, 1,500,000 gallons of Air Corps gasoline

storage, 2,000 barrels fuel oil storage, water system, electric distribution system and housing for 19,000 officers and men, in addition to facilities previously mentioned.

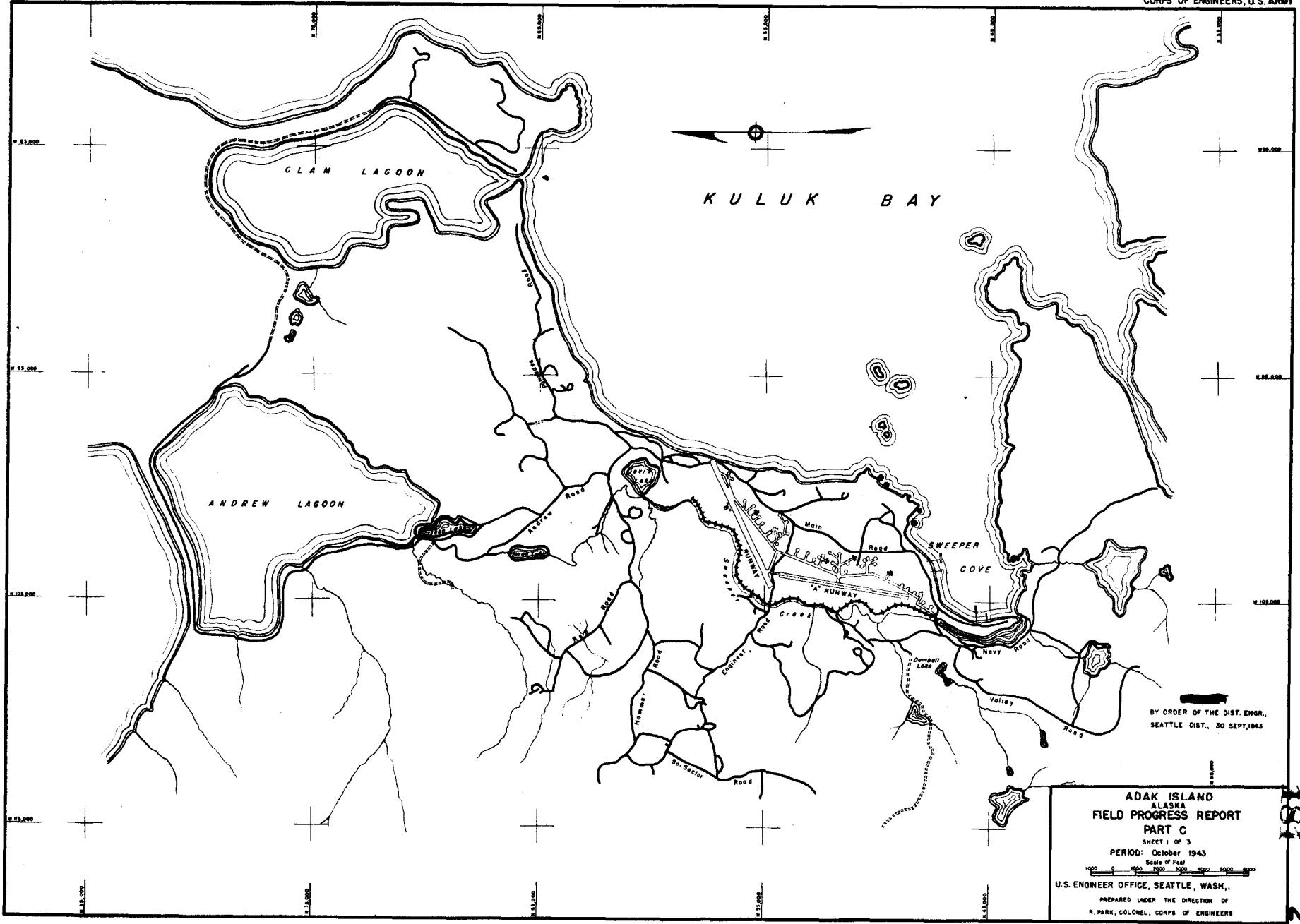
At the peak of the winter season, ships dock number 2 was constructed in the record time of 17 days. Extreme difficulties and material shortages were overcome and the dock has seen heavy service since its completion. Construction of housing, which consists primarily of prefabricated huts and T/O buildings, progressed concurrently with other features of higher priority. Only in recent months has much effort been expended toward recreational facilities such as theaters, athletic fields and gymnasiums. The first winter nearly all the men were housed in tents but it was anticipated that by the second winter all personnel would be quartered in hut-type housing with adequate bathing, hospital and recreational facilities.

Actual construction was initiated by the 807th Engineer Battalion (Aviation) on 1 September 1942, just two days after the initial landing. Army construction troops at Adak ultimately included one Engineer (GS) regiment, two Engineer (GS) battalions, one Engineer (Aviation) battalion and two Engineer companies. The first Resident Engineer was Lt. Colonel Carlin H. Whitesell, Jr., CE. He was succeeded by Colonel Lloyd C. Cross, CE. The construction at its peak employed 2,700 men. More Engineer troop personnel was employed at this project than at any other Alaska station. Construction continued simultaneously on runway facilities, hangars, roads, ware-

houses, Quartermaster repair, reclamation and cleaning facilities, quarry operation and miscellaneous construction until the garrison reached approximately 20,000 officers and men.

The rugged terrain of the island offered few locations for an airfield. The site considered the most feasible was in a tidal marshland having the general aspect of a "V". This location was a natural one for an airfield except for the fact that the tide covered the firm sand of the lagoon twice daily. If the tide could be controlled and the stream feeding into the lagoon diverged, a ready-made runway 200' by 4,200' could be had. This work was conceived and planned by Lt. Colonel L. B. DeLong, CE, and Lt. Colonel James D. Bush, Jr., CE. This was accomplished by building a dike and canal around the edge of the lagoon and erecting tidal gates near the mouth of Sweeper Creek which drains the flat area. Eventually two intersecting steel mat runways were constructed 150' wide and 6,000' and 7,800' long. The longer runway was originally made by placing the mat sections longitudinally, but this proved unsatisfactory and resulted in buckling and breaking of the steel mat. Finally, the whole runway was closed for a short period and the mat relaid in a transverse direction. Only one raid was made on the position by hostile aircraft with no resulting damage.

The Adak project estimated at \$19,686,238, is scheduled for completion by the end of 1943. However, later authorizations, including the erection of an Ordnance Field Depot and an Adak Staging Depot, postponed the completion date into late 1944.



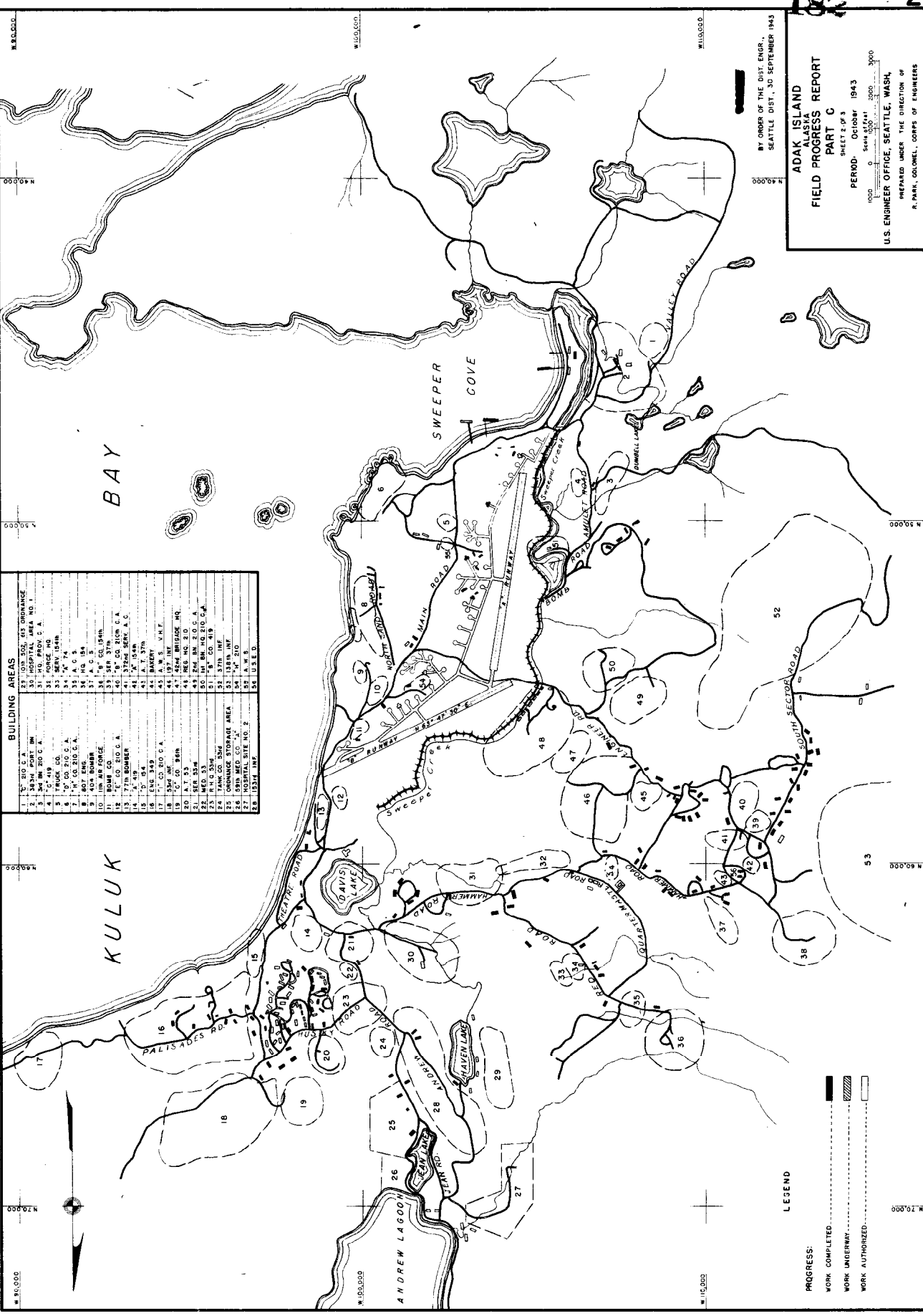
BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPT, 1943

**ADAK ISLAND**  
ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**

SHEET 1 OF 3  
PERIOD: October 1943  
Scale of Feet  
1000 2000 3000 4000 5000 6000

U. S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

101  
2



**BUILDING AREAS**

1	10" CO. C.A.
2	34" PORT. BM.
3	34" BM. 210 C.A.
4	34" BM. 210 C.A.
5	TRUCK CO.
6	10" CO. 210 C.A.
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99	10" CO. 210 C.A.
100	10" CO. 210 C.A.

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPTEMBER 1943

**ADAK ISLAND  
FIELD PROGRESS REPORT  
PART C**

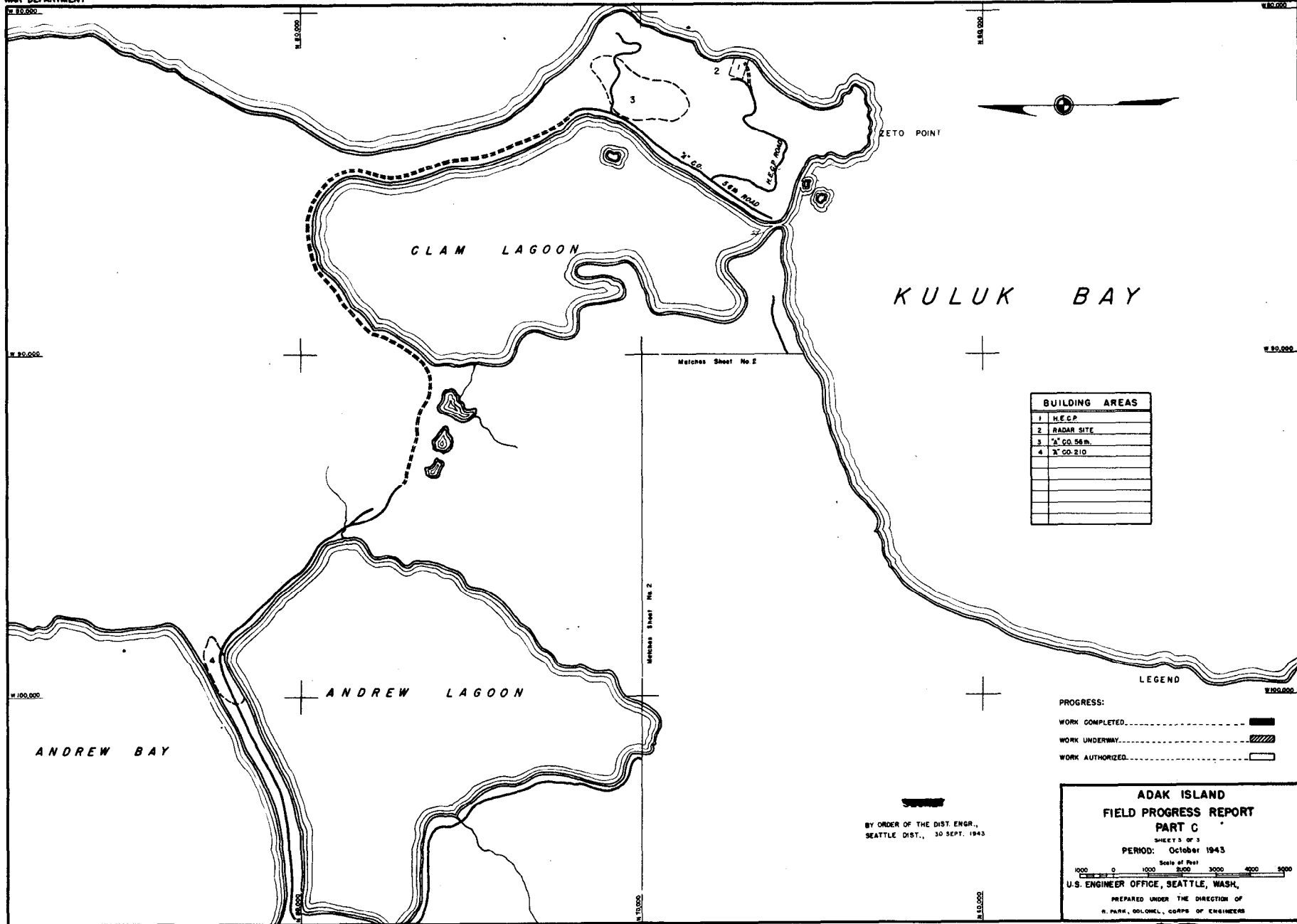
SHEET 2 OF 3  
PERIOD: October 1943

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**

PROGRESS:

- WORK COMPLETED (solid line)
- WORK UNDERWAY (dashed line)
- WORK AUTHORIZED (dotted line)



BUILDING AREAS	
1	H.C.P.
2	RADAR SITE
3	3 <sup>rd</sup> CO. 56th
4	3 <sup>rd</sup> CO. 210

LEGEND

PROGRESS:	
WORK COMPLETED.....	■
WORK UNDERWAY.....	▨
WORK AUTHORIZED.....	□

**ADAK ISLAND**  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 3 OF 3  
 PERIOD: October 1943  
 Scale of Feet  
 1000 0 1000 2000 3000 4000 5000  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 S. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.,  
 SEATTLE DIST., 30 SEPT. 1943

183  
2

## ATKA

It was intended to use Atka as a base for long-range fighter and medium bomber operations against Japanese-held Kiska. Subsequently, Adak was found better suited to these operations and Atka was maintained primarily as a way-station between Fort Glenn and Adak. Fort Glenn was the station nearest to Japanese-held Kiska at the time the Atka project was initiated. Atka is located approximately 300 miles southwest of Fort Glenn and is the largest island of the Andreanof group.

Construction was initiated at Atka upon authorization in letter dated 10 September 1942 from the Western Defense Command to the Alaska Defense Command, subject: "Materials for Cavern".

Original authorizations provided for a landing strip 150' by 3,000' with steel mat surface, taxiways and hardstandings, 50-bed hospital, lighterage dock, necessary access roads and housing utilities and all necessary facilities for 950 officers and men. Initial landings were made 17 September 1942 and construction of the runway was initiated; however, only one detached aviation company with limited TBA and Engineer equipment was available for construction and work proceeded slowly.

South of the present garrison site is the old Atka fishing village of 15 poorly constructed buildings. A makeshift lighterage dock existed at the village but was very unsatisfactory for barges of the size used by Army and Navy forces. As a temporary expedient, a barge was overturned to provide a barge dock. This proved only partially successful and could not handle the tonnages required to maintain the garrison. A lighterage dock

was proposed but never constructed. Construction of a ships dock began in August 1943 and although operations have been severely hampered by lack of tools and equipment, a civilian crew of seven men assisted by troop labor have completed approximately three-fourths of this feature. Recent shipments of material have expedited dock construction.

The 521st Engineer Company (C) arrived at the project in early July 1943, and for two months construction of roads, airfield facilities and post buildings proceeded rapidly. Prior to the arrival of the 521st Engineers "A" Company of the 802nd Engineer Bn (Avn) was engaged in all Engineer construction. From July until the present date, the 802nd Engineers have been employed solely on construction of Air Corps facilities, including runways, taxiways and revetments, hangars, and Air Corps gasoline system. Due to higher priority of other westward stations, shipping to Atka was greatly curtailed and the lack of special materials obliged Engineer troops to discontinue construction of technical facilities and erect prefabricated housing. As a result, the present garrison of 1,056 officers and men is completely quartered in hut-type housing while technical features are far behind the construction schedule.

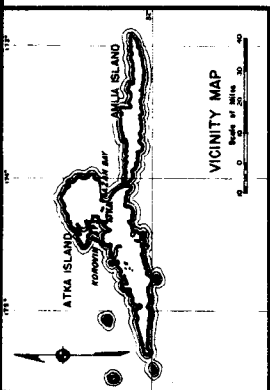
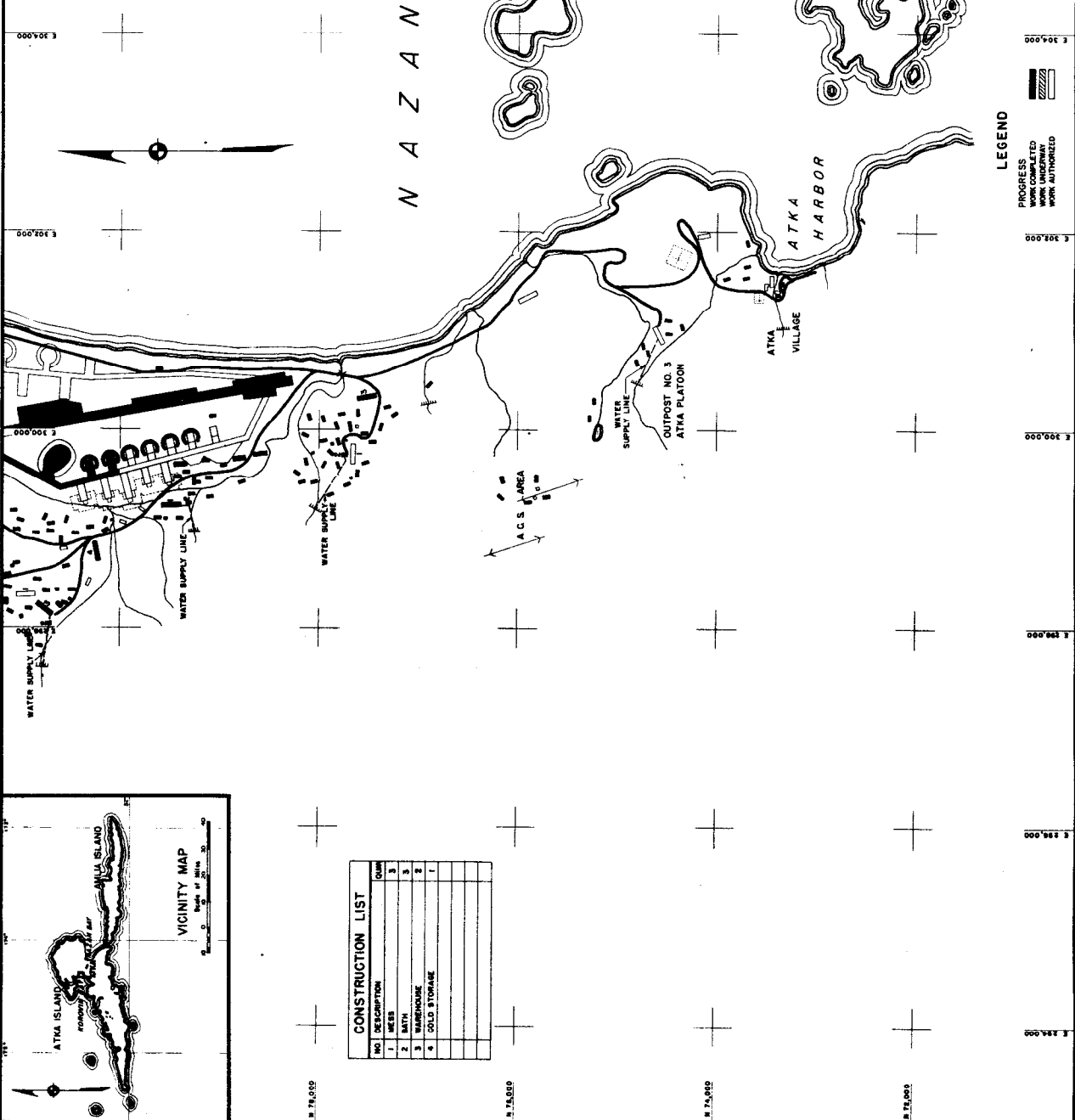
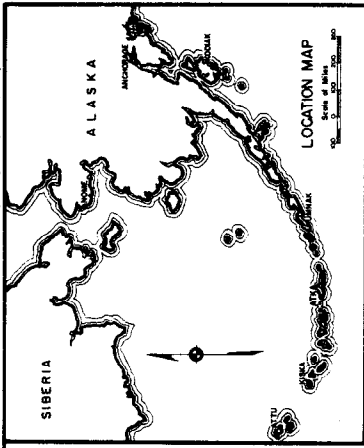
Early work was planned and supervised by Major Walter A. Faiks, CE, Resident Engineer, and in December 1942, he was replaced by Captain E. L. Caenan, CE.

Adverse weather, lack of materials and poor docking facilities seriously hampered work. The runway site involved no unusual difficulties but required extensive filling in certain areas. A strip 100' by 3,000' was ready for use by 27 December 1942 and landings were

successfully made by two B-24 bombers. Considerable difficulty was experienced in the take-off and several planes, including one C-47 transport, suffered minor damages in running off the end of the runway when taking off under load. Consequently, steel mat was extended to 4,000' by 21 March 1943 and main efforts were diverted to completion of taxiways and hardstandings.

It is anticipated that, with approval of the recommended decrease of the garrison to a 32-man caretaking detachment, further construction will consist of completion of only dock facilities, one T-hangar, and a 4,800' runway. This work should be completed in January 1944 at an estimated cost of \$3,800,000.

CORPS OF ENGINEERS, U.S. ARMY



**CONSTRUCTION LIST**

NO.	DESCRIPTION	QTY
1	MEER	3
2	BATH	3
3	WAREHOUSE	3
4	COLD STORAGE	1

**LEGEND**

PROGRESS  
WORK COMPLETED  
WORK UNDERWAY  
WORK AUTHORIZED

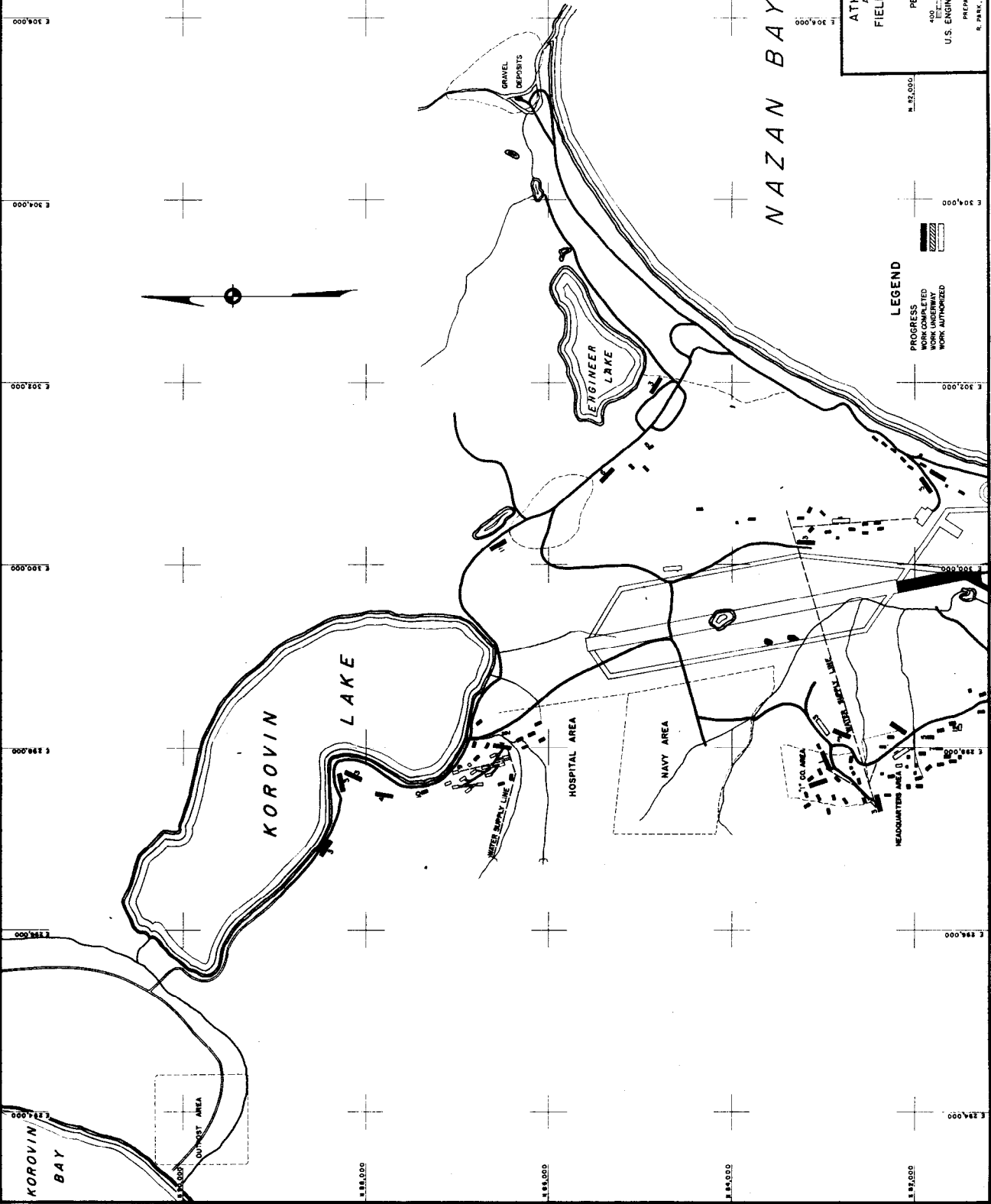
ATKA LANDING FIELD  
ATKA ISLAND, ALASKA  
FIELD PROGRESS REPORT  
PART C  
SHEET 1 OF 2  
PERIOD: OCTOBER 1943  
BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST., 30 SEPT. 1943  
U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

WAR DEPARTMENT

WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY

NO.	DESCRIPTION	QUANTITY
1	MESS	3
2	BATH	1
3	WAREHOUSE	9
4	COLD STORAGE	1
5	POST HEADQUARTERS	1
6	POST UTILITIES	1
7	ENGINEER'S OFFICE	1
8	U.S.E.D. CARPENTER SHOP	1
9	BOILER PLANT	1
10	POWER HOUSE	1
11	H. E. SHOP	1
12	DECONTAMINATION STATION	1



N A Z A N B A Y

BY ORDER OF THE DIST. ENGR.  
 SEATTLE DIST., 30 SEPT 1943

ATKA LANDING FIELD  
 ATKA ISLAND, ALASKA  
 FIELD PROGRESS REPORT  
 PART C  
 PERIOD: OCTOBER 1943  
 PREPARED UNDER THE DIRECTION OF  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 R. PARK, COLONEL, CORPS OF ENGINEERS

LEGEND

- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

## SAINT PAUL ISLAND

Saint Paul Island, together with Saint George Island, and two smaller islands, comprises the Pribilof group. This group lies approximately 300 miles north of Umnak Island, and 350 miles southwest of Bethel, Alaska. Saint Paul Island is 10 miles in length and approximately 4 miles in width. Its location is such that it lies within fighter plane range of Aleutian Stations and certain Alaskan mainland CAA fields. Construction was undertaken to provide an airfield which could control the Bering Sea approaches to the Bristol Bay coast of Alaska.

Authority for initiation of construction is contained in a classified letter from the Commanding General, Alaska Defense Command, to the Commanding General, Western Defense Command, subject: "Air Force Facilities - St. Paul," dated 14 September 1942. Subsequent authorizations provided for construction of features other than Air Corps facilities.

The original construction program called for a 100' by 3,000' steel mat fighter strip and other necessary Air Force facilities. The village of Saint Paul, consisting of 55 buildings, including warehouses, made extensive construction of troop housing unnecessary. A garrison of 1,400 officers and men, including one company of the 42nd Engineer Rgt. (GS), was mainly housed in civilian homes previously occupied by fishermen and Bureau of Fisheries personnel. To give dispersion, one third of the troops lived in winterized tents in areas adjacent to the runway site.

Two months after the landing of troops in September 1942, a fighter strip 100' by 3,250' with a volcanic ash surface was completed. However, the first landing on this strip was on 3 April 1943. Only a few landings by Navy PB-Y planes were subsequently made. Construction of a cross runway of the same dimensions was authorized, but never started. All construction work was done by troop labor. Major Francis J. Loomis, CE, was the Resident Engineer with Captain Wm. J. Foster, CE, as his assistant. Major Loomis was later relieved by First Lieutenant Donald E. Coogan, CE, who remained until completion of the project.

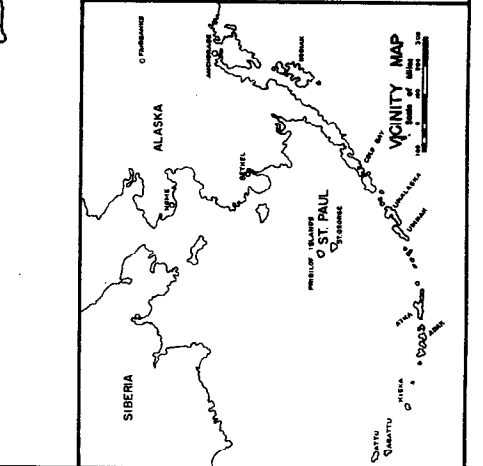
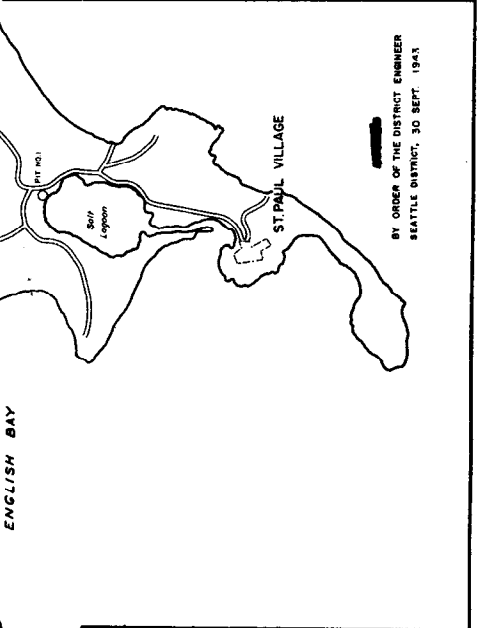
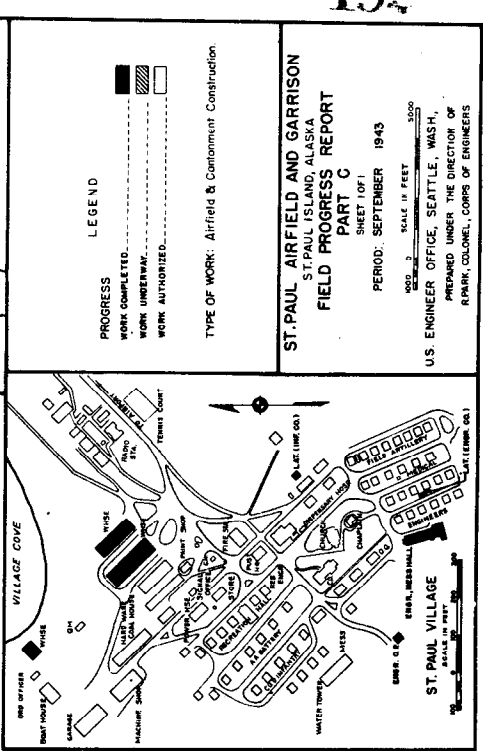
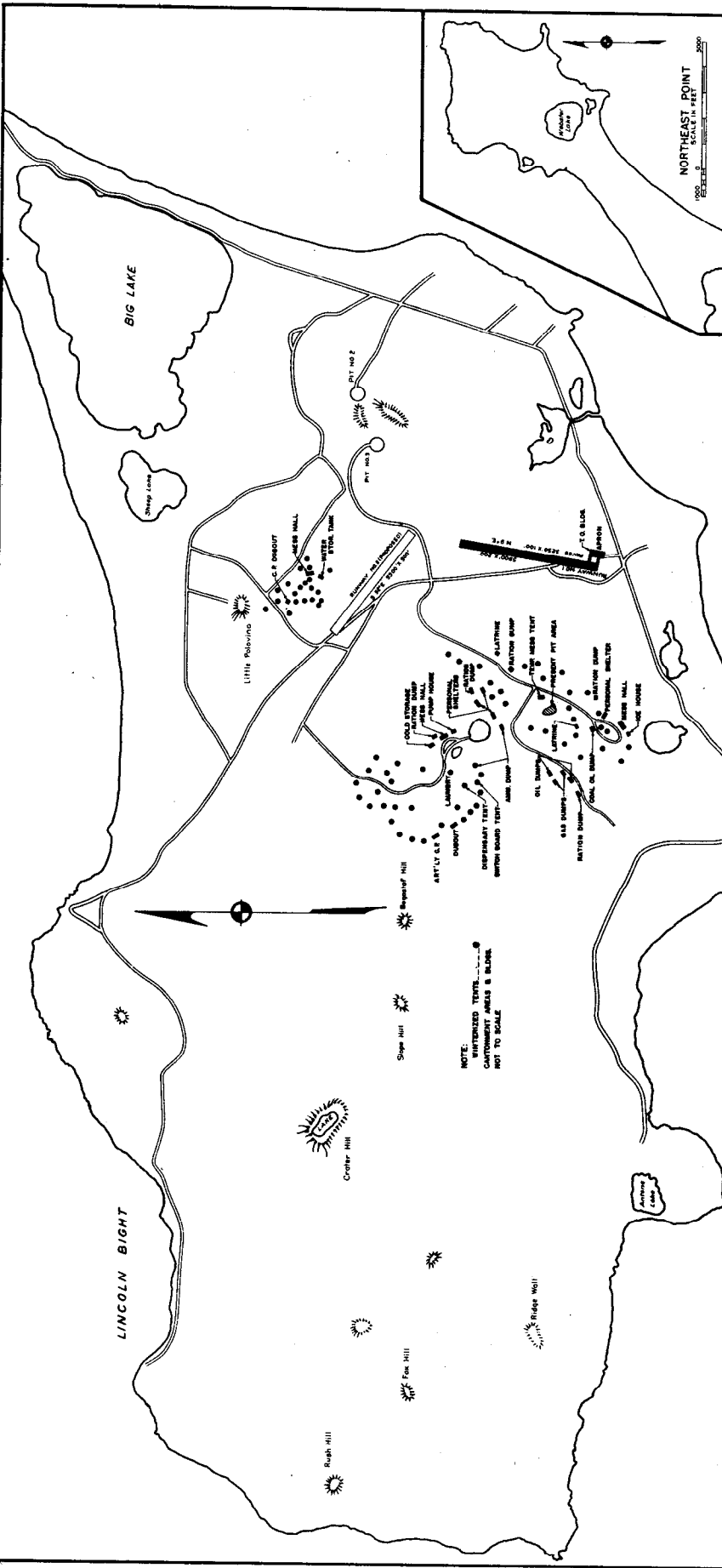
Due to inaccessability from October 1942 to May 1943, lack of proper equipment and limited Engineer forces, construction activity at Saint Paul Island can never be said to have reached any definite peak; however, in the last three months of 1942, with a maximum garrison of 1,400 officers and men, the originally authorized fighter strip and road system were pushed to completion. The balance of the winter months were spent in comparative idleness, and from May until June, preparations for the departure of troops precluded any further construction. Weather conditions were bad. Daily blizzards and storms filled the roads with drifts, causing breakdown of equipment, destruction of certain structures, and handicapping troop labor. Freezing of water lines and lack of access by road to water points caused critical water shortages in numerous instances. Virtually every barge and boat in use at the Island was damaged or destroyed by rough seas and ice floes.

It was decided to abandon the project in June 1943, and all

construction ceased. Demolition charges were placed under the runway and in the radio station during the following month.

Demountable buildings were torn down and prepared for transshipment. By the end of August 1943, all troops were removed from the island, except a ten man caretaking detachment.

The estimated cost is \$300,000.



BY ORDER OF THE DISTRICT ENGINEER  
SEATTLE DISTRICT, 30 SEPT. 1943

## ANCHITKA

The purpose of the Anchitka project was to provide a main advance base for long-range bombing missions against the Japanese Archipelago and a base for offensive action against Attu and Kiska. The site was within 15 minutes fighter and bomber range of Japanese held Kiska. Anchitka afforded an excellent location for AWS installations from which any Japanese moves to or from their main Kiska installations could be detected. Anchitka Island, in the Western Aleutians, is long and narrow, being roughly 40 miles long and averaging 3 to 4 miles in width. It is located at approximately 179° east longitude, 69 miles east of Kiska Island. Best harbor facilities exist in Constantine Harbor, on the east end of the Island. The terrain is also relatively flat at this location, affording excellent airfield locations.

The original program at Anchitka was authorized by letter dated 7 October 1942 from the Alaska Defense Command to the Western Defense Command.

The original construction program provided for (in order of priority): a 150' by 4,000' fighter strip, 2 lighterage docks, access roads, ships dock, bomber runway of unspecified dimensions, housing for a garrison of 8,000 officers and men, and necessary utilities. Constant patrol activities by float-type Japanese aircraft made it imperative that a fighter strip be constructed in the least possible time. Lighterage docks were of utmost importance to facilitate landing of additional personnel and equipment.

After preliminary Engineer reconnaissance of 17 December 1942, initial landings were made at Constantine Harbor on 15 January 1943. Two days later, construction was initiated on a fighter strip, a lighterage dock and access roads.

Subsequent necessities and authorization increased the construction program to include the following, in addition to original construction: a bomber runway 200' by 10,000' with a cross runway 200' by 5,000', both with steel mat surfacing, Kodiak "T" hangars, 1,500,000 gallon aviation gasoline storage, 2,800 ' rock jetty and wharf, Ordnance overhaul facilities, and two 500 bed hospital units.

Construction of the main bomber runway was initiated in early March. The location is on a high, flat area, above Constantine Harbor. Depth of muskeg varied from 2' to 8', and a large number of small, dispersed lakes occupied the area. All muskeg was stripped off to put in a substantial sub-grade. The main fill was with sand, varying in depth from 2' to 12'. A runway 200' by 5,000' with a steel mat surface was completed in 2 months. This runway was regularly used by all types of heavy bombers in offensive operations until the Kiska invasion. The main bomber runway was extended to 10,000' during October 1943, and it is to be completed with a steel mat by 15 November 1943.

Construction personnel at Amchitka included one combat Engineer Regiment, one Aviation Engineer battalion, and one Engineer (GS) battalion. The 151st Engineer regiment (C) constructed the buildings, the 813th Engineer battalion (Avn)(Sep) constructed the airfield, and the 177th Engineer regiment (GS) the Air Corps gasoline systems. After diversion of a large part of the heavy equipment after the initial construction period the project still has a large amount of heavy equipment, including 18 D-8 tractors, 48 yard Euclid trucks and 10 power

shovels of various capacities up to two cubic yards. With more heavy equipment than other Westward projects, Anchitka reached its construction peak during October. A notable high was attained on the bomber runway extension -- during 24-hour periods with favorable weather, as much as 30,000 cubic yards of sand fill was hauled to the runway site, while the daily average has been about 20,000 cubic yards. Subsequent authorizations by November increased the garrison to a strength of 14,500 officers and men.

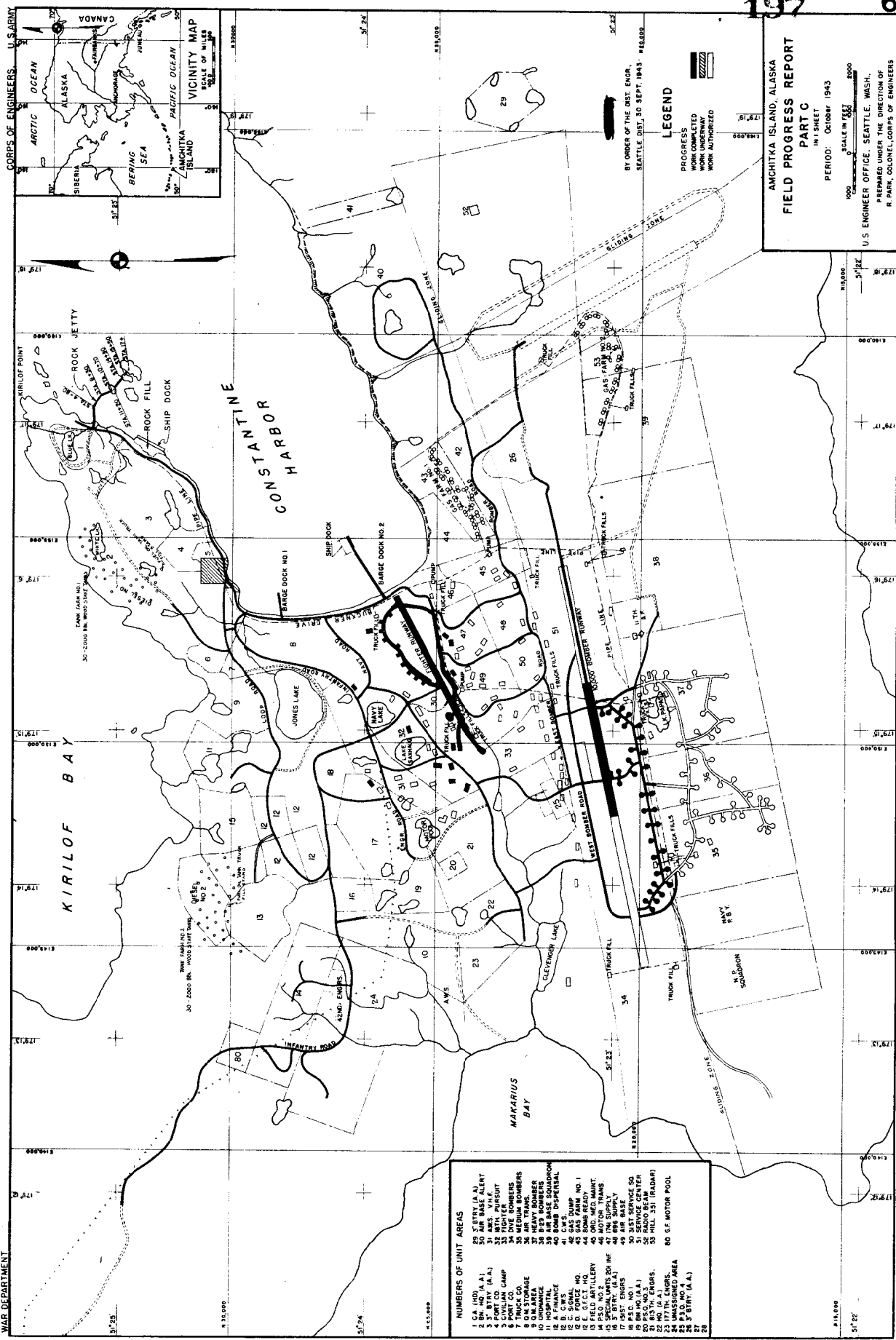
One of the problems of construction was the fighter strip, located in a tidal marsh running for about 4,000' inland from the head of Constantine Harbor. Profiting from previous experience at Adak, drainage ditches were dug and a tide gate was constructed. However, the problem of drainage proved much simpler than at Adak, and the area was satisfactorily drained, leaving a substantial sand base, without need of an elaborate dewatering pump system. In addition to the usual inclement weather, enemy aircraft offered other impediments to construction, making six separate raids, which resulted in two large bomb craters in the runway area, and several casualties. On 16 February 1943, the first pursuit planes landed on the new strip and from that time there was only light enemy aerial activity.

One of the outstanding construction features of this project was the construction of a 2,800' jetty from the north shore at the mouth of Constantine Harbor. Work was done by the West Construction Company, using rock quarried from Kirilof Point, a distance of approximately one quarter of a mile from the jetty location. Construction was initiated in April during particularly heavy weather. On numerous occasions washouts occurred. The jetty was completed however, by the

end of July, and Kirilof wharf construction was underway on the leeward side of the jetty. The wharf is 70' by 800' -- one of the largest wharfs at any Alaska project, and the largest in the Aleutian "Chain". Neither the wharf nor the jetty has proved entirely satisfactory. In recent heavy Bering Sea storms, 300' of the jetty and fill behind the wharf were washed away. The jetty was repaired and proposed construction of pile bent approaches to the wharf was expected to put both features back in operation.

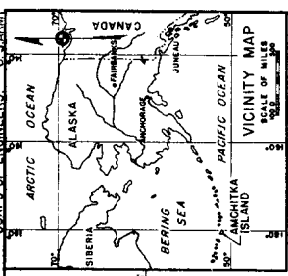
Colonel Fisher S. Blinn was the Resident Engineer of Amchitka, assisted by Major Frank Brock. Colonel Louis F. Foote commanded the 8813th Engineer battalion (Avn)(Sep) troops constructing the airfield, Colonel Fisher S. Blinn, the 151st Engineer regiment (C), and Lt. Colonel John J. Sullivan, CE, the 177th Engineer regiment (GS).

Anticipated completion of the Amchitka project was set for 1 June 1944. The estimated cost is \$20,822,280.



WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY



**AMCHITKA ISLAND, ALASKA**  
**FIELD PROGRESS REPORT**  
**PART C**  
 IN 1 SHEET  
 PERIOD: October 1943  
 SCALE IN FEET  
 1" = 1000'  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

**LEGEND**

- PROGRESS
- WORK COMPLETED
- WORK UNDERWAY
- WORK AUTHORIZED

BY ORDER OF THE DIST. ENGR.  
 SEATTLE DIST. 30 SEPT. 1943. 148,000

**NUMBERS OF UNIT AREAS**

1	CA (IND. A.)
2	29 2 BTRY (A.) ART
3	31 AMS (M. A.)
4	32 MTR PURSUIT
5	34 MVE BOMBERS
6	35 MEDIUM BOMBERS
7	36 TRUCK CO.
8	37 HEAVY BOMBER
9	38 MVE BOMBER
10	39 MVE BOMBER
11	40 BOMB DISPENSAL
12	41 C. S. CAMP
13	42 C. S. CAMP
14	43 C. S. CAMP
15	44 C. S. CAMP
16	45 C. S. CAMP
17	46 C. S. CAMP
18	47 C. S. CAMP
19	48 C. S. CAMP
20	49 C. S. CAMP
21	50 C. S. CAMP
22	51 C. S. CAMP
23	52 C. S. CAMP
24	53 C. S. CAMP
25	54 C. S. CAMP
26	55 C. S. CAMP
27	56 C. S. CAMP
28	57 C. S. CAMP
29	58 C. S. CAMP
30	59 C. S. CAMP
31	60 C. S. CAMP
32	61 C. S. CAMP
33	62 C. S. CAMP
34	63 C. S. CAMP
35	64 C. S. CAMP
36	65 C. S. CAMP
37	66 C. S. CAMP
38	67 C. S. CAMP
39	68 C. S. CAMP
40	69 C. S. CAMP
41	70 C. S. CAMP
42	71 C. S. CAMP
43	72 C. S. CAMP
44	73 C. S. CAMP
45	74 C. S. CAMP
46	75 C. S. CAMP
47	76 C. S. CAMP
48	77 C. S. CAMP
49	78 C. S. CAMP
50	79 C. S. CAMP
51	80 C. S. CAMP
52	81 C. S. CAMP
53	82 C. S. CAMP
54	83 C. S. CAMP
55	84 C. S. CAMP
56	85 C. S. CAMP
57	86 C. S. CAMP
58	87 C. S. CAMP
59	88 C. S. CAMP
60	89 C. S. CAMP
61	90 C. S. CAMP
62	91 C. S. CAMP
63	92 C. S. CAMP
64	93 C. S. CAMP
65	94 C. S. CAMP
66	95 C. S. CAMP
67	96 C. S. CAMP
68	97 C. S. CAMP
69	98 C. S. CAMP
70	99 C. S. CAMP
71	100 C. S. CAMP

## VALDEZ

The project at Valdez was established because housing facilities were essential for use of a port operating company stationed there to unload the large volume of freight for construction forces in the interior of Alaska. The same troops comprised a year-round protective garrison for the Port of Valdez, the southern terminus of the Richardson Highway, over which freight is trucked to Fairbanks and way stations. Valdez is located on the southern coast of Alaska at the head of Prince William Sound. It is approximately 125 air miles east of Anchorage.

The Valdez garrison housing was authorized by the Commanding General, Western Defense Command, in a 1st indorsement, dated 28 February 1943, to basic letter from the Commanding General, Alaska Defense Command, dated 19 February 1943.

The garrison site is located on a glacial moraine approximately  $1\frac{1}{2}$  miles west of the town of Valdez. The soil consists of stream-worn gravel with an 18" overburden of silt and decayed vegetation. The area is covered with small scattered stands of alder, willow and poplar trees which afford concealment during the summer foliage season and some protection from the winter storms. The original program included facilities for 15 officers and 250 enlisted men, a 25 bed hospital, motor repair shop, and 20,000 square feet of storage space. Later, a dry cleaning plant and a small laundry building were authorized. Pacific huts and T/O (frigid zone)

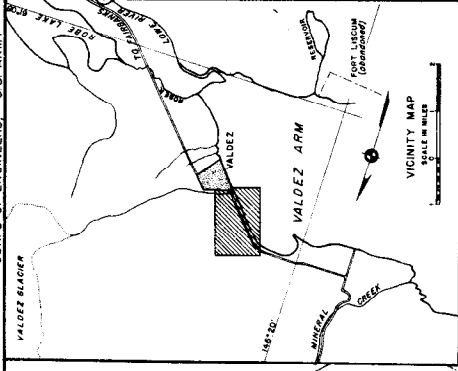
buildings were used throughout the camp.

Work on foundations was started (using local materials) prior to receipt of construction materials from Seattle. Piling foundations were driven under the T/O barracks, mess hall, dry cleaning plant and motor repair shop. Timbers placed on tamped gravel served as foundation for all other structures. Approximately 75% of the required materials were available 5 May 1943. Full crews worked on the building only 12 days, between 5 May and 5 June 1943, and during that time over 50% of the 265-man camp was finished.

The actual work at Valdez was carried out by members of the Alaska National Guard, assigned to the 297th Infantry. The construction was under supervision of the Resident Engineer, Lieutenant Frank R. Hill, CE, and two non-commissioned officers, from the 42nd Engineer Regiment (GS). Adequate materials were available, erection of facilities progressed at a rate estimated to be approximately three times faster than other similar construction in Alaska. The 297th Infantry was acting as the Valdez port operating company, and they worked on the garrison construction "between boats". Preparation of the ground and foundation work was done in April 1943, when 2' of snow was still present. Since lay necessary materials have been slow in arriving at Valdez for the completion of the project.

The entire Valdez project was considered complete as of 23 October 1943. The approximate cost of the project was \$392,000.

WAR DEPARTMENT  
CORPS OF ENGINEERS, U.S. ARMY



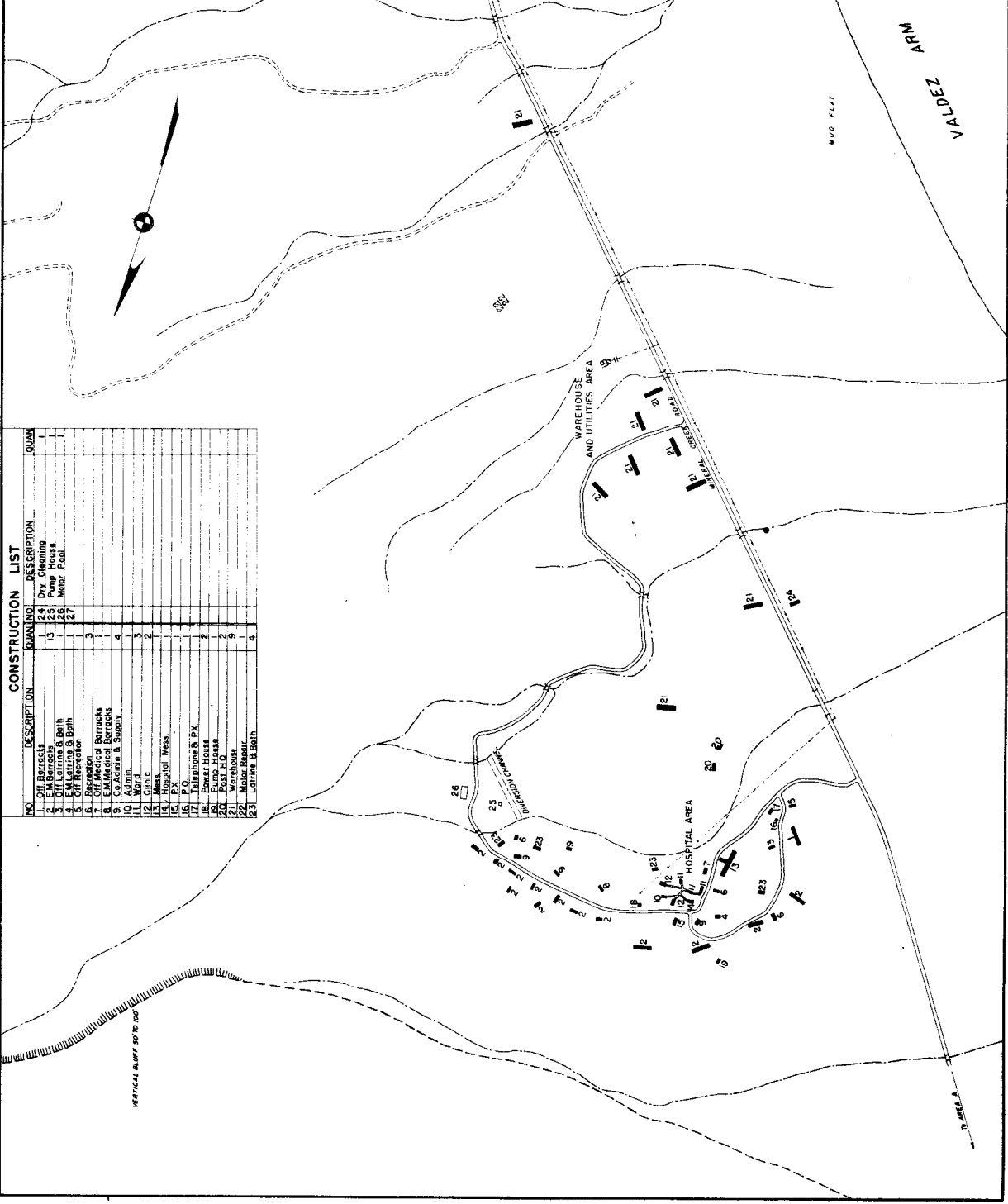
BY ORDER OF THE DIST. ENGR,  
SEATTLE DIST. NO. SEPTEMBER 1943

LEGEND

PROGRESS  
 WORK COMPLETED: [Solid black bar]  
 WORK UNDERWAY: [Dashed line]  
 WORK AUTHORIZED: [Dotted line]  
 TYPE OF WORK: Containment Construction [Hatched pattern]

VALDEZ, ALASKA  
FIELD PROGRESS REPORT  
PART C  
IN 1 SHEET  
PERIOD: October 1943  
SCALE: 1/4 INCH = 100 FEET

PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS



CONSTRUCTION LIST

NO.	DESCRIPTION	QUANTITY	STATUS
1	Off Barracks	1	1
2	EM Barracks	13	1
3	Off latrine & Bath	24	1
4	Off latrine & Bath	26	1
5	Off latrine & Bath	27	1
6	Recreation	3	1
7	Off Medical Barracks	1	1
8	Off Medical Barracks	1	1
9	Off Medical Barracks	1	1
10	Off Medical Barracks	1	1
11	Off Medical Barracks	1	1
12	Off Medical Barracks	1	1
13	Off Medical Barracks	1	1
14	Off Medical Barracks	1	1
15	Off Medical Barracks	1	1
16	Off Medical Barracks	1	1
17	Off Medical Barracks	1	1
18	Off Medical Barracks	1	1
19	Off Medical Barracks	1	1
20	Off Medical Barracks	1	1
21	Off Medical Barracks	1	1
22	Off Medical Barracks	1	1
23	Off Medical Barracks	1	1
24	Off Medical Barracks	1	1
25	Off Medical Barracks	1	1
26	Off Medical Barracks	1	1

SECRET

## ATTU

Attu is the most western island of the Aleutian "Chain" -- only 650 miles from the Japanese Kurile Islands, 250 miles west of Dutch Harbor and approximately 1,200 miles west of the Alaska mainland. Therefore Attu occupies the best position to repel enemy advances against the Alaska frontier. From June 1942 until May 1943 Attu was held by a garrison of approximately 2,000 Japanese troops. In May 1943 the island was occupied by American forces and the Japanese garrison reduced. This operation was undertaken to enable us to gain complete control of the Aleutian Islands and to advance our bases in preparation for future attacks on the Japanese mainland. Since the island occupies this westward position and as storms in this region move from west to east, it is in an exceptionally good location for an advance weather base for the Alaska mainland. The project when completed will be an air base for attacks upon Japanese held territory to the west, being situated only 730 miles from the large Japanese base at Paramushiro in the Kurile Islands.

The Attu project was authorized by Western Defense Command in 1st indorsement dated 25 June 1943, to basic letter from the District Engineer to the Western Defense Command dated 12 June 1943, subject: "Request for Formal authorization for Project L".

The original authorization was for a protective garrison with facilities for 5,956 officers and men in the ground forces and 2,360 officers and men in the Air forces. The 400-bed hospital was

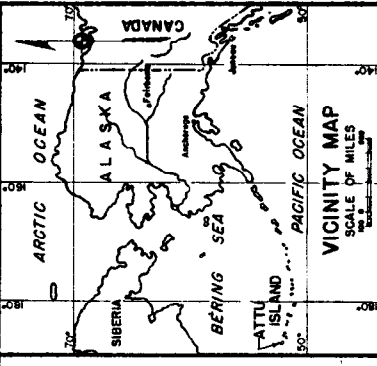
provided with a staff of 291 officers and men. Authorized technical facilities are an airfield of two runways, one 150' by 3,000' and the other 150' by 5,500', with necessary taxiways and hardstandings; a satellite field with one runway 150' by 5,000', 6 kodiak "T" hangars and one portable steel combat hangar with adequate shop and storage space for the air forces. Electric power will be supplied by 25 diesel generator sets with necessary distribution lines and equipment. Water supply will be from the many streams on the island, augmented by storage tanks. The harbor facilities authorized two ships docks, one barge dock, one LST ramp and one marine bargeway.

Authorized fuel storage was 3,612,000 gallons for fuel oil, 380,000 gallons Air Corps gasoline storage and 500,000 gallons for Quartermaster gasoline storage. A rather unusual authorization was that for the dry and cold storage facilities, as approximately one half of this storage was to be in tunnels cut into the solid rock of the island which would give ample storage space and excellent protection from enemy attack.

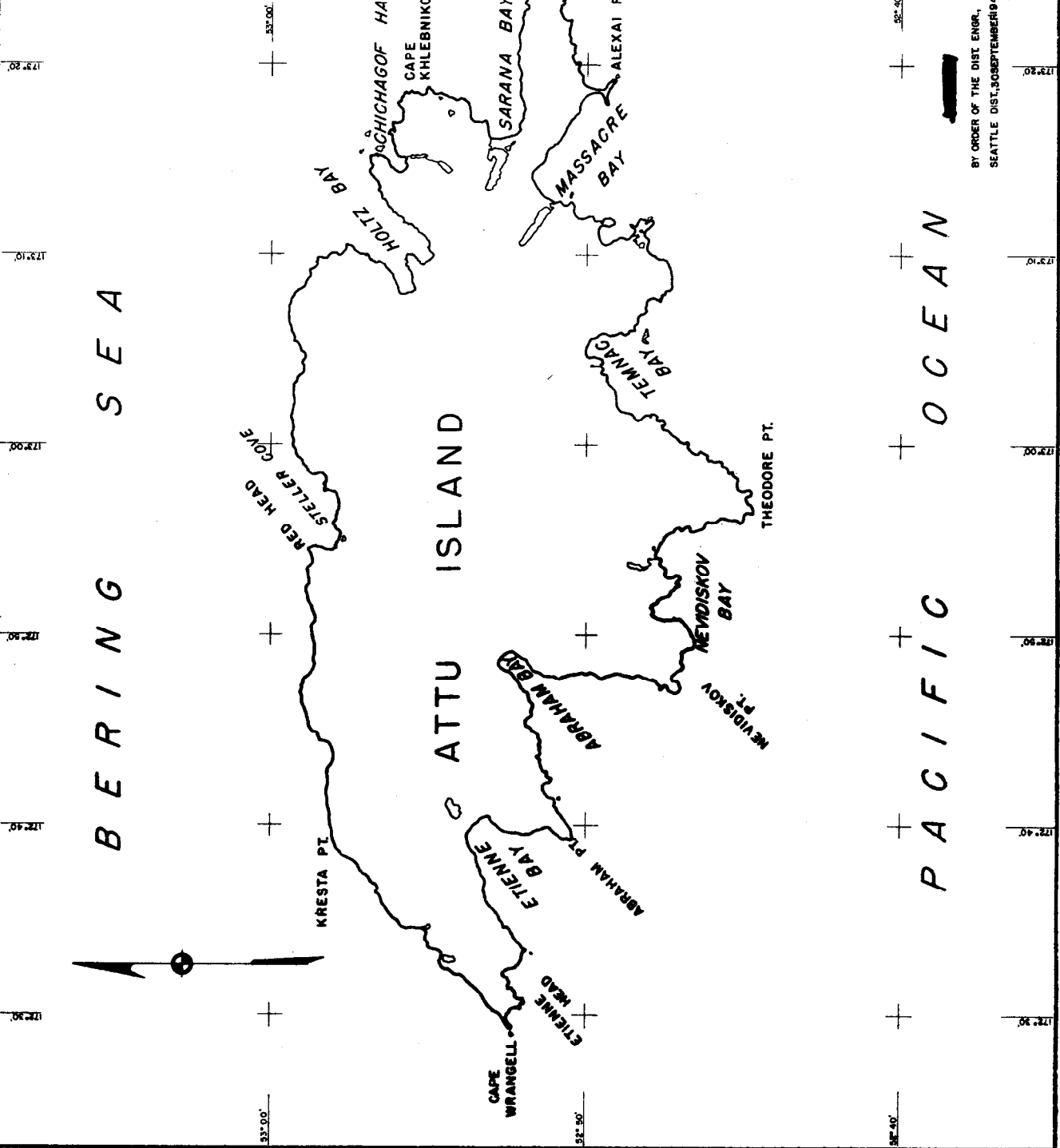
Construction was carried out by Engineer troops augmented by civilian workers. The West Construction Company holds contract for road construction and excavation of the underground storage facilities. First surveys and plans were made by Lt. Colonel Virgil L. Homeldorff, CE, and survey crews of the 50th and 13th Engineers. Lt. Colonel Homeldorff, CE, is the Resident Engineer.

Completion of the Attu project is anticipated in June 1944, at an estimated cost of \$10,000,000.

CORPS OF EN. U.S. ARMY



ATTACHMENT



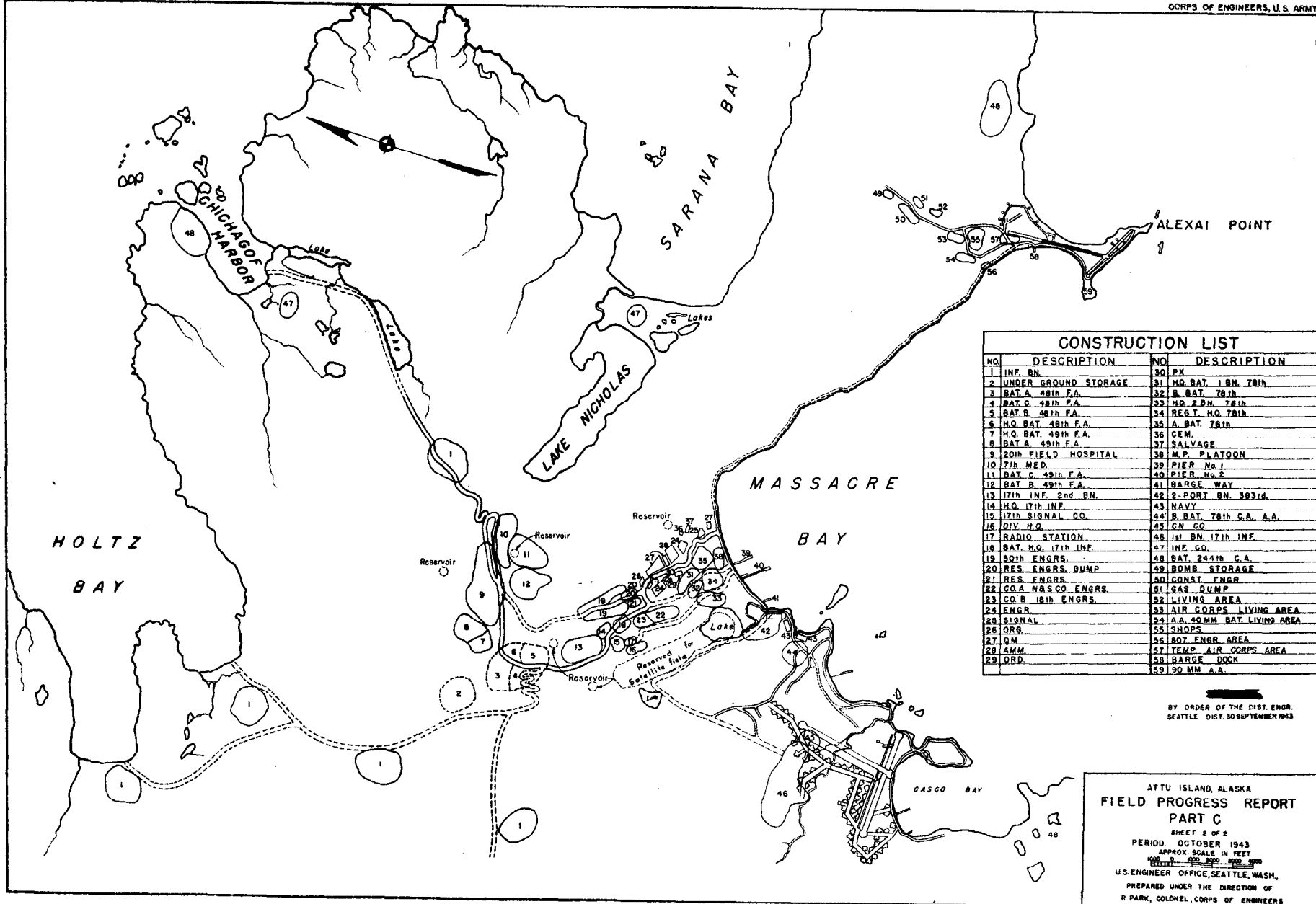
**LEGEND**

PROGRESS  
 WORK COMPLETED  
 WORK UNDERWAY  
 WORK AUTHORIZED  
 WORK PROPOSED

ATTU ISLAND, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 1 OF 2  
 PERIOD: OCTOBER 1943  
 APPROX SCALE IN FEET  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST ENGR,  
 SEATTLE DIST., 30 SEPTEMBER 1943

P A C I F I C O C E A N



CONSTRUCTION LIST			
NO.	DESCRIPTION	NO.	DESCRIPTION
1	INF. BN.	30	PX
2	UNDER GROUND STORAGE	31	HQ. BAT. 1 BN. 78th
3	BAT. A. 48th F.A.	32	B. BAT. 78th
4	BAT. C. 48th F.A.	33	HQ. 2 BN. 78th
5	BAT. B. 48th F.A.	34	REGT. HQ. 78th
6	HQ. BAT. 48th F.A.	35	A. BAT. 78th
7	HQ. BAT. 48th F.A.	36	GEM.
8	BAT. A. 48th F.A.	37	SALVAGE
9	20th FIELD HOSPITAL	38	M.P. PLATOON
10	77th MED.	39	PIER No. 1
11	BAT. C. 48th F.A.	40	PIER No. 2
12	BAT. B. 48th F.A.	41	BERGE WAY
13	17th INF. 2nd BN.	42	2-PORT. BN. 383rd
14	HQ. 17th INF.	43	NAVY
15	17th SIGNAL CO.	44	B. BAT. 78th C.A. A.A.
16	DIV. H.Q.	45	CN. CO.
17	RADIO STATION	46	1st BN. 17th INF.
18	BAT. HQ. 17th INF.	47	INF. CO.
19	50th ENGRS.	48	BAT. 244th C.A.
20	RES. ENGRS. DUMP	49	BOMB. STORAGE
21	RES. ENGRS.	50	CONST. ENGR.
22	CO. A. 18th ENGRS.	51	GAS. DUMP
23	CO. B. 18th ENGRS.	52	LIVING AREA
24	ENGR.	53	AIR CORPS LIVING AREA
25	SIGNAL	54	A.A. 40 MM. BAT. LIVING AREA
26	ORG.	55	SHOPS
27	QM.	56	807 ENGR. AREA
28	AMM.	57	TEMP. AIR CORPS AREA
29	ORD.	58	BERGE DOCK
		59	50 MM. A.A.

BY ORDER OF THE DIST. ENGR.  
SEATTLE DIST. 30 SEPTEMBER 1943

ATTU ISLAND, ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**  
 SHEET 3 OF 2  
 PERIOD, OCTOBER 1943  
 APPROX. SCALE IN FEET  
 1:500 1:1000 1:2000 1:5000  
 U.S. ENGINEER OFFICE, SEATTLE, WASH.  
 PREPARED UNDER THE DIRECTION OF  
 R. PARK, COLONEL, CORPS OF ENGINEERS

204  
9

## SHEMYA

The construction at Shemya was inaugurated to provide an air base between Attu and Amchitka Islands, and to provide an advance air base for attacks upon the Japanese Kurile Islands to the west. Shemya was occupied while the battle of Attu was still under way. The island is about two miles wide, four miles long, and reaches a maximum elevation of 250' above sea level. The terrain, soil, natural materials, and the absence of mountains make this island an excellent location for heavy bombardment airfields. Shemya is located in the Near Island group, at the tip of the far western Aleutians, approximately 1,700 miles from Anchorage.

Authority for the project is contained in the first indorsement dated 23 June 1943 from the Commanding General, Western Defense Command, to the District Engineer, subject: "Formal Request for Authority for Project 'K'", to basic letter from the District Engineer to the Commanding General, Western Defense Command, dated 12 June 1943.

The original authorization provided facilities for 7,945 officers and men in the ground forces, and 1,908 officers and men in the air forces. A 450 bed hospital was authorized and provided with a staff of 291 officers and men.

Technical features authorized in addition to necessary housing were: two runways, one 150' by 10,000' and one 150' by 4,500', with necessary taxiways and hardstanding; twenty-eight diesel generator sets and necessary transmission lines and equipment; air corps gasoline storage of 1,500,000 gallons; fuel oil storage of 3,150,000 gallons; Q1 gasoline storage of 357,000 gallons. Also authorized for the

air forces were six Kodiak "T" hangars, two portable steel combat hangars and several steel warehouses to give adequate working and storage spaces for the operation and maintenance of bombardment aviation. Under a subsequent authorization the 10,000' runway will be paved with asphaltic concrete to a width of 500', while the 4,500' strip will have a paved width of 300'. Necessary taxiways and hardstandings will also be paved.

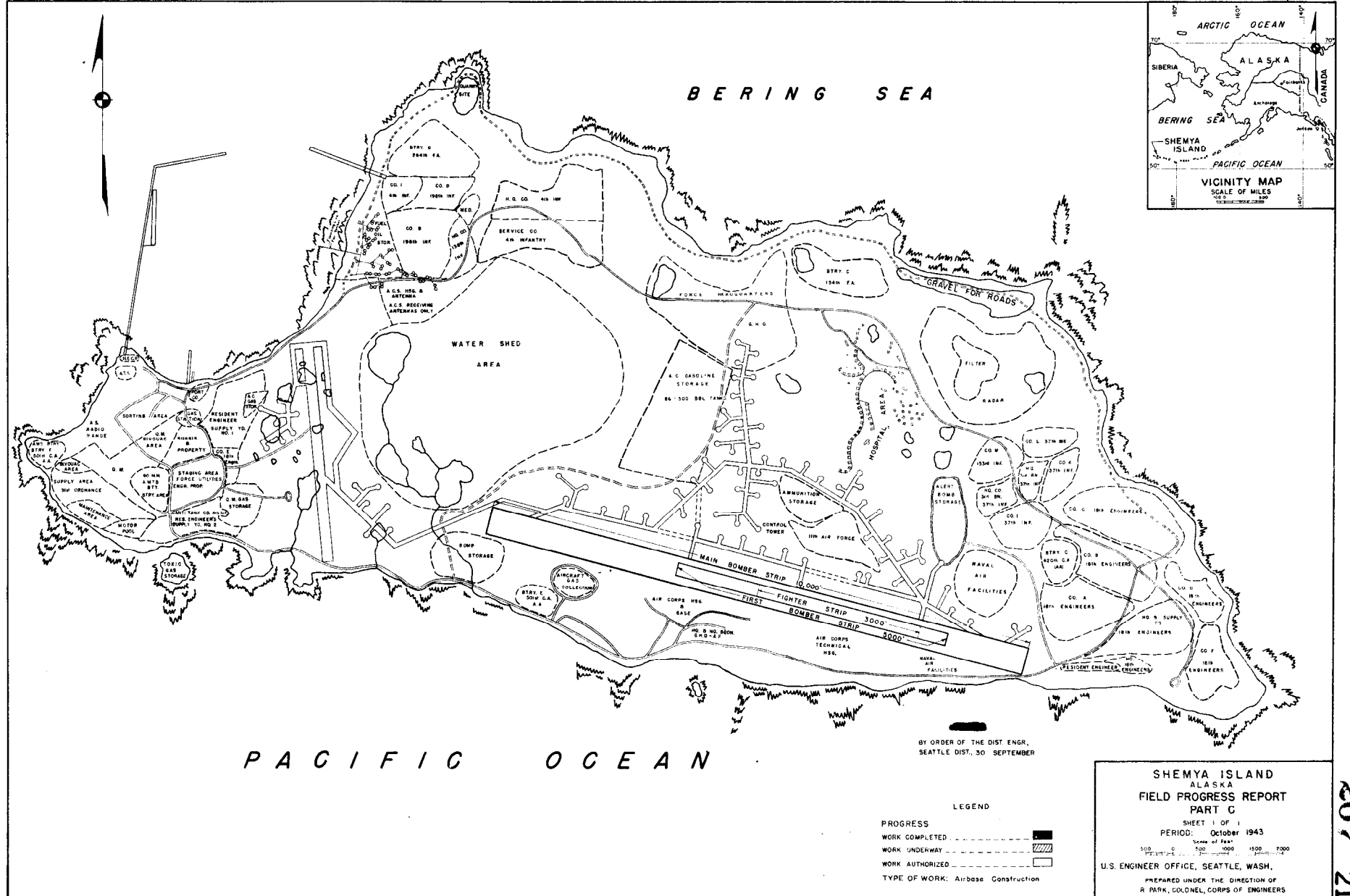
A barge dock and LST ramp were originally authorized for the harbor and subsequent authorizations have been made for a rock crib barge dock.

It is expected that the small lakes on the island, which yield an adequate water supply, will be augmented by drilled wells during periods of low run-off or peak demand.

One regiment of Engineer construction troops, plus a small detachment of Engineer maintenance troops, were provided to carry out the majority of the construction work. These troops were augmented by a few civilian employees serving in technical capacities. Colonel C. H. S. Johnson, CE, is the Resident Engineer.

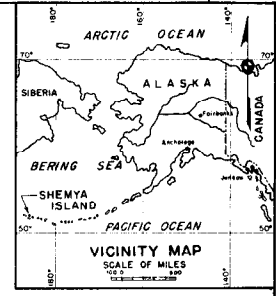
The major difficulty encountered was stormy weather creating rough, rolling seas in the bay, which made the discharge of cargo very difficult. The top soil of this island is almost entirely sand, which, due to high winds, drifts badly, making it difficult to maintain the runway. Steps were taken to stabilize the soil in some manner, either by the use of burlap or oznaburg cloth under the mat and on the shoulders, or transplanting available native grasses.

This project is scheduled for completion in November 1944 at an estimated cost of \$15,000,000.



BERING SEA

PACIFIC OCEAN



BY ORDER OF THE DIST ENGR,  
SEATTLE DIST, 30 SEPTEMBER

LEGEND

PROGRESS	▬
WORK COMPLETED	▬▬▬▬
WORK UNDERWAY	▬▬▬▬▬▬
WORK AUTHORIZED	▬▬▬▬▬▬▬▬

TYPE OF WORK: Airbase Construction

**SHEMYA ISLAND**  
ALASKA  
**FIELD PROGRESS REPORT**  
**PART C**

SHEET 1 OF 1  
PERIOD: October 1943

Scale of Feet  
0 500 1000 1500 2000

U.S. ENGINEER OFFICE, SEATTLE, WASH.  
PREPARED UNDER THE DIRECTION OF  
R. PARK, COLONEL, CORPS OF ENGINEERS

207 21

## MILE 26 - SATELLITE FIELD

Mile 26 Satellite was established to provide an auxiliary airfield for Ladd Field, at Fairbanks, when the movement of Air Transport Command and Alsib (Alaska-Siberia) planes overtax the capacity of Ladd Field. The field is located 26 miles southeast of the town of Fairbanks, on the Richardson highway, in the Tanana Valley.

The Mile 26 Satellite field was authorized by letter from the Adjutant General's office to the Commanding General, Western Defense Command, dated 17 June 1943, subject: "Construction Program for Expansion of Alaskan Wing, ATC"

Construction includes housing for 428 personnel with necessary warehousing, utilities, and technical facilities for operation of the Air Transport Command at this project. Also included are two runways 150' by 6,000' with asphalt surface, approximately 200,000 square yards of parking area, 1,800 lineal feet of taxiway and a Birchwood hangar 200' by 202'.

The Morrison-Knudsen Company of Boise, Idaho, contracted for this entire job on a unit price basis, the work to be performed in accordance with plans approved by the Air Transport Command and under the supervision of the Engineer, Alaska Defense Command. By 15 October 1943, one temporary 150' by 5,000' runway had been stripped of moss and buck to a satisfactory sub-base. The contractor had erected his construction camp. Stripping proceeded on the parking area and east runway and erection of the project buildings had been initiated.

There were no unusual problems of construction, but due to the water table in this region being so near the ground surface, a refill on the runway and parking area slightly above the original ground level prior to stripping was found to be necessary.

Captain Edward D. Tracy, CE, is Resident Engineer at Lile 26 Satellite Field assisted by Lieutenant Edmond L. Powers, CE.

It is planned that the construction as authorized for this project will be completed on 31 October 1944. The contract cost at the project is \$4,832,700.

## KISKA

Construction at Kiska was for the purpose of establishing garrison housing. Kiska Island was the last island of the Aleutian Chain to be occupied by American forces. From June 1942 until early August 1943 it was occupied by the Japanese who, upon their defeat at Attu and consequent outflanking, abandoned their position in the Aleutians. Kiska is in the Western Aleutians, in a group known as the Rat Islands. It is the largest island of this particular group and lies at approximately  $177^{\circ} 30'$  east longitude. It is approximately 1,500 miles from Anchorage.

The original plans for this base called for an airfield with protective garrison cantonment and housing for 15,000 troops; however, it was reduced to approximately 400 troops with no air force units provided. Authorized features included one ships dock, a barge dock, an LST ramp, and a 225 bed hospital with a staff of 288 officers and men. An excellent water supply was available from the many island streams.

The following technical facilities were to be built in addition to the necessary housing: one runway 150' by 3,500', AC drum collector system of 42,000 gallons capacity, 840,000 gallon fuel oil storage, 250,000 gallon GM gasoline system, and adequate diesel generator units to provide the necessary power and lighting required.

One battalion of Engineer troops was assigned to carry on the program. Equipment and personnel were sufficient and work proceeded satisfactorily. The Resident Engineer at Kiska is Colonel

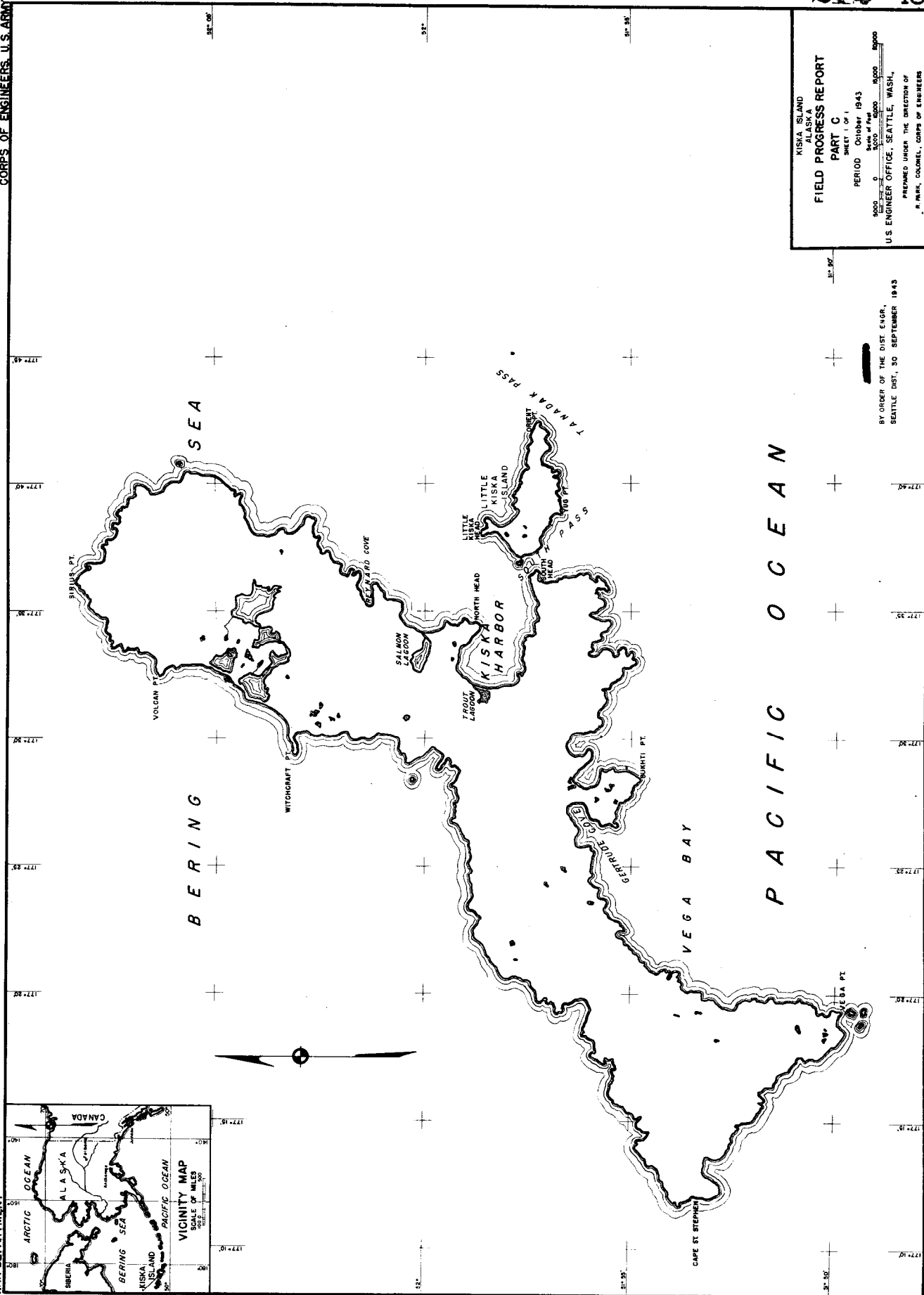
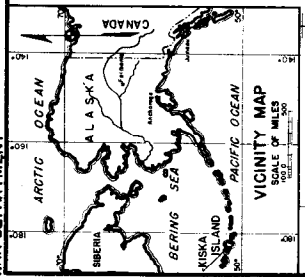
William R. Schuler.

When work was first started on the ships dock, a sandstone formation was encountered about 200' from shore that could not be penetrated. The difficulty was overcome by obtaining shoes for the piling.

The anticipated date of completion for this project is June 1944, at an estimated cost of \$3,000,000.

CORPS OF ENGINEERS, U.S. ARMY

WAR DEPARTMENT



KISKA ISLAND  
ALASKA

FIELD PROGRESS REPORT  
PART C

PERIOD October 1943  
SHEET 1 of 1

U.S. ENGINEER OFFICE, SEATTLE, WASH.,  
PREPARED UNDER THE DIRECTION OF  
P. W. W. COLONEL, CORPS OF ENGINEERS

BY ORDER OF THE DIST. ENGR.,  
SEATTLE DIST. 30 SEPTEMBER 1943

## ADAK DEPOT

Immediately after American occupation of Kiska, the last enemy position on the Aleutians, preliminary plans were initiated by the Alaska Defense Command for the construction of a base depot at Adak Island. The purpose of such a depot was to initially equip and maintain an expeditionary force of approximately 100,000 to house a supply level for six months, and to be completed and stocked by 15 April 1944.

An investigation of possible sites on Adak was made by a party of military and civilian engineers under Colonel Roy W. Leibsic, CG, and three sites submitted as feasible. The selection of the Sweeper Cove area was made upon the recommendation of Major General Eugene Landrum, Commanding General, U. S. Troops, Adak, and preliminary estimates of costs, construction forces, equipment and shipping tonnages were submitted.

The initial request and estimates covered the construction of 7 docks, a breakwater, 7 transit sheds, 56 warehouses, 15 magazine warehouses, roads, open storage areas, housing for 9,000 operating personnel and all utilities, and were forwarded to the Western Defense Command for approval.

The Commanding General, Deputy Commander and the Engineer, Alaska Defense Command, proceeded to Washington, D. C. for purpose of expediting the decision of the authority to proceed. Lt. Colonel Leon B. DeLong, CG, was assigned as Resident Engineer of the Depot and after making preliminary surveys and plans on the

site, proceeded to Seattle to expedite the design and engineering plans and procurement of materials and equipment in the event of authorization of the project.

By 1st indorsement to letter from the Western Defense Command to the Chief of Staff, dated 1 September 1943, subject: "Establishment of Base Depot at Adak", by the Secretary of War, dated 15 October 1943, approval was given to construct "a troop staging and supply base at Adak".

The final authorization provided for the design of the base to support 50,000 troops with three month's level of supplies. Further installations were to include piers for the berthing of six ships, "transit sheds, covered storage, magazines, etc., and then to permit rapid expansion if required at a later date". The early completion date set by Western Defense Command was relaxed.

Preliminary designs were immediately developed by the District Engineer and the procurement of materials and equipment started. It was decided that all trusses for buildings would be precut in Seattle and all other lumber procured from Alaska stockpiles. Additional equipment was required for the construction and procurement requested through the Chief of Engineers.

The plan for construction forces called for contracts with civilian contractors, one covering the buildings, one the breakwater and retaining wall, one for dredging, and one for the grading and filling. Three battalions of Engineer troops were to be used for construction of housing, utilities and roads.

The program of construction items as set up are as follows: a breakwater 1500' long, top width 30'; retaining wall 2900' long, top width 20'; docks, 3 each 100' by 500' finger-type; 1 skeleton frame for oil dock; transit sheds, 3 each 181' by 600'; warehouses, 20 each 123'3" by 320'; warehouses, 13 each 20' by 100'; port operations office building, 146' by 220' (2 stories); port personnel housing, Pacific hut type for 4500 men; shops, 191' by 320'; utilities and roads.

Cost-plus-a-fixed-fee contracts were negotiated and signed the first part of November with the following firms covering separate phases of the work: Guy F. Atkinson, buildings, utilities, concrete work and civilian mess; West Construction Company, rock work, breakwater, dike, fuel storage and operation of shops; Puget Sound Bridge and Dredging Company, dredging and shore fill; Puget Sound Bridge and Dredging Company, grading and filling; Birch and Sons, all paving including that of runways. The contractors immediately started moving men and materials to the site and construction was started.

Portions of the areas incorporated into the lay-out of the depot were occupied by various units including the Navy. This necessitated the moving of existing facilities from these areas and the coordination of their replacement elsewhere. No other unusual problems appear as delaying factors.

The anticipated date of completion was set as 15 April 1944 and the cost estimated at approximately \$25,000,000.

## AIRCRAFT WARNING SERVICE

The original authority directing consideration of Aircraft Warning Service for Alaska was contained in a letter from the Adjutant General's Office to the Western Defense Command, 23 May 1940, subject: "Aircraft Warning Service, Continental United States." Tentative studies envisioned a minimum of four detector stations; namely, one each in the vicinity of Unalaska, Kodiak, Sitka, and the Anchorage-Seward-Cordova area. These studies also contemplated an Information Center near Anchorage for the purpose of "filtering" reports received from the related detector stations. The Commanding General, Western Defense Command, directed that the Commanding General, Ninth Coast Artillery District, conduct the studies in Alaska, the reports of which were to be submitted to the War Department by 1 July 1940. Construction of Aircraft Warning Service Stations was to be accomplished by the Corps of Engineers.

A party consisting of Lieutenant (now Colonel) A. C. Welling, CS, Area Engineer at Fairbanks, Lieutenant (now Lt. Colonel) W. H. Snouffer, Signal Corps, and a civilian radio Engineer, travelling by a small Coast Guard patrol boat, made a reconnaissance of the proposed areas. This party selected detector sites at Sitka, Cape Hinchinbrook, Cape Chiniak, and Unalaska Island. A site for a mobile detector was also chosen in the vicinity of Fairbanks. Recommendations were also submitted for the construction of an Information Center near Anchorage.

In December, 1940, the Adjutant General authorized construction of a fixed Aircraft Warning Service detector at Cape Chiniak on Kodiak Island, Mount Harbor at Sitka, Unalaska, the Information Center at Anchorage, and a mobile detector near Fairbanks at Pedro Dome. Later in March, 1941, additional stations were authorized at Unalaska, Hinchinbrook, Lazy Bay, vicinity of Nome, Metlakatla (Forrester Island), Nushagak, Yakutat, and a second station in the vicinity of Unalaska if necessary. These stations were expected to give minimum warning of the approach of hostile air craft to the Navy establishments at Dutch Harbor, Kodiak and Sitka and the Army bases at Fort Richardson and Iadd Field. Following the declaration of war the Commanding General, Alaska Defense Command was given the authority for immediate construction of detector sites as determined by the tactical situation.

In order to receive and disseminate information obtained from outlying detector stations and other sources, additional information or filter centers were proposed by the Eleventh Air Force in March, 1942, and they were subsequently established at each major air base in Alaska. During October of the same year, the Air Defense Plan for Alaska was increased to include Very High Frequency (VHF) stations for local communication with certain friendly aircraft during periods of general radio silence. The importance of VHF equipment is emphasized by the following incident. On 30 September 1942, one Japanese scout plane appeared over the newly established Adak air base. The Japanese aircraft was visible to ground troops but was not observed

by our fighter aircraft patrol (above) due to a layer of clouds between them. Due to the radio silence our patrol could not be advised of the presence of this ship and as a result the enemy plane was able to circle the field and return to its base. VHF equipment is short range and can be operated during a radio silence without jeopardizing the security of an air base. Had VHF equipment been in operation at Adak at that time, our fighter aircraft patrol could have been notified of the presence of the enemy craft and would have successfully attacked the enemy plane and prevented its return to Kiska with the information of the location of our base at Adak.

Due to the isolation of most detector sites, complete housing and utilities for the operating personnel of about 50 men were provided. Diesel generator power plants, cold storage buildings and other housing were furnished by the Engineers, while the steel detector building and antenna tower were supplied by the Signal Corps. All construction and erection was performed by the Corps of engineers. In many cases the most difficult and costly construction was for landing facilities and access roads or tramways. Each station was planned for self sufficiency in every respect.

Except for construction of the earlier detector stations and where civilian labor was readily available at the larger projects, troop labor was employed on AAS construction. Civilian labor was used wholly or in part in the fixed detector stations at Sitka,

Yakutat, Cape Chiniak, Outer Island, and initiated work on the later abandoned Cape Hinchinbrook and Forrester Island sites. The mobile detector station access road and housing at Jeanie Point, on Montague Island in Prince William Sound, were also completed mainly by civilian labor. Contract labor has never been utilized on the construction of AWS detector stations. Stations constructed entirely by troop labor are: Lazy Bay, Cape Wislow, Nikolski, Cape Prominence, Sanak, Tigalda, Kettle Cape, Tanak, Amchitka (Hill 351), Frosty, Yakak, Tagalak, Adagdak, and Beer Island.

The greatest difficulty encountered during the construction of detector stations was means of access (supply). In the majority of cases, the sites were isolated from any direct means of travel except by water. Due to the shortage of floating equipment and the stormy nature of the seas throughout Alaska, the transportation of construction materials and supplies to these sites was extremely difficult. In many cases, no suitable beach was available; the only area suitable for landing operations was often entirely exposed to the action of sea and wind. The urgency of high priority work at the several airfield installations often precluded the diverting of adequate floating equipment to the supply of the isolated AWS construction forces. At Cape Wislow, supplies and materials were lightered from Dutch Harbor. Frequently after an eight or nine hour voyage to the site, the sea was so rough that a landing could not be made and the fully loaded

barge would return to Dutch Harbor. Several such attempts were often made before a landing could be finally accomplished. At times after many days of diligent effort to construct light-erage docks at some stations, storms would, overnight, entirely wipe out the results of this labor.

The original sites for the detector building and antenna tower for the SCR-271 sets required a high promontory or mountain peak in order to obtain, as nearly as possible, a maximum 360° sweep. This entailed the construction of long and steep access roads from the landing beach, over swamps, hills, through valleys, on to the detector site atop the mountain, which often required long side hill cuts through solid rock. Where the detector site was on a peak inaccessible to a tractor trail or road, long and extensive tramways were necessary. Tramways were constructed at Forrester Island, Cape Wislow, Outer Island and Cape Prominence. The tramway at Cape Prominence reached a total length of 2,400', (grade averages 52 percent), the maximum grade reached on any section was 81 percent and at one section a trestle bridge 180' long was constructed. The total rise from the lower platform at the beach to the upper platform at the detector site is approximately 1,250'.

By the nature of its technical capabilities, the introduction of SCR-512 detector sets had in most cases, reduced the elevation at which detector construction might be accomplished. This set requires a natural amphitheater site usually found at lower elevations and therefore simplifying the means of access.

However, the problem of supplying materials, equipment and supplies to the isolated site still constitutes a major problem.

Due to changes in the tactical situation in the summer of 1942 the previously chosen sites on the west coast of Alaska in the Bristol Bay - Norton Sound area were abandoned in favor of sites on the Alaska Peninsula and in the Aleutian Islands. The interior sites of Takotna near McGrath, and Pedro Dome near Fairbanks, were also abandoned. The proposed west coast stations which were considered for construction and then abandoned were located at Cape Avinof, Kwiguk, Cape Prince of Wales, Point Hope, and Point Barrow. Construction of a detector station at Nushagak near Kvichak Bay was started but later abandoned.

New and improved radars, changed military situation and more information concerning the operation and capabilities of radars, occasioned major changes to the Aircraft Warning Service net as first planned. Sometimes shipment of materials, equipment and construction forces were accomplished before the project was finally abandoned. The presently (November, 1943) authorized program for the construction of Aircraft Warning Service in Alaska has resolved itself into a definite and stabilized program. Completion becomes entirely dependent upon the availability of materials, equipment and supplies. Adequate troop labor is available. The only uncompleted projects are now located on the lower Alaska Peninsula and in the Aleutians. Based on the present program construction of the complete network for Alaska should be completed by June, 1944.



Tramway, looking up. AWS Cape Prominence,  
Alaska. 12-12-42



(C488A) Tramway trestle construction. AWS Cape  
Wislow, Alaska. 6-15-42



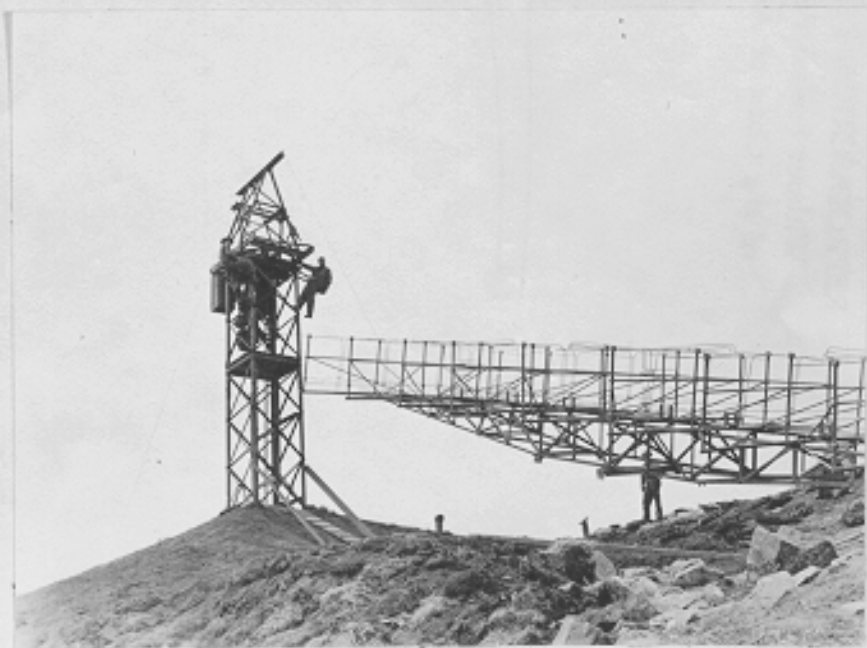
Completed detector station. AWS Cape  
Wislow, Alaska. 8-8-42



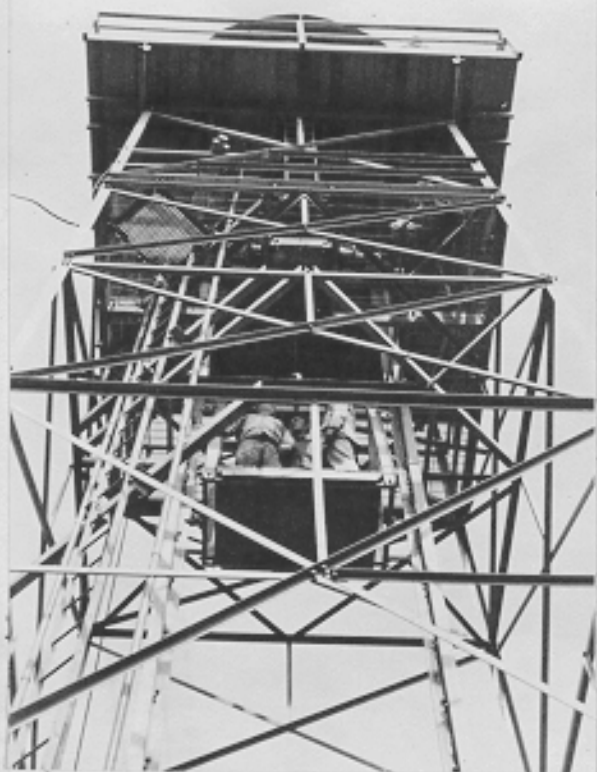
Wreckage of dock and M/S GENE on beach  
(C488C) just west of the base camp. AWS Outer  
Island, Alaska. 10-13-42



Hoisting of antenna and antenna in place on  
detector building. AWS Cape Prominence,  
Alaska. 6-15-43



(C488B)



SCR-296 (Radar) Round Top Hill, Chiniak.  
Fort Greely, Alaska. 6-23-43



(C488D) Landing and moving mobile radar equipment to site.  
View of 2 pieces of equipment following first one  
around curve to top of hill. 3" x 12" planks used.  
Jeanie Point, Montague Island, Alaska. 5-22-42

P A R T IV

This section contains photographic and descriptive data regarding the eighteen (18) outstanding types of construction work performed. They are in alphabetical order. In addition, two supporting chapters detail the equipment used and the difficulties encountered in Alaska construction.

## AIRFIELDS

The primary reason for construction in Alaska was to establish an offensive or defensive system of airfields. With the exception of the Alaska Barge Terminal at Excursion Inlet, the Fort Raymond Project at Seward and the Garrison Project at the Port of Valdez, all work was centered around airfield construction.

Basically the runways, taxiways, parking areas and revetments were similarly designed in the Coastal, Interior and Aleutian Areas. However, their construction differed considerably in view of tactical reasons, terrain, materials available and climatic conditions. Equipment varied in accordance with availability. Types of surfacing varied with the tactical situation as well as materials available. The rate at which runways were completed varied considerably. Probably the speediest construction was at Adak Island where the hard packed sand of a tidal lagoon formed a base on which the steel mat was laid.

In the Coastal Area the airfields at Annette and Yakutat were the most difficult to construct. The concrete runways at Fort Richardson, while of major importance, were of relatively simple construction in spite of severe climatic conditions. Here no permanently frozen ground or drainage problems were encountered, the subsoil being mainly silty sand and gravel.

The runways at Annette were constructed of quarry run rock dumped on muskeg which was often 18' in depth. This project not only required the use of considerable heavy equipment but involved unusual and difficult problems of construction. As of November 1943 no surfacing other than fine stone had been placed on either of the runways. At

Yakutat the terrain was flat and the water table close to the surface. Large drainage ditches were constructed parallel to the strips. Here both runways were paved with concrete. The asphalt runways at Juneau and Cordova were constructed by the Civil Aeronautics Administration. The concrete runways at Kodiak, jointly used by the Army and Navy, were constructed by the Navy under contract to the Siems-Drake Puget Sound Company. Their construction was relatively difficult, in view of the fact that considerable rock excavation was required.

The only runway or airfield construction in the Interior Area performed by the Corps of Engineers was at Mile 26 (a satellite field, 26 miles southeast of Ladd Field at Fairbanks). Here two 6,000' parallel runways are to be built by contract with the Morrison-Knudsen Company, of Boise, Idaho. At Ladd Field a 4,000' gravel extension was added to the 5,000' concrete runway previously built by the Constructing Quartermaster. All other runways in the Interior Area were built by the Civil Aeronautic Administration under civilian contract. At a few stations the Corps of Engineers, with troop labor or civilian force account, added certain taxiways and parking areas.

The most difficult and spectacular work on airfield construction was done in the Aleutian Islands. The unsurfaced field at Fort Morrow was constructed of a local pumice stone material by the Resident Engineer. The two runways at Cold Bay, built of sand and gravel, were commenced by the CAA but completed by the Corps of Engineers. Combination concrete and crushed rock runways at Fort Mears were constructed by the Navy under contract; primarily, they are used by the Navy. The runways at Fort Glenn, Adak, and Amchitka required more engineering ingenuity, and heavy construction

equipment and personnel than did the fields at Attu, Kiska, Atka, and Shemya. Shemya, although a major base, was of relatively simple sand construction. The fills on this runway were made by leveling huge sand dunes. Sand fills here ran to a maximum depth of 50'. A 3,000' long sand filled, steel mat-surfaced portion of the bomber runway was completed in 17 days. A 3,200' long, sand filled, steel mat-surfaced runway was constructed and in operation at Attu in 12 days. The Japanese had occupied the Island for 11 months and had not constructed a usable runway.

The development of steel runway landing mat was a highlight in Alaska airfield construction. The first shipments of runway mat left Seattle for Fort Glenn in February 1942. Since then over 26,000,000 square feet of mat has been shipped to Westward projects. Most of the mat is pierced plank type and on a suitable base has proven satisfactory for the heaviest bombers. Bar and rod mats were used in limited quantity for taxiways and parking areas but runway surfacing has been confined to the heavier plank type.

Two satellite fields, as well as three main runways, were constructed at the Fort Glenn site. All fills and surfacing were composed of volcanic cinder and ash available in the nearby hills. Inasmuch as good access roads could be built from borrow pits to runway sites, it was possible to employ speedy earth moving equipment.

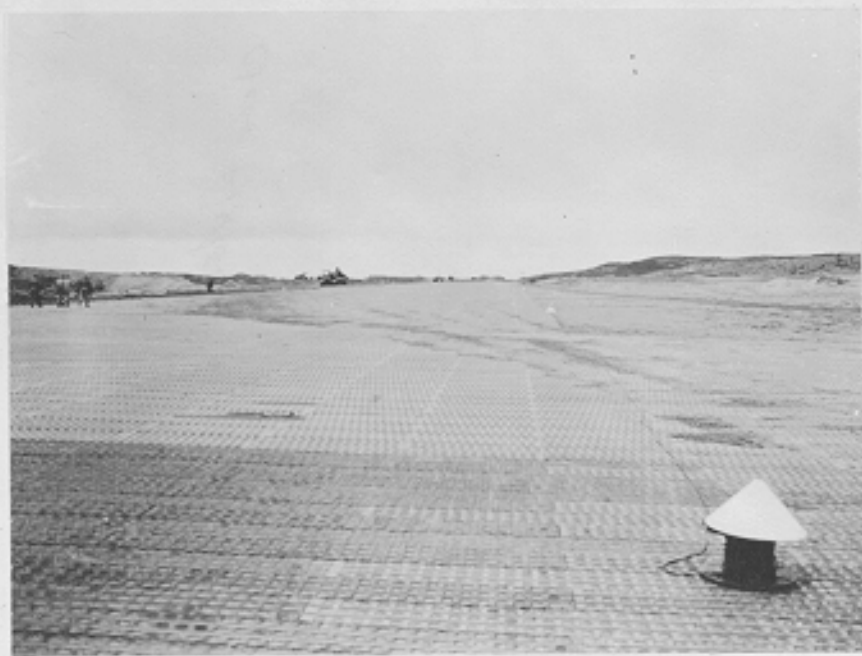
The construction of the three runways at Amchitka involved several unusual problems of construction. The short fighter strip was built in and on a tidal lagoon. This construction required the use of tidal control flood gates. However, the scale of this feature was small in

comparison with similar work done at Adak. The bomber runways were built of sand fill on deep muskeg. At all times the weather was foul as is customary in the Aleutians. Visibility at this station was often very limited due to fog. Frequently it was necessary for earth moving equipment to be operated with lights in daylight hours. More heavy equipment was employed on this project than on any other base in the Aleutians. Thirty-seven D-9 tractors, 23 carryall scrapers, 16 ten yard trucks, 25 three yard trucks in addition to nine  $2\frac{1}{2}$  and 5 yard shovels were among the equipment in use.

At Adak, runway locations were scarce but with the diversion of creeks and the establishment of a system of dikes and tidal gates it was possible to construct two runways in an area which formerly had been a tidal lagoon. It was necessary to eliminate several small hills between the lagoon and Kulak Bay to allow a clear approach from the sea. The sand available from the dunes bordering the bay, in addition to the hard packed, water washed sand of the lagoon, furnished excellent runway construction material. The shorter runway (6,000') was laid on the floor of the lagoon and required only surface leveling. Storms and heavy rains considerably hindered early construction of the diversion dike. One serious flood was experienced and the runway temporarily was inoperative. Because of the natural possibilities for runway construction afforded by the level bed of the lagoon, it was possible to construct the dike, dam out the tides and land air craft, including heavy bombers, within ten days after construction started. Thirteen days after the original task force landing was made some 43 planes attacked the Japanese held island of Kiska from this runway.



Runway construction showing portion completed  
steel mat. Looking west from Station "O".  
Shemya Island, Alaska. 7-7-43



(C496A) Runway construction showing portion completed  
steel mat. Shemya Island, Alaska. 7-7-43



Drainage ditch along east side of Runway "A",  
Longview, Alaska. 11-5-42



(C496M) General view temporary runway "A" (locking  
north), Adak, Alaska. 9-10-42



Completed portion steel mat - locking west from  
washout area - Shemya Island, Alaska. 7-7-43



(C496B) Runway construction showing fill and culvert  
Station #0" (washout area). Shemya Island,  
Alaska. 7-7-43



Runway "B" revetments and Engineer shop area  
in the background. Adak, Alaska 1-12-43



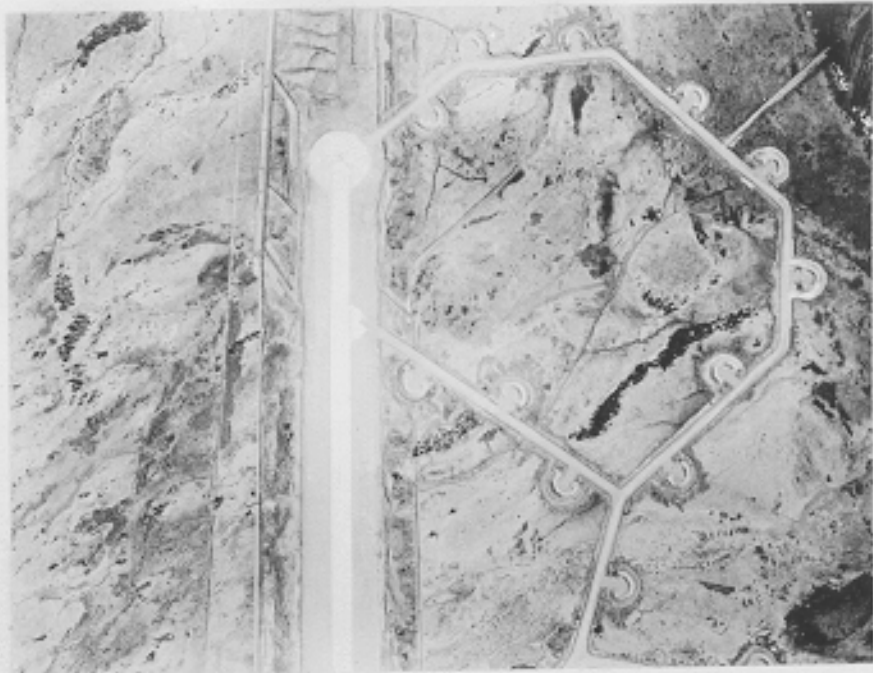
(G496H) Runway "B" revetment. Adak, Alaska. 3-1-43



Runway "B" from the top of Red Bluff.  
Adak, Alaska. 11-16-42



(C496J) Completed portion of runway "B". Adak,  
Alaska. 1-4-43



Aerial view. Yakutat, Alaska. 5-14-43



(C496L) Snow bank in front of P-40. Fort Randall,  
Alaska. 11-21-42



Fighter strip looking east. Amchitka, Alaska  
3-24-43

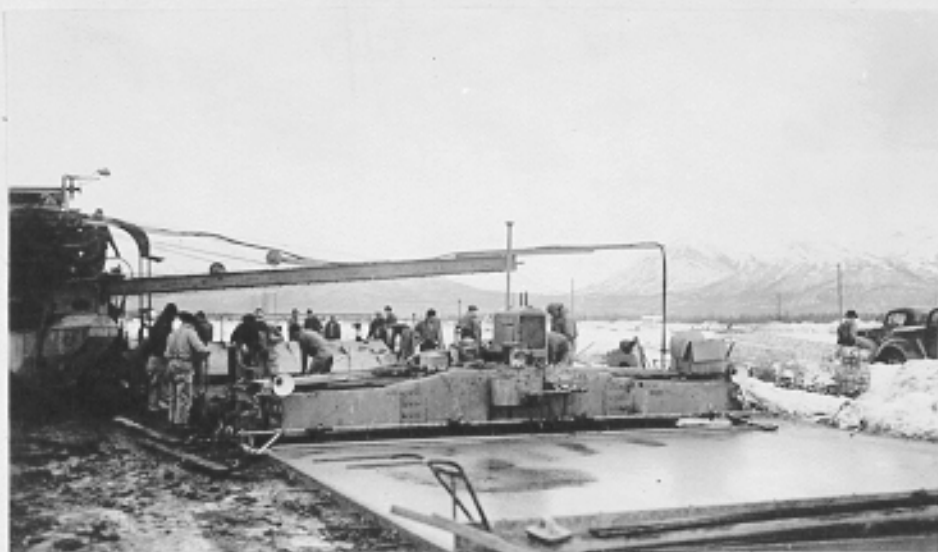


(C496E) Looking north along runway "A". Attu Island,  
Alaska. 6-6-43

Timber drag smoothing volcanic ash on runway.  
Fort Glenn, Umnak Island, Alaska. June, 1943.



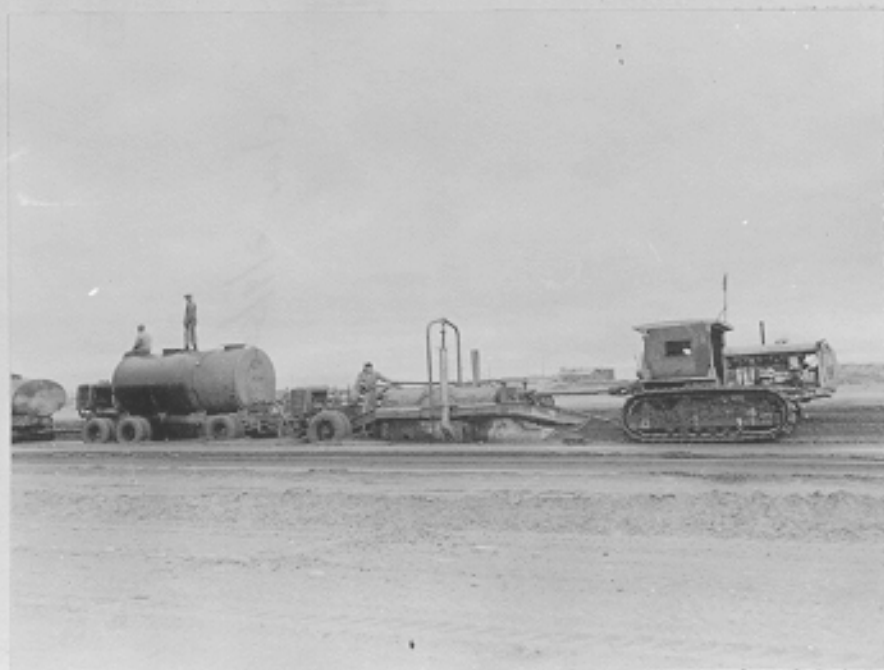
Gravel, volcanic ash, pierced steel plank or concrete -- the work was done quickly with the materials at hand to meet or better the completion dates.



(G520A) Pouring concrete on last 200' of the third 20' section of the 5,000' runway. Finisher in front center. Fort Richardson, Alaska.



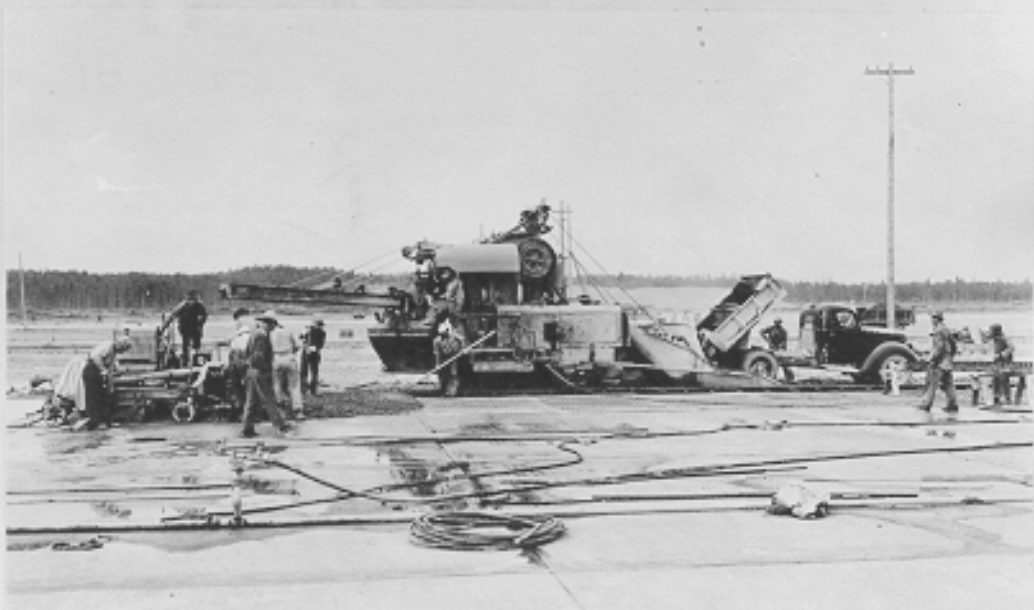
View of asphalt plant. Ladd Field, Alaska.  
8-20-43



(C496F) Laying the top on north-south runway looking  
north. Fort Randall, Alaska. 7-1-43



Northeast-southwest runway looking northeast  
from station 4,000. A-29 landing. Yakutat,  
Alaska. 5-14-43



(C496K) Runway apron paving. Fort Richardson, Alaska.  
7-23-43



Laying steel mat runway "A", Alexai Point,  
Attu Island, Alaska. 7-11-43



(C496G) East-west runway. Pouring Bitumin on North  
half. Cold Bay, Fort Randall, Alaska. 8-4-42

## DOCKS

Dock construction in Alaska was carried on mainly in the Coastal and Aleutian Areas. No dock construction of any consequence was carried out in the Interior Area. Docks varied in size and type, generally to suit the construction program and the future operations of the port.

Extensive dock construction was carried out at Excursion Inlet and Adak Island. Docks and allied port facilities were installed at all of the Aleutian projects and at Kodiak, Seward, Anchorage, Yakutat, Juneau and Annette Island. The above mentioned facilities were primarily built to accommodate oceangoing vessels. In addition, smaller docks to accommodate lighterage barges and landing craft were built. The vast majority of dock materials came from the States.

In many cases stiffleg derricks with a capacity up to 75 tons were installed on the docks to handle heavy lifts. In some localities it was necessary to use creosoted piling throughout due to the presence of teredos (marine borers). The type of piledriving equipment varied from light drop hammers to the heavy steam type (Vulcan #1 and 50 C). Compressed air proved to be more satisfactory and practicable in the operation of pile drivers. Since steam boilers required coal or fuel oil, as well as water which was not always as readily available as compressed air from portable gasoline driven units. Lack of shipping facilities to isolated projects was the determining factor in availability of boiler coal and fuel oil.

In the early stages of operation at several projects, make-shift docks of various local design were constructed. In some instances barges were filled with water and sunk to provide the necessary facilities. In one case a barge was deliberately overturned to provide a dock. In another case steel pontoons were flooded and sunk to provide cribbing for a rock fill dock.

To illustrate the scope of dock construction several typical installations are described as follows:

Adak - There are two ships docks for Army use. Both are of standard size and construction, 70' by 400'; one has an approach 32' by 400' and the other 32' by 500'. One dock is parallel to the shore while the other is at right angles. The latter dock was built by extending a lighterage dock. Two lighterage docks were originally built; one was converted to the ships dock and the other has a 200' approach with a 37' by 64' dock head.

Attu - There are two ships docks at the head of Massacre Bay for Army use. Both are standard type, situated at right angles to the shore, thereby making a "finger" type structure. One dock has a 32' by 610' approach and the other a 32' by 1,006' approach. Adjacent to the longer approach is a 40' by 182' LST ramp, a heavy, timbered platform extending beneath the water surface to provide a solid and dry landing area for LST's. The first ships dock was completed within three weeks of the initial landing.

Fort Glenn - Main ships docks are at Chernofski. Here two docks, 70' by 400', were built parallel to the

shore, and each has two approaches which average 230' long for dock #1 and 300' for dock #2. There are also two barge docks, one 20' by 60' and the other 20' by 120'. Cargo is lightered from Chernofski to Otter Point where barge docks are used for unloading; these docks are 31' by 201' and 60' by 165'.

Seward - A special dock for Army use was built. Overall dimensions are 90' by 745' and it has two warehouses, each 45' by 210', and a depressed railroad track down the entire length. There is a road approach 22' by 250' and the track approach consisting of approximately 700' of trestle and 250' of fill. Piling was treated and varied in length from 50' to 120', the excessive length being caused by deep water, penetration was not more than 25'.

Amchitka - A barge dock and a "finger" dock, constructed much the same as at Adak and Attu, was built at the head of Constantine Harbor. At Kirilof Point a special dock parallel to the shore was built with a rock fill approach and storage area. The dock structure is 70' by 800' with the fill extending along the entire landward side and it contains approximately 240,000 cubic yards of rock.

Excursion Inlet - Three dock units were constructed. Each dock is 100' by 1,000' and is located parallel to the shore. Approaches 96' wide and 150' long connect both ends with a shore fill, and in addition there is a 72' wide approach

at the center. Two of the docks have travelling gantry cranes along the face; one has a capacity of 20 tons and the other a capacity of 45 tons. The third dock has a 75 ton stiffleg derrick. Near one dock is a 400' by 100' barge dock and at another ship dock is a barge grid with a counterbalanced transfer bridge for direct cargo movement between the barges and dock. Untreated native piling was used with lengths from 30' to 85'.

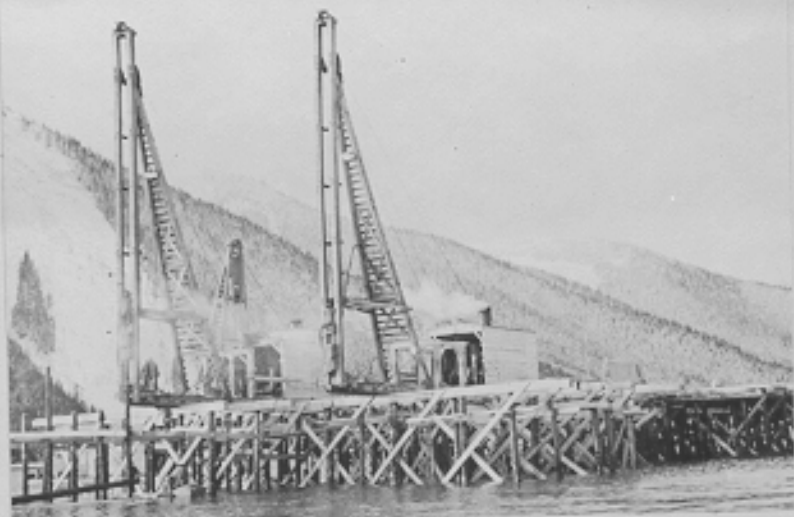


Seward Army dock, looking north. Fort  
Raymond, Alaska. 9-5-42



Whittier dock under construction. Alaska  
Railroad Passage Canal Connection. 9-26-42

(C491)



Ship dock #1, inside corner of dock and north approach ramp. Rigs driving pile on main dock. Excursion Inlet, Alaska. 12-18-42



Partially erected 20-ton Gantry crane on ship dock #2, looking northwest from cannery canning building. Excursion Inlet, Alaska. 9-7-43

(C4918)



Stiffleg derrick. Juneau Port Expansion  
Project, Alaska. 1-17-43



Gridiron transfer bridge. Juneau Port  
Expansion, Alaska. 5-17-43

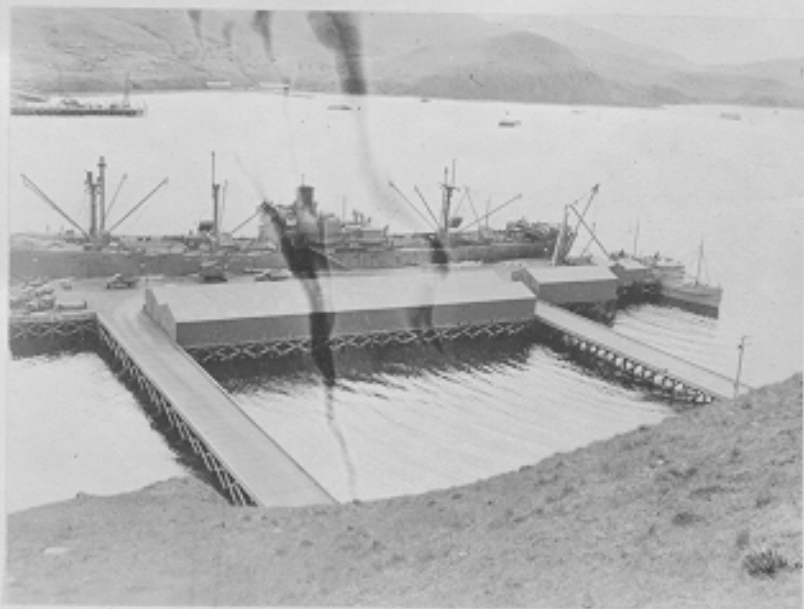
(C491A)



LST ramp construction, 98% complete.  
Attu Island, Alaska. 7-17-43



LST dock. Adak, Alaska. 8-12-43  
(C491D)



Completed dock with warehouses at Chernofski.  
Fort Glenn, Umnak, Alaska.

7-7-43



Dock and marine way construction. Attu Island,  
Alaska.

7-20-43

(C491C)



Kirilof dock and fill, looking northeast.  
Amchitka, Alaska. 7-29-43



Dock #2. Transports unloading. Amchitka,  
Alaska. 8-2-43

(C491E)

## BREAKWATER CONSTRUCTION

The construction of a breakwater or jetty on Amchitka Island in the far western Aleutians was the only work of this type undertaken by the Corps of Engineers in Alaska. However, at Sitka a causeway connecting 9 islands was constructed by Naval contractors. A description together with the length of time required to construct as well as cost data is given in the chapter covering Fort Ray or the Sitka Project.

On 17 December 1942, a reconnaissance party landed on Amchitka Island for the purpose of determining its suitability for use as an air base and garrison site. At this time, the Engineer elements of the party recommended that a breakwater be considered in the construction program. Several locations in Constantine Harbor were proposed. Immediately after the original task force landings in January 1943, the Commanding General and Resident Engineer strongly recommended initiation of jetty construction. Barges being used for lighterage between ships and shore suffered severe damage during heavy seas. A location was proposed, and sounding of the harbor floor was undertaken. Authorization for construction of this feature was granted by 1st indorsement, dated 28 February 1943, to basic letter from the Officer in Charge, Alaska Construction, to the Commanding General, Alaska Defense Command, subject: "Jetty Construction - Formula", dated 24 February 1943. Funds in the amount of \$1,500,000 were authorized.

Constantine Harbor is an open-mouthed bay situated near the southeast end of Amchitka Island. The harbor is oriented in a north-easterly direction and measures roughly  $1\frac{1}{2}$  miles wide by 3 miles long.

The north shore is lined by rocky cliffs reaching an altitude of 130', extending to a northeast headland known as Kirilof Point. The south shore is similarly lined by cliffs and reefs, but of a smaller size. Numerous small rock islands are situated at the harbor mouth near Kirilof Point. The head of the harbor consists of relatively flat terrain and marshland, and it was proposed to construct a standard ships dock at this location.

Preliminary reconnaissance of the sea bottom in the vicinity of Kirilof Point led to skepticism as to whether or not jetty construction was feasible. An alternate location for the jetty from the southeast shore was proposed, but abandoned on the basis that adequate protection of the harbor would not result. Final settlement was made on the location which would permit the breakwater to extend east from Kirilof Point, and by a series of bents, connect three major islands and two submerged high points to a distance of 2,300'.

It was decided to perform this work by contract and such was negotiated with West Construction Company in February 1943. Between March 7-26, a total of 103 civilians arrived at the project and began drilling two coyote holes in the harbor face of the cliff on Kirilof Point. The contractor furnished drilling equipment but Army trucks and air compressors were used in the operations. Drilling of coyote holes continued daily for two ten-hour shifts, and despite mechanical failures and inclement weather, civilian crews completed the holes and blasted the main quarry on 6 April, using 70 tons of powder. The first blast moved 120,000 cubic yards of rock.

The next 20 days were spent in carving a 2,500' access road in the rock along the harbor to the jetty site. On 25 April, dumping of core stone began. Civilian crews operated all equipment under numerous difficulties. At all times, overhanging rock in the quarry face presented a menace to drilling personnel and equipment. On two occasions severe storms washed out large sections of core stone, necessitating additional fill. On 7 August, armoring was completed and the feature was turned over to Engineer troops for maintenance. The core stone was of no specific size but armor rocks were at least 1 cubic yard in volume and many pieces reached a size of 15 and 20 cubic yards. Euclid trucks carried rocks weighing up to 12 tons but larger stones had to be dragged to the dumping sites on skids pulled by tractors.

Original plans called for a rock fill 1,500' long with a core stone section 22' wide at a crest 8' above M.L.L.W. Revisions were required to this size due to unusually heavy seas. The present breakwater is 2,300' long. The core is 30' wide at 17.5' above M.L.L.W., and armor rock is placed 7' thick on top, 8' thick on the faces, giving a section 38' wide at 21.5' above M.L.L.W.

The jetty made possible the construction and use of Kirilof Wharf, which is the largest in the Aleutian Islands, measuring 70' by 800', backed by a rock fill. Heavy storms have washed out as much as 200' of the jetty and constant maintenance is required to keep the jetty in usable condition.



Placing rock armor plating on breakwater.  
Amchitka, Alaska. 8-1-43



(C497A) Roadway on breakwater. Quarry in background.  
Amchitka, Alaska. 8-1-43

## WATER TRANSPORTATION

During the first stages of Alaska construction many small boats were directly handled by the Corps of Engineers for initial landings and lightering at new projects. Approximately 300 small craft including tugs, barges, fishing tenders and fish scows, power barges, yachts and lighthouse tenders were purchased for this work. Barges were towed to Westward locations at all times of the year while in previous civilian practice, tows beyond southeastern Alaska were made only infrequently during the summer months. Delay and equipment losses occurred but the results obtained far outweighed momentary reverses. Until March 1943, the Engineers, through the Seattle District Engineer, procured, manned and maintained all the floating plants. In March 1943, all floating plants except floating construction equipment was transferred to the jurisdiction of the Army Transport Service.

In addition to utilizing available steamship space, much of the cargo for the Alaska Barge Terminal was sent on barges from Seattle. Piling and dock timbers were frequently barged from Puget Sound to Aleutian projects. Except for the Alaska Barge Terminal, barges were sent to the other projects mainly for local use in lightering from ship to shore. Because shallow water and exposed locations prevented building ship wharves at Fort Morrow and Nome, all cargo had to be lightered. Naknek airfield is located 15 miles upstream on the Naknek river and only shallow draft vessels can be used.

There is no road from the airfield to the village of Naknek and freight is stored on the cannery docks at the village for later shipment or lightered directly from the ship to the site.

When the first moves to Unmak, Atka, Adak and Amchitka Islands in the Aleutians were made, direct landings of material on the beach had to be made, for there were no existing facilities. Ordinary flat wood and steel barges were pushed directly onto the beaches and tractor automotive equipment, lumber and construction supplies were unloaded on improvised ramps through the surf. After tractors had been landed, handling barges at the beach became easier for they could then be hauled close to shore and moved as needed. Lines to the shore, and stern lines to anchors were usually necessary unless the sea was exceptionally calm. In the occupation of Attu, Shemya and Kiska, special military landing craft were used in addition to barges. The LST's (Landing Ship Tank) and LCT's (Landing Craft Tank) carry large amounts of freight and equipment directly to the shore. These craft are equipped with landing ramps and stern anchors, and are of shallow draft and all steel construction. The greatest difficulty was experienced at Shemya where the unprotected shores were seldom free from high ocean waves, which made beach landings ineffective.

Direct landings on a beach were made only in the preliminary stages of construction at a project. Ship docks, lighterage docks and ramps for the LST's were given the first construction priority. Lighterage or barge docks are a necessary facility to

the main ship docks. They are used for unloading other ships by barging when the main docks are occupied and also for local distribution of cargo which can most expeditiously be moved by water.

At Fort Glenn on Umnak Island there are no protected sites for ships docks and it was necessary to use the harbor of Chernofski, 12 miles to the east on Unalaska Island, as the principal transshipping point. Here cargo was discharged from transports to barges or to temporary shore storage for lightering to Fort Glenn. The stormy waters of Umnak Pass caused great loss of cargo and equipment. Listed below are some of the more important wrecks which occurred in other Alaska waters. It is worthy to note that there was no loss of life connected with these operations.

Barge #33, 275-tons, en route from Fort Glenn to Adak, was lost near Inanudak Bay, Umnak Island, due to a storm and heavy seas on 24 January 1943. Included in the cargo were three trucks, a compressor, a ditching machine, a road grader, two trailers, two carryall scrapers and 87 tons of ammunition.

Barge #49, 350-tons, was lost in Chignik Bay on the Alaska Peninsula on 30 August 1942, when the tow line parted during a severe storm. The barge was later located on a beach on Nakchamik Island with the cargo intact. Attempts at salvage were stopped by another storm which broke up the barge and destroyed the cargo. Two trucks, a carryall and some truck tires were removed but the majority of the cargo including two road graders, several trucks, a power shovel, four Athey wagons, lumber pumps, and tractor parts

were buried in the beach gravel.

Barge #57, 350-tons, was lost 19 November 1942 in the Bering Sea during a storm with gales reported to have reached 80 miles per hour.

Barge #68, 350-tons, was lost near Amchitka on 13 April 1943 with 100-tons of bombs and ammunition and three tractors, two pumps and other construction equipment.

Two small tugs, the GENE and LAIDA, were lost in the heavy seas of Aleutian waters. Another tug, CHIGNIK II, exploded on 31 March 1942 and the resulting fire could not be controlled because of high winds.

In December 1942, Power Barge 110 succeeded in reaching Saint Paul Island to assist with lightering before the freeze-up, but it was there only a few days when the hull was ripped by submerged rocks in the harbor. The vessel was beached and is still at Saint Paul awaiting repairs.

Also in December 1942, Power Barge 108 was blown ashore in the Bay of Islands, Adak Island, during a heavy storm. It was later salvaged and towed to Sweeper Cove for repairs.

As mentioned above, great difficulty was experienced in maintaining the floating plant. Repair facilities in Alaska were entirely inadequate. Private marine ways are located at Cordova, Juneau and Ketchikan but they are not even sufficient to handle all civilian boat repairs and many fishing vessels have major work and the annual overhaul done in Puget Sound ports. Repair yards

for Army floating plant were built at the Alaska Barge Terminal at Excursion Inlet, Fort Raymond, Adak and Attu. Marine railways have been built at Alaska Barge Terminal and Fort Raymond, to accommodate maximum dimensions as follows: draft 15', length 172' and tonnage 500-tons.

In connection with the haul-out ways complete machine, sheet metal, steel plate, plumbing, electrical, carpenter and welding shops have been provided. These facilities were completed during the fall of 1943 and the Army Transport Service is responsible for their operation.

At Chernofski, bargeways and woodworking shops were constructed for a maximum draft of 5'6" and a gross weight of 200 tons.

Marine repair facilities constructed at Adak and Attu by the Army Engineers include 300 ton gross weight bargeways, a woodworking shop and machine shop. The machine shop is to be used with floating drydocks furnished by the Navy.

When all construction is entirely complete at coastal stations, small craft will continue to be needed for harbor patrols, lightering and supply of outposts and minor stations. For this reason marine repair works were primarily a part of some of the garrison programs, but their completion is an aid to floating plant engaged mainly in construction activities.



Unloading scow Mastodon at temporary barge dock. Excursion Inlet, Alaska. 11-1-42



Unloading construction materials from barges (C498B) at Auke Bay. CAA Garrison, Juneau, Alaska. 4-23-42



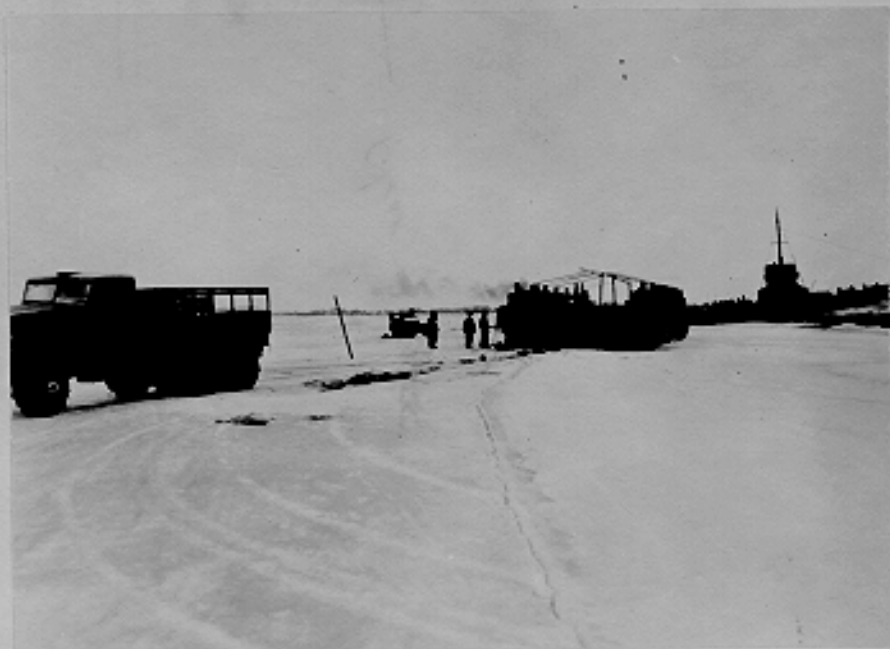
Unloading freight at base camp. Fort Morrow,  
Port Heiden, Alaska. August, 1942



(C498) First barge unloading of heavy equipment.  
Adak, Alaska. 8-31-42



Unloading runway steel from barge. Attu Island,  
Alaska. 6-2-43



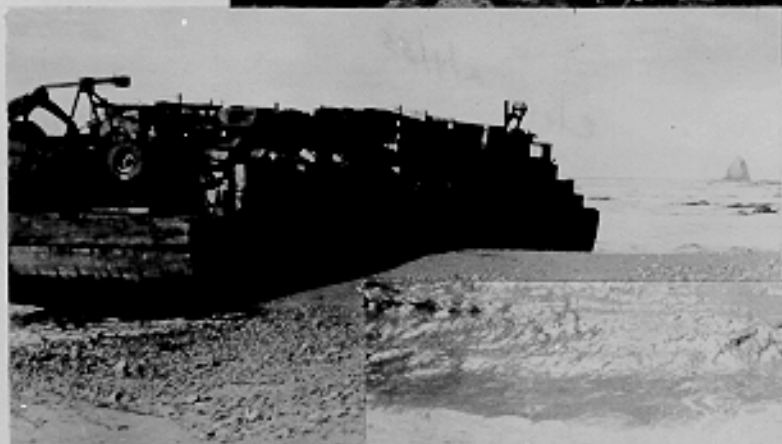
Barge being broken loose from ice. CAA Bethel,  
(C498C) Alaska. 3-6-43



Average type conditions on barge lightering gas storage. Nome Garrison, Alaska. 10-9-42

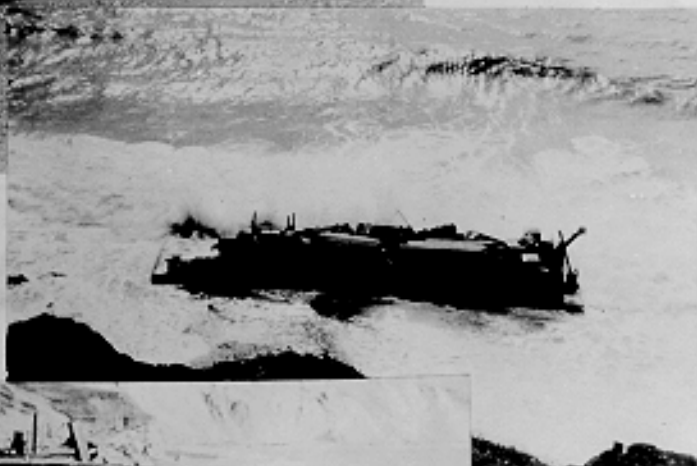


(C498A) Landing and moving mobile radar equipment to site. Picture taken in a southerly direction. Mobile site is about 1 mile distant in center foreground. Jeanie Point, Montague Island, Alaska. 5-12-42 - 5:00 a.m.



Barge transportation is hazardous in Alaska waters.

Inanudak - Chignik -  
Saint Paul - Umnak -  
Adak and other locations  
were the scene of such accidents.



C526) Repair yards for Army floating plant were built at Excursion Inlet, Port Raymond, Chernofski, Adak and Attu.



Dock unit #1 - Marine Ways in foreground -  
 looking southeast from cannery oil dock.  
 Excursion Inlet, Alaska. 9-7-43



(C502 A) Dredging for Marine Ways at north end of  
 dock unit #1, looking west. Excursion  
 Inlet, Alaska. 8-3-43



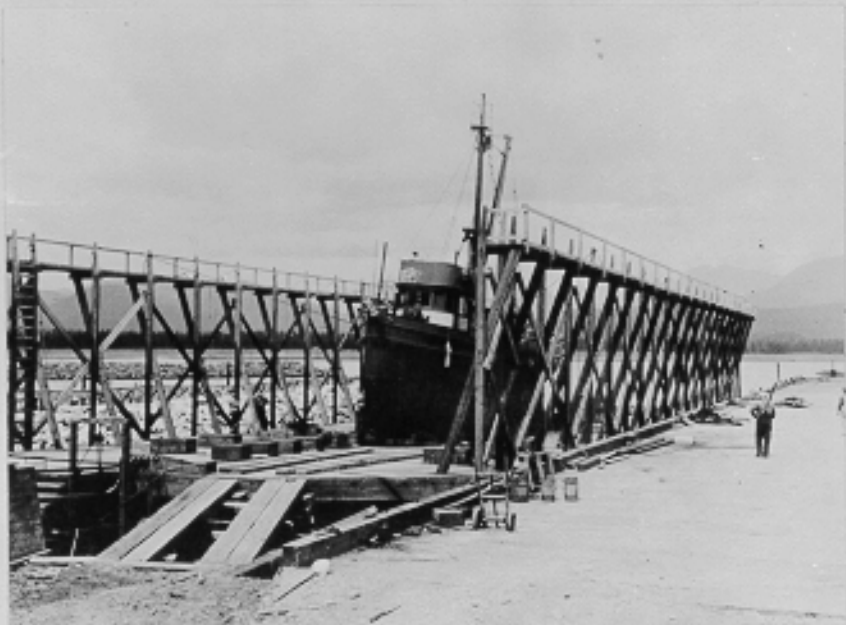
Marine Ways and Marine repair shop, looking southeast. Excursion Inlet, Alaska. 7-13-43



(C502) Front view of barge on Marine Ways. Adak, Alaska. 3-29-43



Marine railway cradle, looking northeast.  
Seward, Alaska. 6-1-43



(C502B) Raising boat on Marine Railway, looking north.  
Seward, Alaska. 7-20-43

## ROAD CONSTRUCTION

Road construction was carried on at all projects in Alaska. Few features of construction were of more importance than this work. Road nets were a vital link from beach or railhead to project sites and their importance cannot be overemphasized.

Types of roads built varied with the locality as well as materials and equipment available for the work. Equipment used was similar in the Aleutian, Coastal and Interior Areas. Bulldozers, carryalls, shovels and trucks were the primary units of construction. The work was done by civilian as well as troop labor.

The design of roads was generally local to suit conditions as found. Widths varied up to 30' with no set standard design. For the most part surfacing was gravel, sand, quarry run, or crushed stone. As of November 1943, practically no road construction with surfacing other than that listed above had been carried on.

Road construction at Annette Island was probably the most difficult of that carried on at all projects in the Coastal Area. Here the muskeg swamps were unusually deep (up to 18'). Lumber and corduroy roads were built in some instances. Rock fill on this muskeg required an excessive amount of fill. Most road construction was gravel fill at Cordova, Juneau and Fort Richardson. Road construction at Yakutat approached, if not equalled, that at Annette in difficulty. Conditions insofar as drainage and muskeg were similar, and large ditches were built paralleling the roads. Roads were constructed

mainly of quarry run and crushed rock at Sitka, Kodiak, Dutch Harbor, and Seward. A considerable amount of plank and corduroy roads were necessary for access to Sitka fixed defense garrisons. Gravel furnished for the most part the material with which roads were built in the Interior Area. Due to frozen ground conditions in many localities considerable fill was required. Particular emphasis was placed on proper drainage. An additional problem was caused by the spring thaws. Frost boils, cracks and heaving frequently disturbed road surfaces.

Practically all roads in the Aleutian Area were constructed partly on muskeg. Considerable fill was required although drainage was relatively unimportant. The heavy mat of moss and grass retards rainfall run-off. Probably the most outstanding single piece of road construction in the Aleutians was the road from Massacre Bay to Holtz Bay on Attu Island. This particular piece of road required considerable rock excavation in addition to the usual Aleutian problem of fill on muskeg. The road ran through a high mountain pass in the center of the island. The majority of work on this job was done by the West Construction Company, Boston, Massachusetts. The volcanic ash found on Unnak Island supplied excellent road material. The majority of roads in the Aleutian Islands were constructed of sand or quarry run rock. No surfacing was used other than additional gravel.

Approximately 1,129 miles of road were constructed at the 35 Alaskan projects. Of these, 134 miles were built by contractors and the remainder, approximately 1,000 miles, were built by troop labor or force account. Primary roads (averaging 18' in width) amounted to

645 miles and secondary roads amounted to 484 miles. The eight projects on which most road work was done are: Yakutat, Fort Richardson, Fort Randall, Fort Glenn, Fort Greely, Fort Mears, Adak and Amchitka.

Bridges and culverts were an essential part of road construction. Every section of road construction required culverts of various types and sizes; however, not all required bridges. This feature was more essential in the Coastal Area than in either the Aleutians or Interior Area. Various designs and types were built and materials were generally of the rougher, more readily available type. Timber and log framing comprise the majority. There were no outstanding pieces of bridge construction done by the Corps of Engineers. However, the Corps of Engineers operating under the Northwest Service Command, whose activities are not covered herein, built several remarkably fine structures on the Alaska highway.



Typical section of road to Ocean Cape - Point  
Carrew. Yakutat Landing Field, Alaska. 9-23-42



Rock fill on the Metlakatla road. Notice to the  
left that the mud and sand is being pushed up  
from the ponds. Looking west from station 48+00.  
Annette Island Landing Field, Alaska. 7-31-42

(C492A)

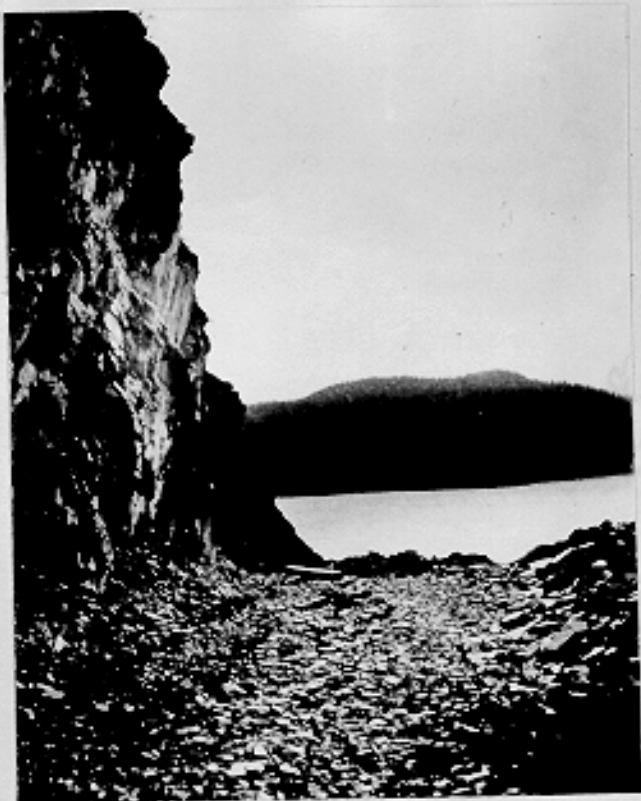


Bessie Road fill near the S & A Battery, 81st F.A. Nome Garrison, Alaska. 6-9-43



Bessie Road fill near the S & A Battery, 81st F.A. Nome Garrison, Alaska 6-9-43

(C492)



Caines Head to Rocky Point road showing high point of cut looking north. Fort Raymond, Alaska. 9-20-42



Idak Road in construction on Idak Peak. Fort Glenn, Alaska. 12-13-42  
(C492D)



Road to Hill 800, looking west. Sitka, Alaska.  
7-2-43



New road across Eskimo Creek from construction  
area to garrison area. CAA Naknek, Alaska. 8-17-43  
(C492E)



Umanak Island - Construction road between gravel  
pit and runways. Fort Glenn, Alaska. 7-7-42

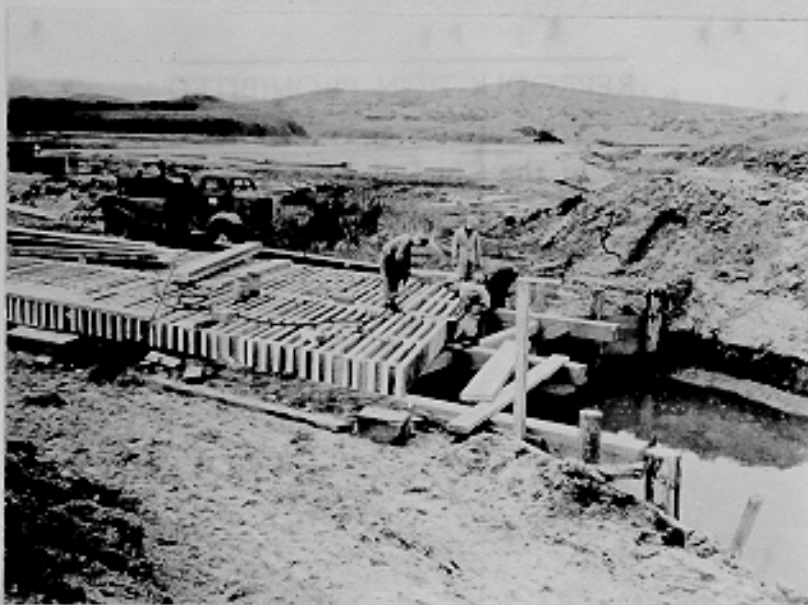


Arnold Road. Amchitka, Alaska  
(C492B)

4-9-43



Bridge over North Creek built by 331st Engineers,  
looking east. Excursion Inlet, Alaska. 4-26-43



Bridge and culvert construction, runway "B" extension. Adak, Alaska. 8-13-43

(C492C)

## HOUSING AND FACILITIES

To properly garrison the thousands of troops stationed all over the Territory of Alaska required construction of many different types of housing. General speaking there were ten separate and distinct types used. Some types were suitable for both Interior, Coastal and Aleutian Areas, others were not.

Probably the most satisfactory type of housing when considered from all angles has been the Pacific Hut. The manufacture of this type of housing was commenced at approximately the peak of construction in Alaska and proved to be invaluable as a substitute for several types then in use. This manufacture required the use of only a small amount of critical materials (7 percent). Practically all the materials required come from the Pacific Northwest in the vicinity of Seattle where the factory is located (approximately 700 units per month are manufactured by this concern). This unit is a sectional hut, 16' by 36', built of plywood with arched sides and roof. Its compactness in shipping, its ease of erection, its light weight and its windproof and waterproof qualities, in addition to its cheapness, make this unit by far the most satisfactory type of housing used.

The construction of Theatre of Operations type barracks was carried on in all areas as was the erection of Pacific Huts. Ordinarily housing units of this type were constructed in 20' widths, ranging up to 160' in length. Messhalls, latrines and baths, recreation buildings, laundries, machine shops, dry cleaning

plants, shoe repair shops and warehouses as well as barracks were built using this type of construction. These units can be erected by inexperienced labor, all materials cut and assembled at the site. Rough lumber and building paper comprise the majority of materials used.

The CCC type building was of prefabricated wood panel construction and was easily erected. However, the disadvantage of this type of housing was the space required in shipping as well as the fact that it was subject to leakage from wind and water. The majority of this type of building was used for warehouses, administration buildings, messhalls, baths and latrines and barracks. The design is similar to standard insulated wood frame construction with drop siding and tar paper roofs. The erection of this type of building on unstable soil often led to unsatisfactory floor conditions.

The Yakutat Hut is a simple wood frame hut, 16' by 16', of prefabricated panels or sections. It was so-called because it was first erected at Yakutat. In the early stages of construction in Alaska this type was usually sent to new construction projects because of its easy erection. In the latter stages of construction they were used primarily as drying rooms and shelters for power plants and pumps.

The Quonset Hut is of prefabricated, corrugated sheet iron. Ordinarily it was supplied in two sizes, 16' by 36' and 24' by 60'. The larger size (prior to the cessation of its manufacture) was mainly used for hospital wards. The many windows and extra

space afforded by this large type unit served this purpose admirably. The Pacific Hut is modeled after this unit, the main difference being the type of materials used in fabrication. Manufacture of the Quonset Hut requires the use of critical materials almost entirely, steel predominating. For the most part these units were used for housing although their use as shelters for power plants, recreation buildings, tool houses and small warehouses was resorted to. The erection of the 16' by 36' hut normally required less than 100 man-hours.

Mobilization buildings of wood frame, permanent type were specially designed for large cantonments in rear areas. This type of building was used for barracks, warehouses, recreation, and administration buildings. At the beginning of construction work in Alaska a considerable number of this type were built at Fort Richardson and Seward, and the Navy built many at Fort Mears, Fort Ray and Fort Greely. In order to carry out the policies of dispersion and camouflage, the erection of these larger type units was discontinued. Also, this type required skilled labor for erection.

Permanent barracks of reinforced concrete and steel were erected at Ladd Field to house cold weather experimental personnel. In addition the married officers quarters, bachelor officers quarters, NCO apartments, hospitals, theatres, laundries and warehouses followed the same type of construction at this station. It was elaborate and costly construction which required considerable skilled personnel and time to erect. The

design and planning of this type of construction was formulated to suit peacetime conditions.

Heavy permanent construction approaching this type was carried out at Fort Richardson, Fort Greeley, Fort Mears and Fort Ray; however, not as elaborate and costly as that at Ladd Field.

Latrines and baths, messhalls, recreation buildings, dry cleaning and shoe repair and utility shops as well as numerous administration and technical facility buildings were some of the uses to which all of the above types of housing were put.

Several types of housing to provide quick shelter in winter time were used. Winterized tents consisted of wooden floors and sides and light skeleton framework for standard 16' by 16' Army pyramidal tents. Stout Houses and Jamesway Huts were frequently provided by the Air Corps for use of their personnel and were designed to give shelter only during the initial stages of construction. The Stout House is a simple 12' by 16' hut, built of prefabricated wood composition panels. It is box-like in design and requires very little construction effort. Both it and the Jamesway Hut can be flown in transport aircraft. The Jamesway Hut is of 16' widths supplied in multiple lengths of 8'. It has wooden floors and laminated wooden hoops for framework. The frame work is covered by a rubberized canvas tent. The hut is cylindrical in appearance and similar to the Pacific and Quonset Huts in that respect.

As was stated above, laundry equipment was placed in many types of shelter. This equipment was ordinarily furnished in

1,000 and 2,000 man units. Special arrangement and design of machines was necessary to care for the additional bulk of Alaskan and Arctic clothing. Bakeries were housed in many types of buildings although the Theatre of Operations, 20' by 80', was widely used. This equipment was usually issued in 1,000 to 10,000 man capacity units.



Air Corps weather station. Quonset hut (24 x 60) showing winter conditions. Fort Morrow, Port Heiden, Alaska. 1-24-43



(C488E) Snowbank against Quonset Hut -- capacity 10 men. At some Alaska stations temperature often down to 70 below. Engineers and Engineer supervised civilian workers as well as troops occupied these shelters. Fort Randall, Alaska. 11-21-42



Quonset hut being jacked up prior to moving -  
Anvil Creek, north end hospital area. Nome  
Garrison Project, Alaska. 1-17-43



Quonset hut in ice, Anvil Creek, north end of  
hospital area. Nome Garrison Project, Alaska.  
1-17-43

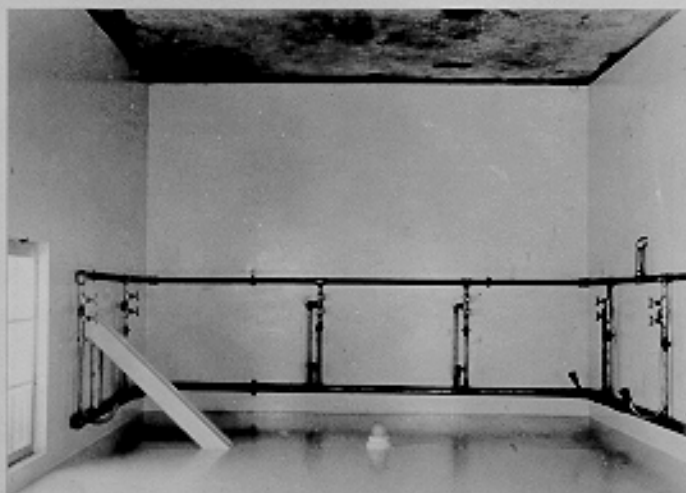
(C493)



Ordnance Warehouse (16 x 32) KD Yakutat Hut.  
CAA Gulkana, Alaska. September, 1942.



(C488F) Pacific Hut (16 x 36). Fort Richardson, Alaska.  
3-15-43



Interior view of 20 x 80 L & B Air Corps  
Expansion area. Nome Garrison, Alaska.  
2-4-43



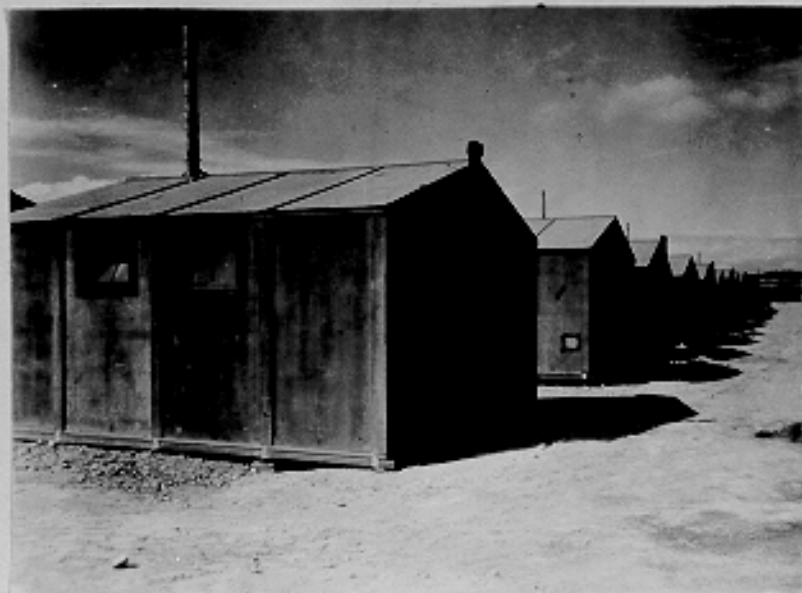
Looking northward at 20 x 80 L & B, Air  
Corps Expansion. Nome Garrison, Alaska.  
2-4-43

(C493D)

Yakutat hut, Revetment "A", Fort Richardson,  
Alaska. 6-20-42



All types of huts were used on Alaska projects  
- - Quonset, Pacific and Yakutat huts were the  
three most widely used types.



(C520) Stout hut barracks, 16' x 16' -- designed to  
be flown in cargo planes. Fort Richardson,  
Alaska. September, 1942



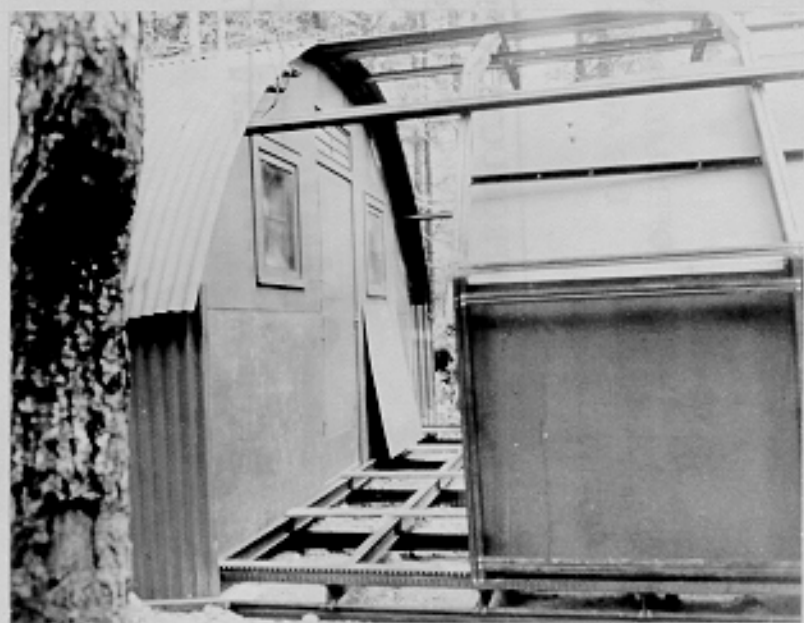
Mess hall (kitchen). CAA Bethel, Alaska.  
3-6-43



Interior view of new Post Laundry, Burma Road,  
Unalaska Valley, Dutch Harbor, Alaska. 10-2-43  
(C493C)



Interior view of 40' x 80' Recreation building in construction camp. CAA Garrison, Juneau, Alaska. 3-5-43



Connecting two 16' x 36' Quonset huts for Recreation building in Hospital Area. CAA Garrison, Juneau, Alaska. 3-5-43

(C493A)



Barracks and hospital building, looking west - general progress - detail of east side. Ladd Field, Fairbanks, Alaska. 3-3-41



Winterized tents - Internment camp, Guards' quarters. Fort Richardson, Alaska. 3-6-42

(C493G)



Hospital surgery building, interior view of  
operation room before painting. Nome Garri-  
son, Alaska. 6-28-43



Exterior view of hospital supply building  
constructed in "T" shape using three Quonsets.  
Nome Garrison, Alaska. 6-28-43

(C493E)



KD mess halls buildings 1 and 2, looking southeast.  
Fixed Seacoast Battery 293, Seward, Alaska. 5-10-43



Aerial view. Amchitka, Alaska.  
(C 493B)

8-3-43

## UTILITIES

(Water, sewage disposal, power, light and heating)

As set forth in the preceding chapter on General Housing and Facilities, it was pointed out that types of construction varying from peacetime permanency to wartime crudeness were used. Utilities of all types followed this trend. The first established bases, such as those at Ladd Field, Fort Richardson, Fort Mears, Fort Greely and Kodiak, required comparatively elaborate utility systems.

After the declaration of war the trend toward dispersion demanded smaller power plants, designed to service widely dispersed cantonments. The same was true of sewage disposal systems and heating arrangements and other utilities.

Power plants varied from the two 3,000 KW units in the central heating and power plants at Fort Richardson and the 1,500 KVA power plant at Ladd Field to diesel powered generating units of 100, 75, 50, 40 and 25 KW capacities erected in widely dispersed localities at other stations. In some cases where garrisons were established near populated communities it was found practical to connect to the community light and power system. This was usually done by means of a standby agreement in which the Army would furnish the community light and power in the event of a shutdown and vice versa.

Because of tactical reasons necessitating simple building types, the utilities in the Aleutian Area were likewise of simple construction. For the most part water was supplied by damming streams and small creeks. Wells, both shallow and deep, served as standby units and sometimes as primary sources. To decrease the use of critical materials wood stave

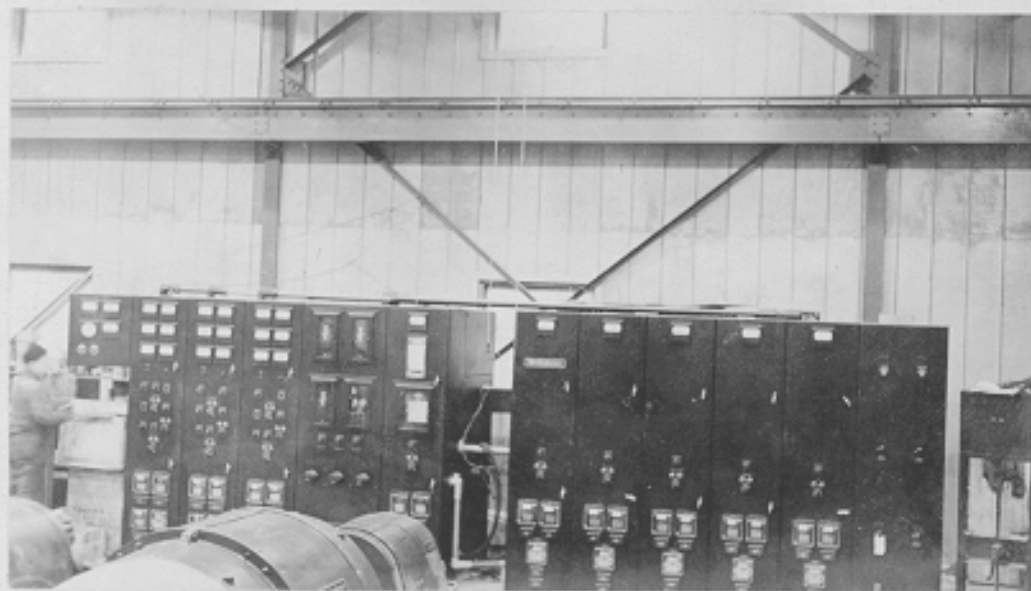
pipe, a common conduit in the Pacific Northwest, was often installed for water distribution systems. In the Coastal Area, particularly in South eastern Alaska, it was possible, at practically all stations, to supply water by means of small dams and distribution lines. At Fort Richardson a timber crib, rock filled dam was constructed approximately 6 miles from the garrison site and provided a gravity system. However, in view of the severe climatic conditions it was necessary to provide heating arrangements whereby all water piped through this line could be heated at the source in the winter time.

In the Interior Area water supply was a serious problem. In addition to the severe winter climatic conditions, the permanently frozen ground provided added difficulties. It was frequently necessary to lay steam pipes inside of the water mains. Where this was not done heavy insulation had to be provided. Deep wells were often drilled through permanently frozen strata to water bearing gravel.

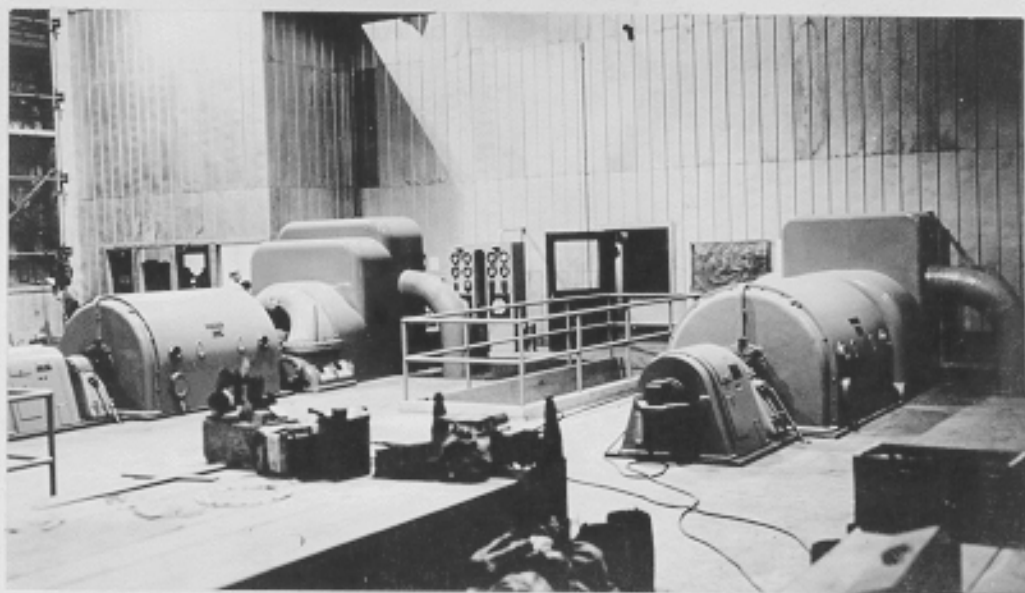
A septic tank sewage disposal plant was constructed at Ladd Field inasmuch as the garrison was located approximately three miles up stream from the city of Fairbanks. At other projects where water borne sewage was used the outfall discharged into a sufficiently large body of water to eliminate the necessity of treatment plants. By and large, pit latrines accounted for most sewage disposal.

Many types of heating plants were built, the largest and most elaborate being at Fort Richardson and Ladd Field where steam distribution systems were constructed. However, these steam systems only provided heat for the original cantonment. The expanded garrisons were heated by smaller individual units placed in each building. This

latter method was followed almost entirely after the declaration of war. Coal, wood burning stoves or oil space heaters were placed in all buildings requiring heat. Design of stoves and heaters was the same throughout Alaska, the colder areas and more northerly latitudes merely required additional fuel. For the most part, small, steam central heating plants were provided for hospital units. Wood burning units were furnished only where wood was plentiful, such as The Big Delta and Galena Projects.



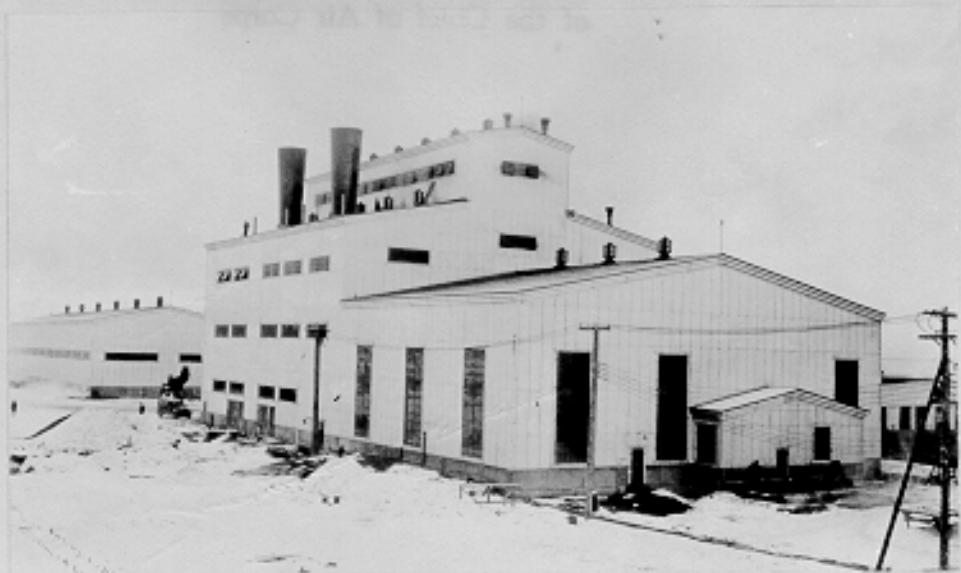
Powerhouse - generator room looking east at  
generator instrument panel and control board.  
Ladd Field, Fairbanks, Alaska. 1-16-41



(C511) Power Plant - generator room, condensing tur-  
bine #1 on left and non-condensing turbine #2  
on right. Fort Richardson, Alaska. 1-15-42

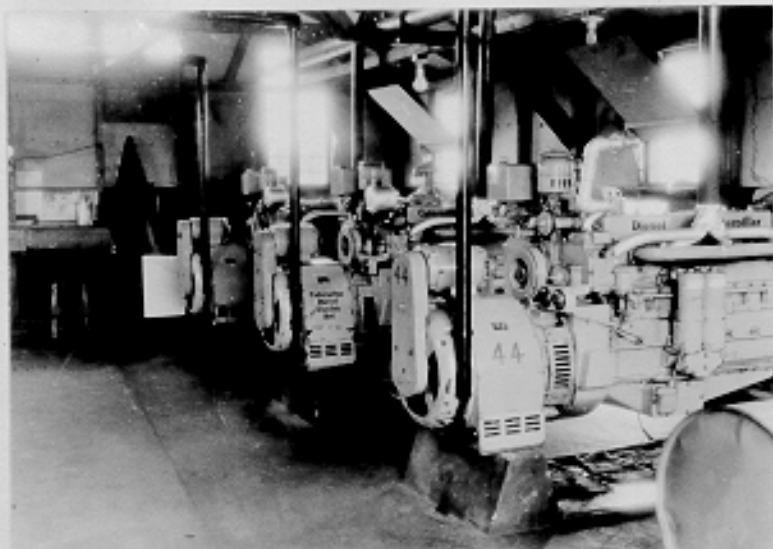


Exterior of powerhouse, rear view. CAA Bethel,  
Alaska. 7-12-43

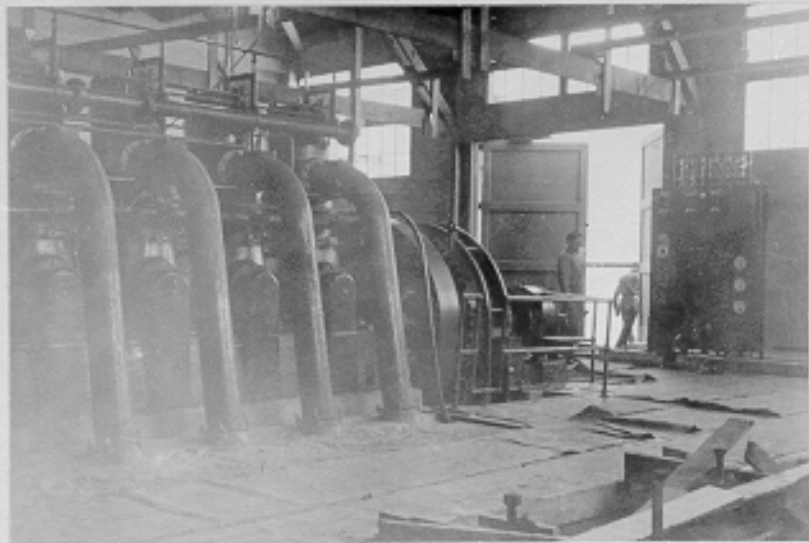


Central power and heating plant. Fort Richardson,  
Alaska. 1-21-42

(C494B)



Powerhouse - interior view showing generators.  
Yakutat Landing Field, Alaska. 7-30-42

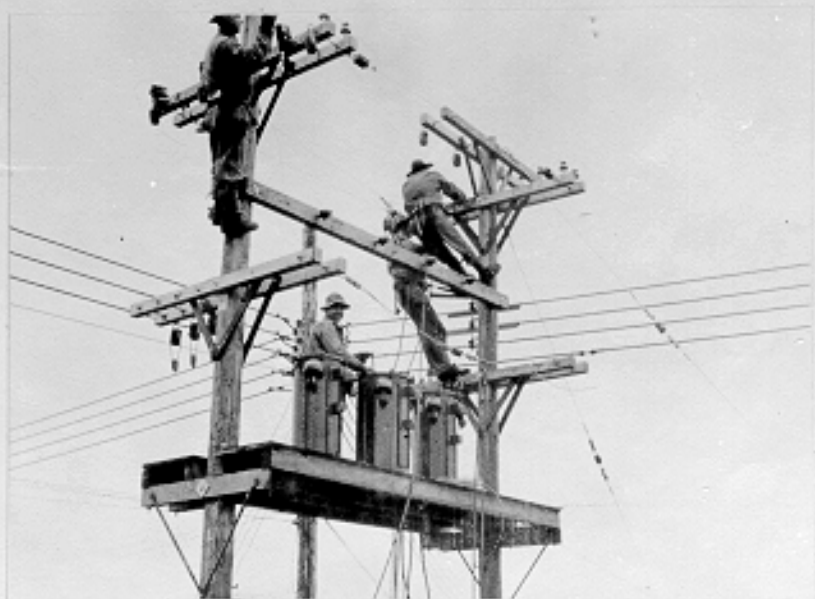


First unit of power plant in operation. Taken  
from back corner of base of 2nd unit. Alaska  
Railroad Passage Canal, Whittier, Alaska.  
8-1-43

(C494A)



Transformer bank near laundry from road looking east. Nome Garrison Project, Alaska.  
12-1-42



Transformer bank at Headquarters powerhouse under construction. Three 25 KVA 110/208 to 2300 volt. CAA Naknek, Alaska. 8-17-43

(C494C)

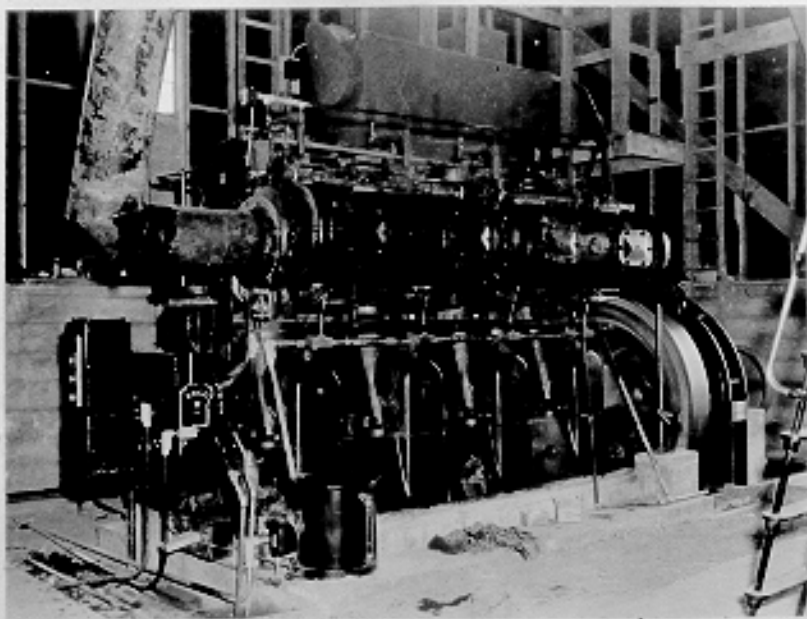


Well digger, drilling at bakery. Cold Bay,  
Fort Randall, Alaska. 11-8-42.

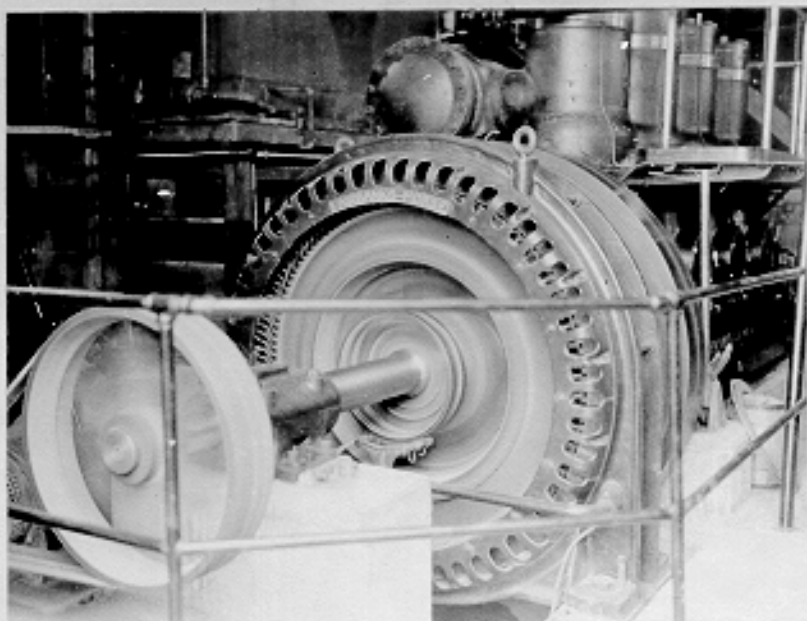


Ditch digger working on permanent water supply  
line. Fort Glenn, Alaska. 8-10-42

(C494E)



Diesel generator plant. Fort Glenn, Umnak, Alaska.  
7-7-43



Generator in operation. Fort Glenn, Umnak, Alaska.  
7-7-43

(C494F)



North Creek Dam #1 - Main water supply looking north, also downstream. Log skidding cat hyster in foreground. Excursion Inlet, Alaska. 4-28-43



North Creek Dam #1 - Looking north and downstream. Excursion Inlet, Alaska. 4-28-43

(C4940)



Laying wood stave pipe for Yellow Lake water line, looking north from station 80+00. Annette Island Landing Field, Alaska. 1-10-43



Welding pipe for dock water line. Fort Randall, Alaska. 8-27-43

(C494G)



Dug well in Air Corps area. CAA Bethel, Alaska  
3-6-43



Upstream face of Cove Creek Dam. Alaska Railroad  
Passage Canal, Whittier, Alaska. 9-4-43

(C494)



Looking east from a point approximately 1 mile west of Fort Richardson, showing construction of Gravity Sewer Line. 3-13-41



View showing difficulties encountered in installing 4" sewer line from ACS area at Mile 11 to Mendenhall river. CAA Garrison, Juneau, Alaska. 4-20-43 (C494H)

## GASOLINE AND OIL STORAGE

The construction of facilities for storage of gasoline and oil was standardized, regardless of locality. Weather and unusual climatic conditions had little effect upon this feature of construction. As has been previously stated in the chapter on Air Fields, practically all projects were centered around the construction of air bases. Accordingly, considerable storage of fuel for air craft and vehicle operation, as well as the storage of Diesel fuel oil for heating and power requirements, was necessary.

Many different types of storage tanks were used. Tanks for the storage of gasoline, in the early stages of construction, were for the most part 25,000 and 50,000 gallon welded type steel units. Bolted type steel tanks of 500, 5,000 and 10,000 barrel capacities were installed at the peak of construction. At Fort Richardson and Nome, in addition to the smaller sizes, 24,000 barrel welded steel tanks were constructed. Wood stave tanks for the storage of Diesel and fuel oil were installed, although 10,000 barrel reinforced concrete tanks were built at Fort Richardson.

For both gasoline and oil storage, the number of tanks erected varied from a minimum of one at some projects to a maximum of 125 tanks at others. The largest storage systems were established at the larger projects, such as Shemya, Adak, Unak, Fort Richardson, Ladd Field, Nome and Fort Randall. At some stations storage consisted entirely of drums.

The size of petroleum pipe lines varied from 3 to 12". The total length of lines laid varied from a few hundred feet at projects

having small storage capacities to the larger projects having a total length of pipeline in excess of 50,000 feet. Pipe used varied from standard weight to light weight spiral welded type. Pipe sections were connected mainly by welded joint and Dresser type couplings.

At all bases constructed near harbor facilities, a main fill line was built from the dock to the tank farms. At Fort Richardson, from peacetime design, an Aqua System was constructed. This system employed the displacement of gasoline by water through a system of electrically controlled pumping stations. Wherever possible tank farms were located to permit gravity discharge to fueling pits and truck fill stands. The failure of a mechanical system at Midway established a definite trend toward gravity supply gasoline distribution systems.

Practically all the the steel tanks used on Alaska construction were assembled at the sites. Considerable difficulty in obtaining steel, welding rod, experienced welders, and welding machines often delayed assembly of these units. Troop as well as civilian and contract labor welded or bolted the units. The 25,000 gallon welded steel tanks were, however, often shipped on the decks of transports from the States to the projects.



Gasoline pumping line looking toward Fort Richardson  
from gasoline pumping station. 10" main gas line.  
Fort Richardson, Alaska. 9-14-42

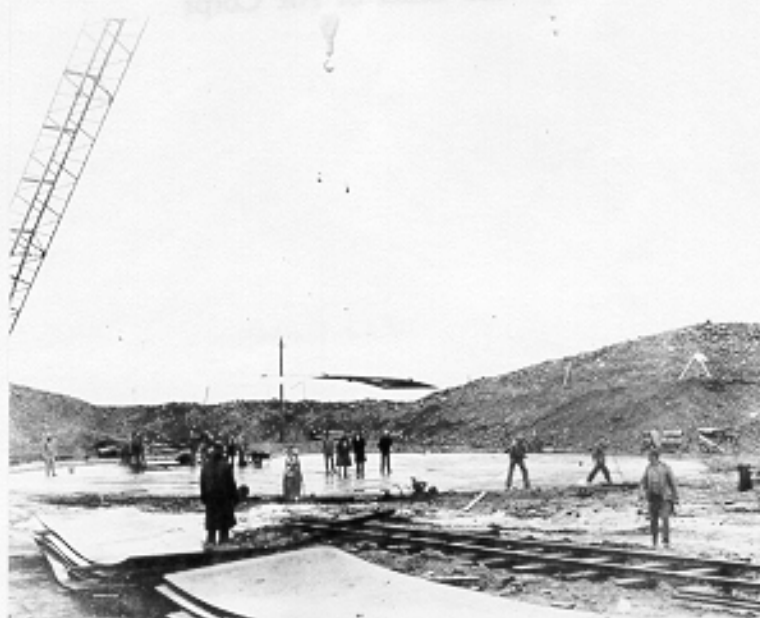


Welded section of pipe line being transported to loca-  
tion near Satellite field. Nome Garrison Project, Alaska.  
9-26-42

(C495A)



ACOR tank in transit to concrete saddle foundations.  
Yakutat Landing Field, Alaska. 9-9-42



First steel floor plate being moved into position at  
tank #1. Nome, Alaska. 8-23-42

(C495D)



Gas storage tanks ready for camouflage. Amchitka, Alaska. 5-19-43

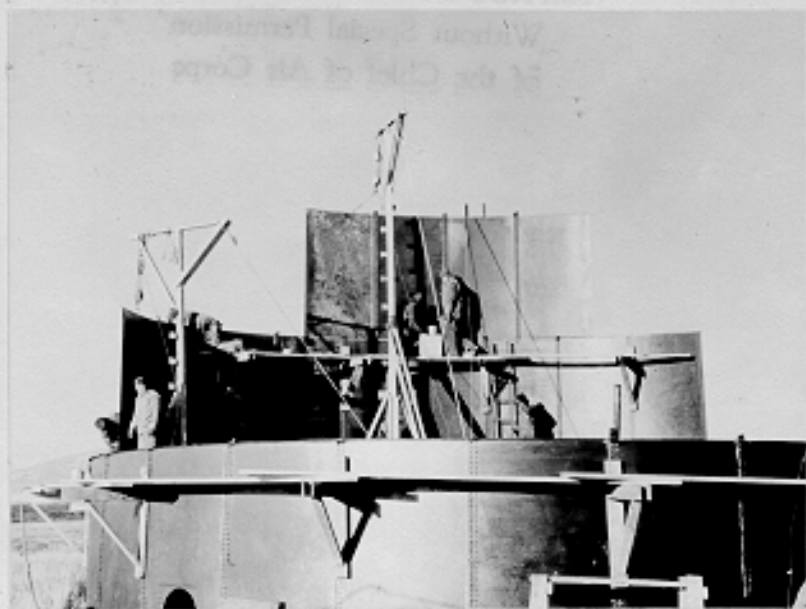


Pipe held with tripods for welding. Amchitka, Alaska. 5-19-43

(C495 B)



Test water flowing from tank #1, gasoline storage  
shovel and dozer backfilling. Nome Garrison Project,  
Alaska. 10-5-42



Start of third shell, tank #3, fuel oil, with half  
of second shell erected. Nome Garrison Project,  
Alaska. 10-8-42

(C495)



Gasoline tanks being put together with welding shed in background. Fort Glenn, Umanak, Alaska. 6-10-43



Fuel oil storage. Concrete storage tank No. 1 (10,000 barrel). Fort Richardson, Alaska. 10-11-42

(C495C)

## HANGAR CONSTRUCTION

Hangar construction was immediately necessary to provide adequate operating facilities at the various airfield projects. With few exceptions, all airfields at which garrisons were built a hangar program was included. This has been noted in the narrative of individual projects covered heretofore.

It was not found necessary to vary the type of construction of hangars in accordance with the locality. The type of construction used in design and erection of hangars in the Coastal Area could have served the Interior and Aleutian Areas and vice versa. The only limiting factor was shipping facilities; i.e. weight and space of materials, and shortage of critical materials.

Six main types of airplane hangars were constructed. A brief description of each together with their additional uses is listed in the following paragraphs:

Base and Operations Hangars were constructed at Fort Richardson. These hangars were designed during peacetime and were included in the original program of the Constructing Quartermaster. The principal design features are massive steel arches set in concrete abutments giving clear hangar floor space and approximately 35' head clearance. Two-storied shops and office wings line the outside length. The base hangar has a 60' by 240' addition at one end. The floors are concrete, the roofs copper. Heat was provided from a central plant. Concrete and steel compose the main building materials. The over-all

diminsions of the base hangars are 270' by 270'.

Base Hangars, the largest hangars in Alaska, were constructed at Ladd Field. These hangars were also designed under peacetime conditions. As in the case of the Base and Operations Hangars at Fort Richardson this hangar was mainly constructed by the Corps of Engineers. Clear floor space was obtained by steel trusses supported on steel columns with concrete footings. The exterior was covered with mansard sheathing. Office space and necessary work shops were an integral part of the building which had over-all diminsions of 271' by 327'.

Temporary or Yakutat Hangars were so-called because they were first erected at the Yakutat Landing Field. Of peacetime design its principal building materials are steel and sheet iron. It can be dismantled and re-erected inasmuch as steel trusses, roof members and columns have bolt connections. Steel trusses supported on steel columns and braced by steel wall and roof members form the frame work. Double-storied lean-tos were constructed on either side. The main floor space is 120' by 220' and the lean-tos, 20' wide, run the entire length on each side.

Birchwood Hangars are to be built at a number of projects. They derive their name from the project at which their construction was first proposed, a satellite field near Anchorage. They were designed by the Seattle District Engineer and consisted primarily of 150' timber bow-string trusses supported on timber columns. A 25' lean-to on either side provided stability as well as work shop space. Concrete foundations and floor are used and the over-all dimensions are 202' by 300'

although in some cases hangars of this type are to be constructed with 200' length.

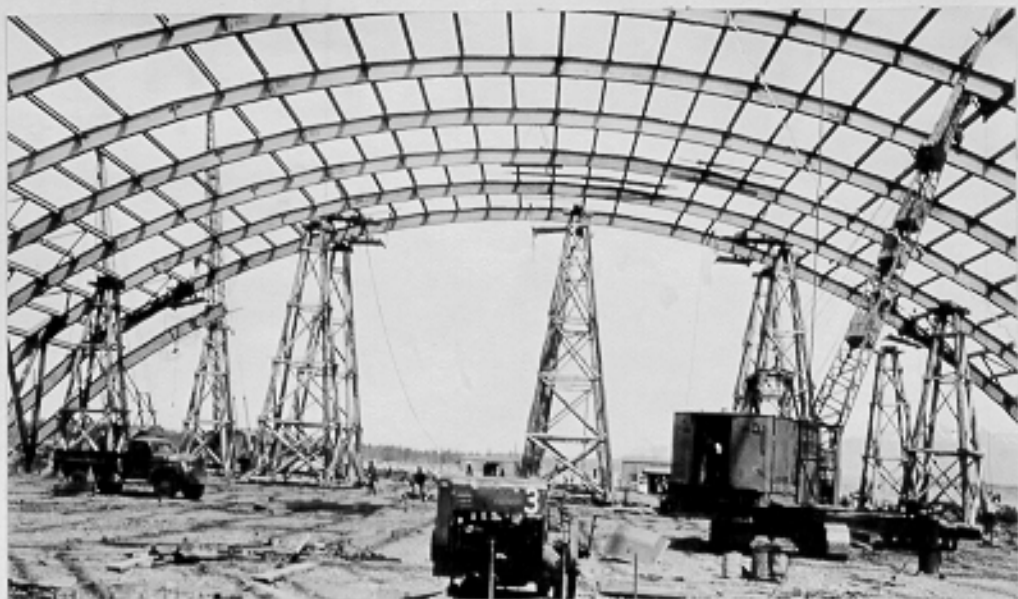
TBA Hangars were designed and manufactured by the Butler Manufacturing Company of Minneapolis, Minnesota. It is of knock-down construction consisting entirely of steel. Trussed steel arches resting on concrete abutments are the principal features. Corrugated metal roofing and concrete floors complete the structure. Primarily the hangars were manufactured for over-all dimensions of 130' by 160' but in some cases two buildings were combined to give greater length. Ordinarily there are no lean-tos on this type of hangar although at one project 25' wooden lean-tos were added for work shops.

"T" or Kodiak Hangars were so-called because of their resemblance to the letter "T" and the fact that it was first designed and constructed by the Navy at Kodiak. The District Engineer prepared modified design utilizing all wood construction with bowstring or Howe trusses supported on timber columns. Foundations and floors are concrete. The hangar was designed to accommodate one large bomber or three fighters. Dimensions are as follows: wing section (or top of "T") 129' by 47' and tail section (or stem of "T") 40' by 55'.

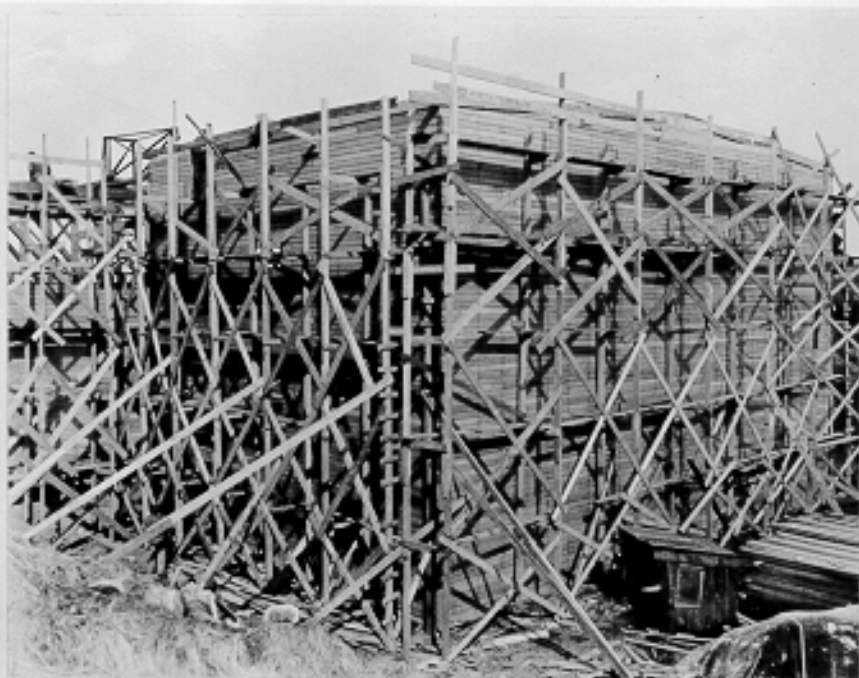
Temporary Nose Hangars of light wooden construction were also built at many projects. These hangars were usually of makeshift construction and were primarily for the purpose of engine repair in inclement weather. At times canvas covering with pipe framing was used for these temporary structures.



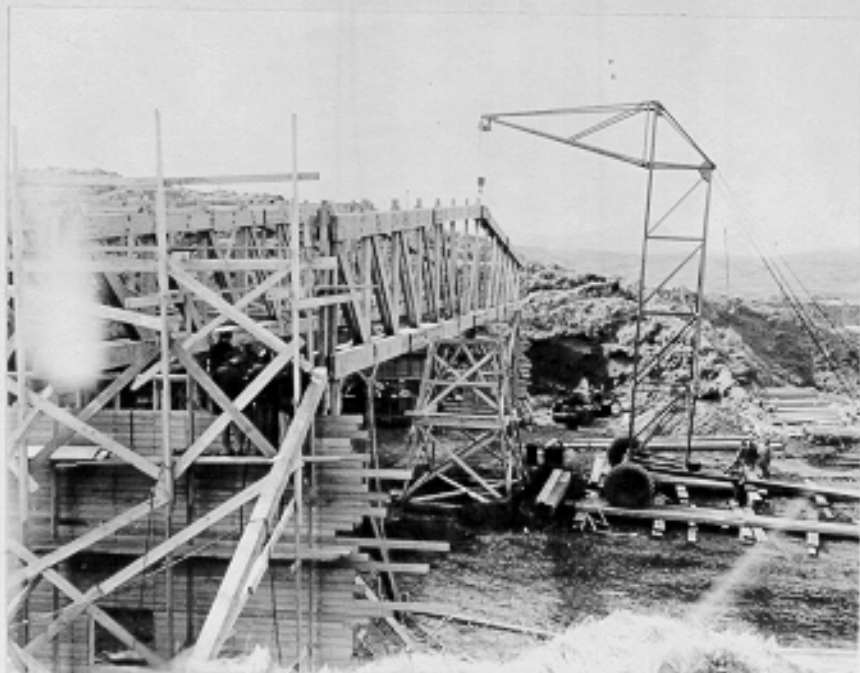
Aviation Engineers portable hangar under construction near future taxi strip. CAA Naknek, Alaska. 8-26-43



(C499) Base hangar - 2 cranes on 17-ton section of arch 1. Fort Richardson, Alaska. 6-3-41



"T" hangar #1 - rear. Adak, Alaska. 3-15-43



(C499A) "T" hangar #1 - all trusses in place. Adak, Alaska. 3-4-43

WAREHOUSE CONSTRUCTION  
including  
COLD STORAGE BUILDINGS

The immediate building of warehouses was an essential item of construction at all projects.

As in the case of several other units of garrisons or airfield construction, the types of warehouses built in the Coastal Area were normally satisfactory in the Interior or Aleutian Areas as well. There were, however, certain exceptions, the Cowin warehouse being the most notable. Its erection in Alaska was discontinued in the early part of 1943, primary reasons being difficulty of erection, use of critical materials in fabrication and the fact that high winds, rain and snow caused extensive leakage.

Warehouses are heated by steam, wood, or coal stoves or oil space heaters.

There are ten main types of warehouses constructed. A brief description of each is given in the following paragraphs.

The most widely constructed warehouse was that known as the Theatre of Operations type. The majority of structures of this type were 20' in width, their length varying from 60' to 180'. The three heavier types of T/O warehouses varied in multiple widths of 50' to 150' and 180' in length. All were of wood frame construction using little if any critical materials. The use of heavy roofing paper for additional siding was often resorted to. This requirement was particularly true in the Aleutians where high winds and rain

caused leakage.

The knock-down or CCC type portable warehouses were also extensively used. Its floor, wall and roof sections were paneled and prefabricated. In this structure little critical material was used and roofing paper was necessary only on the roof. Light battens filled the connections between wall panels.

The Loxstave unit was the lightest wooden construction building used as a warehouse. These buildings were of special wood construction, pre-fabricated and pre-cut. The use of a patented end connection at the corners simulated log cabin construction. This connection was designed primarily to allow use of solid walls and to eliminate studding and overhead bracing.

Warehouses built on mobilization designs were of relatively stable construction. The most widely used was 60' by 153'. This peacetime type of construction was built mainly at Fort Richardson.

Transit sheds, in connection with port and terminal facilities, were the heaviest type warehouse constructed. Their size varied -- the largest, completed by November 1943, were 181' by 400' at the Alaska Barge Terminal. Construction was heavy timber frame with floors of concrete.

Several pre-fabricated steel types were used. The most widely erected being the Cowin until its use proved unsatisfactory. A 40' by 80' type was developed for the Air Corps at Wright Field. Alaska use was relatively limited although satisfactory. Its de-

velopment came toward the latter end of the construction period.

Quonset and Butler type, steel skeleton framed, with arched corrugated roofs and siding, were sometimes used as warehouses.

A few special type reinforced concrete warehouses of various sizes were built at several projects. These normally included office space.

Cold storage buildings varied from standard CCC type to Theatre of Operations and mobilization types. As in the case of warehouses a few special units were built of reinforced concrete.

Cold storage installations have been for the most part designed to utilize a direct system with the liquid Freon as a refrigerant. There are two cold storage plants (Ladd Field and Fort Richardson) which employ ammonia as a refrigerant, operating through an indirect system.

Engineer storage area. Adak, Alaska. 1-8-43



Officers and men on time with all the orders, plans and maps in their pockets -- the equipment, food, guns and tents on the same ship, barge, train or motor caravan -- made the Fighting and Construction program possible on the Alaskan Mainland and on the stormy wind-swept Aleutian Islands.



Main Dock #1. Adak, Alaska.

1-8-43

(C5200)



Warehouse and open storage area. Juneau  
Port Expansion, Alaska. 5-17-43



(C500C) Looking west along wharf. Juneau Port  
Expansion, Alaska. 5-17-43



Refrigeration plant from the top of a boxcar in the railroad. Note cantilever beams at front canopy. Alaska Railroad Passage Canal, Whittier, Alaska. 8-1-43



(C500A) Warehouse at dock unit #3, looking west from top of quarry face. Excursion Inlet, Alaska. 9-3-43



Completed warehouse in area G. Fort Glenn,  
Alaska. 12-22-42



Showing U.S.E.D. warehouse on beach at  
(C5000) Chernofski. Fort Glenn, Alaska. 3-23-43



Cowin hut under construction in Satellite  
area - view taken from road, looking south-  
east. Nome Garrison, Alaska. 12-1-42



(C500) T/O Warehouse - completed (exterior). CAA  
Bethel, Alaska. 8-2-43

## EQUIPMENT AND EQUIPMENT MAINTENANCE

Heavy construction equipment required in Alaska was predominantly of the earth moving type. This was supplemented by rock hauling equipment. Many lessons were learned and faults discovered in the use of various makes and types. By 1943, through the process of elimination, the better and more practicable types of equipment for Alaska construction were known. By that date they had been used under practically every circumstance and climatic condition in Alaska. The most outstanding types as well as makes and models, are briefly listed in the following paragraphs, together with a statement as to their uses.

The most important and widely used, by far, of all equipment used in Alaska construction was the crawler type tractor, the Caterpillar RD-8 and D-8. Some of these machines were equipped with dozer blades, others with rear power control units used for carryall work. Many of these tractors were first used at Annette Island and later moved from project to project. In many instances these tractors had single drum towing winches mounted on the rear and were used for many purposes such as logging and chunking out operations on the southeastern projects and for barging and beaching operations in the Aleutian area. Prior to road construction, at many stations tractors were used to pull track laying trailers and sleds freighting food and supplies. Smaller tractors such as the D-7 and D-4 were used primarily for

either bulldozers or freighting work.

Carryall scrapers ranging from 4 $\frac{1}{2}$  cubic yard LeTourneau to the 24 cubic yard Wooldridge Terra-Clipper were used. The small sizes pulled by D-4's were used in light road construction. The 10, 12 and 15 cubic yard LeTourneau scrapers were used in stripping operations both for road and runway construction. Two 12 cubic yard machines were sometimes hooked in tandem behind a D-8 tractor, loaded with the help of a pusher cat and used on the longer hauls and in large fills.

The tractor was also used to haul Athey trailers of two types; one, the bottom dump (13 cubic yard) used to haul from shovels on the shorter hauls, and second, the freight trailer -- a flatbed track laying trailer of 5 and 10 ton capacity. These were often used in trains consisting of 2 or 3 trailers behind one tractor to transport food and construction supplies to outlying posts where no roads had been constructed. This enabled construction of camp sites, shops, radar stations and satellite airfields to be under way prior to laying the network of roads.

Shovels and draglines of 3 $\frac{1}{8}$  to 4 cubic yard capacity were used. These machines were sometimes equipped with special undercarriage to permit their use on swampy terrain. The undercarriage consisted of longer track frames and special tracks which were both wider and longer. Shovels and draglines from 3 $\frac{1}{8}$  to 5 $\frac{1}{2}$  cubic yard capacity were gas powered and were used mainly for loading smaller trucks for maintaining and ditching

roads and runway area. Often the draglines were converted to cranes for use in unloading boats and barges and in connection with dock construction. The larger shovels, in most cases, consisted of 1 $\frac{1}{2}$ , 2 and 2 $\frac{1}{2}$  cubic yards, diesel powered, and were used mainly in airfield and road construction. Generally speaking, Bucyrus Erie and Northwest proved most satisfactory. A few 2 cubic yard Osgoods and 2 cubic yard P & H's were used but were not successful. As of November 1943, the units used the longest were 2 electric powered 120-B Bucyrus Erie, 4 cubic yard. Also, there were used with good results, 2 each 4 cubic yard Lima draglines with 90' booms, powered with Cummin's diesel engines. The ground at Nome and in the interior was frozen so hard that steam thawing operations were necessary and in some cases a frost ball had to be used before these machines could be utilized.

As soon as roads were constructed trucks of capacities from 1 $\frac{1}{2}$  to 20 cubic yards were brought in. The 20 cubic yard Westerns started Alaska construction at Annette Island Landing Field and advanced successively to stations in the western Aleutian Islands. These trucks were Cummin's powered, chain driven and have proven excellent for this type of work.

Fifteen ton, 10 cubic yard Euclid rear dump trucks were also used in major construction. Trucks of smaller sizes, such as 5 cubic yard Internationals, 3 cubic yard GMC's, 1 $\frac{1}{2}$  cubic yard Chevrolts and Fords, were used on all projects.

Predominating on projects were the 2 1/2 ton, Army issue, cargo trucks which were allocated to the construction forces by the Chief of Engineers. Many of these trucks upon allocation were converted to 3 cubic yard dump trucks for construction uses. These trucks performed admirably after weak spots found in the first few months of their use had been remedied. This consisted mainly in strengthening the frames and installing heavier type springs, both front and rear, and additional overload springs to help absorb part of the load on the rear springs.

Later additions to construction equipment were the Tournaulls and EW-10 Caterpillars, rubber tired tractors equipped with either carryall scraper or bottom dump trailer, both rubber tired haul units. They performed their work well wherever the terrain and soil conditions were such that they could be worked.

Two different types of graders were used. The pull grader, towed by a D-7 tractor was used only under the most severe conditions and in the pioneer construction of roads. The motorized patrol graders, Caterpillar #12, Austin Western #99M and Galion were the makes predominating. These were equipped with 12 foot blades. These patrols would maintain the roads and the runways in the initial stages of construction. They were also used to construct and ditch the roads on level terrain.

Elevating graders were given a trial in the initial construction of roads and runways, but due to the muskeg they proved unsuccessful and were abandoned.

Rooters were required on many projects, the most successful being the LeTourneau cable control unit. Rooters enabled the use of carryalls for moving materials which would otherwise have had to be moved by shovels and trucks. This was particularly true in partially frozen ground.

Operating and maintenance problems encountered throughout Alaska construction proved that equipment must be carefully selected. Experience showed that Caterpillar tractors, LeTourneau power units, dozers and carryall scrapers, Bucyrus Erie and Northwest shovels were excellently adapted to the punishment that equipment must take in Alaska. One of the most difficult problems experienced was securing the initial and subsequent supplies of spare parts. All of the equipment was subject to 24-hour continuous operation and as such, maintenance work was heavy. It can not be too greatly stressed that adequate supplies of spare parts should accompany each piece of equipment to the project.

As can be seen from the preceding portion of this chapter, the operation of all types of equipment was a major feature of construction work in Alaska. In order to properly maintain and operate this equipment and to insure maximum efficiency, a careful selection of personnel was necessary. The early erection of

shops for maintenance work was essential on all projects. Frequently in the Aleutians hasty erection of shops was accomplished merely by hollowing out sand dunes or hillsides and stretching tarpaulins over the excavation. Later, rough temporary structures, often built of ship's dunnage, sufficed until adequate shops were built. The construction of adequate shop facilities was of lower priority than items of airfields, road systems, hospitals and mess halls.

Tools and shop equipment were frequently limited. (See Construction Problems). The small mobile shop units issued to engineer units were of greater benefit, particularly in the early stages of work. However, for heavy maintenance they were entirely inadequate.

In the commencement of all new projects, particularly in the Aleutians, equipment was required to operate under very unfavorable conditions. Tractors, trailers, shovels, draglines and trucks frequently worked in deep salt water, sandy beaches, muskeg, mud and snow before proper roads were constructed. Under these conditions proper inspection for lubrication and maintenance was a necessity. Operators were often inexperienced, particularly in the operation of equipment under such conditions.

At all Alaska projects practically 75 per cent of the work of maintaining equipment was done by enlisted personnel--in the Aleutian area approximately 90 per cent. Unusually proficient

enlisted men were selected from the various engineer units engaged on the project, and were put in charge of the different crews to supervise and train additional personnel. This system proved to be very satisfactory. However, the most satisfactory maintenance work in the entire Aleutian Area was done by the 468th Engineer Maintenance Company. Several months after construction started at Fort Glenn this Company was assigned to this project. The personnel which comprised this unit were experienced and very capable. The shop established at Fort Glenn is one of the best equipped shops in Alaska.

Probably the most outstanding and practicable permanent shop was built at Excursion Inlet. This unit was composed of a machine shop, welding shop, blacksmith shop and repair shop. It was 80' by 200' and divided into two 40' sections. The front 40' section was used for overhaul work. A portion of this section was equipped with pits for work on trucks and similar equipment. The remaining floor space was used for reconditioning tractors and shovels. This one half section of the shop was of sufficient size to accommodate a construction job employing 30 to 40 large tractors, at least 6 shovels and a fair sized fleet of heavy trucks. It was equipped with a 15 ton overhead crane which traveled the entire length of the building with connections to the machine shop. Side entrances to this section enabled the equipment to be brought in for minor repairs and removed again

without disturbing equipment which might have been in for complete overhaul jobs. The remaining 40' by 200' of the building was partitioned into different sized sections to accommodate the machine shop, welding shop, blacksmith shop, mobile repair shop and parts room. In the machine shop, equipment consisted of a 24" lathe with 16' bed, complete with taper and grinding attachments; a 12" lathe with similar attachments; one 5' radial drill; one #4 Milling machine; one 18" shaper and one hydraulic press of 100 ton capacity. In addition to several portable welders the welding shop was equipped with two 250 to 300 amp gasoline driven electric welders, preheating furnace, acetylene generator and several acetylene welding and cutting outfits.

The above described shop is the only one built in Alaska by the War Department in which parts room, machine shop, tractor and truck repair shop were consolidated under one roof. Permanent shops of smaller size and capabilities were built at Ladd Field, Fort Richardson, Annette, Yakutat, Adak, Amchitka, Attu and Shemya. The shop at Fort Glenn, as was previously mentioned, fell in this category. While these latter shops are not as elaborate as the Excursion Inlet shop the type of equipment employed was practically the same.

When the Annette Island Project was completed the machine shop was transferred to the Excursion Inlet Project. The Yakutat shop equipment, upon completion of that project, was shipped to Amchitka and installed. For the Shemya Project a complete

second-hand shop was purchased in the States and installed on that job.

The small mobile shop units mentioned above consisted of two enclosed trucks and trailers. In one of the trucks, machine shop equipment was mounted. This equipment was composed of a 9" gap bed lathe with milling and grinding attachments, a small shaper, drill press, grinder and press. The other truck had in it all the hand tools, special pullers and service tools for the repair and adjustment of the different heavy equipment employed on the job. There was mounted on a trailer, a gasoline powered 300 amp electric welder and parent supplies.



Grading "C" runway. Fort Glenn, Umnak  
Island, Alaska. 7-4-43



Showing carryall spreading material on "C"  
(C496) runway. Fort Glenn, Umnak Island, Alaska.  
7-4-43



Campbell Creek runway. Fort Richardson,  
Alaska. 4-19-42



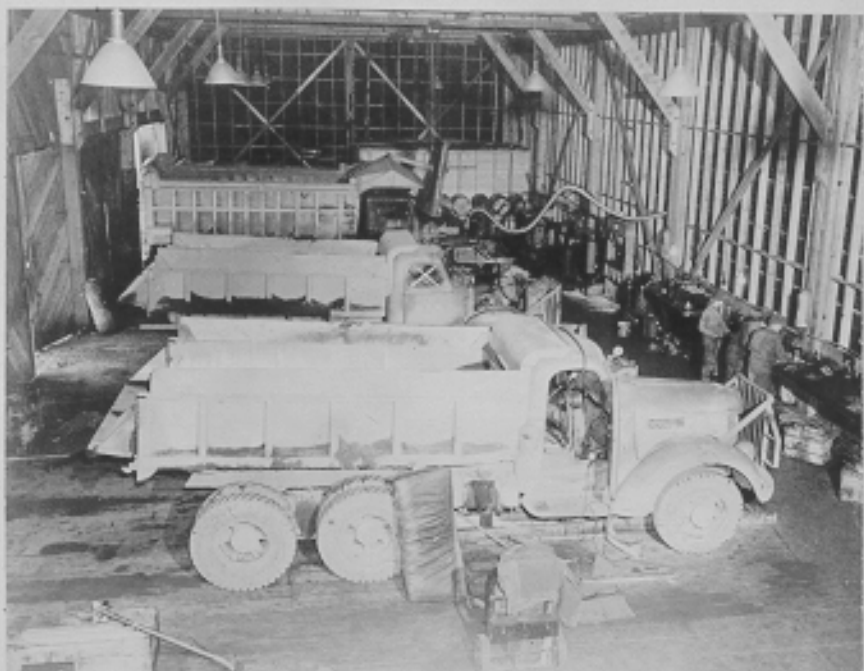
Campbell Creek satellite field. Fort  
(C496D) Richardson, Alaska. 5-8-42



Looking north on southern extension of "A"  
runway. Present field within dike, upper  
left. Adak, Alaska. 9-1-42



(C496C) Typical example of difficulty encountered in  
stripping muskeg. 3 cats required to load 1  
carryall. Runway "A", Alexai Point, Attu  
Island, Alaska. 6-17-43



Construction area, truck repair shop. Fort  
Glenn, Umnak Island, Alaska. 11-8-42



(C501) Construction area, cat repair shop. Fort  
Glenn, Umnak Island, Alaska. 11-8-42



Machine shop, inside looking north.  
Excursion Inlet, Alaska. 1-18-43



(G501A) Machine shop construction. Fort Glenn,  
Umnak Island, Alaska. 8-10-42

## MINOR NAVAL AIR FACILITIES

To increase the effectiveness of seaplanes operating from the Naval Air Stations at Sitka, Kodiak and Dutch Harbor, a system of supplemental bases was considered for installation at certain Army establishments. These facilities consist of buoys for PBV's, a seaplane ramp for hauling a plane out of the water, parking space for several ships, nose hangars for engine servicing and repair, and housing for plane and maintenance crews. The minor Naval air facilities were to be built by the Army Engineers, together with their other work. This Naval construction was originally authorized for Annette Island, Yakutat, Cordova, Fort Raymond, Fort Randall and Fort Morrow. The work was completed at Annette Island and Yakutat. Construction was deferred at Fort Morrow and the facilities were canceled at the other stations.

The ramp at Annette Island is built of reinforced concrete, but to conserve steel, the ramp at Yakutat is made of timber framing sunk and held in place by concrete weights. Housing and other facilities are identical with that constructed for Army uses.



Concrete counterweight block being placed in inboard section of ramp near anchor block. Yakutat Landing Field, Alaska. 2-8-43



(C503A) MNAF - Seaplane Ramp, decking in place and openings for counterweight blocks shown in flooring. Yakutat Landing Field, Alaska. 1-20-43



Looking at seaplane ramp from road inter-  
section. Annette Island, Alaska. 4-7-43



(C503) View of seaplane ramp. Yakutat, Alaska.  
5-15-43

## SEACOAST DEFENSE CONSTRUCTION

Protection to Naval Operating Bases in Alaska, as well as shipping ports, made it imperative that harbor defenses, mobile and fixed, be constructed. Prior to 7 December 1941, Alaska could depend only upon several field mounted 155 MM gun batteries located at Dutch Harbor, Kodiak, Seward and Sitka, for Seacoast Defenses.

In order that the mobile batteries be able to deliver 360° fire, the 155 MM guns were mounted for rapid traverse, on Panama Mounts, construction of which reflected the ingenuity of Engineer and Coast Artillery Officers. A Panama Mount is an emplacement comprised of a center concrete plug upon which the gun rests. This plug is surrounded by an outer concrete circular curb upon which the spade plates traverse. The first Panama Mounts and access facilities were constructed at Dutch Harbor, Kodiak and Sitka by the Siems Drake Puget Sound Company, contractor for the Navy. Similar construction by civilian labor under the Army Engineers at Annette, Yakutat and Seward followed.

At 15 seacoast projects, some 100 Panama Mounts were authorized and of these 72 have been constructed. To augment existing 155 MM gun fire power, six inch naval gun emplacements were constructed at Sitka, Annette, Yakutat, Cold Bay, Chernofski, Umnak, Nome and Adak during 1942-43.

Manning these batteries meant garrison construction at isolated points, supplies to many of which could only be delivered through difficult barging operations until such time as access roads could be constructed.

Realizing that Alaska needed fixed battery emplacements, the War Department in late 1941 set in motion a Fixed Defense Program, originated in 1941, for Sitka, Seward, Kodiak and Dutch Harbor by directing that sites be selected for the immediate construction of seven 6" and three 8" batteries together with searchlight installations, supporting fire control and direction appurtenances and necessary housing. The Seattle District Engineer was directed to prepare designs and specifications for the construction of the tactical structures.

The Navy agreed to undertake the fixed defense construction at Sitka, Kodiak and Dutch Harbor where five 6" and three 8" batteries were authorized: Sitka to have three 6", Kodiak two 8", one 6" and Dutch Harbor one 6" and one 8". Construction at the Naval Stations was started in the fall of 1942, using civilian labor under Siems Draks Puget Sound Company. As of November 1943, this work was being completed by the Navy Construction Battalions. Battery construction at Seward was started in July 1942 and is still underway by the West Construction Company.

In general the following items of construction are included in the fixed harbor defenses: concrete battery emplacements; gun plugs; underground bomb-proof magazines; battery commander's, group commander's and base end stations; harbor defense command post and harbor entrance control post; harbor defense observation posts; radio, signal, meteorological and tide stations; searchlight and power plant shelters; distant electric control stations and seacoast radar units for fire control and seaward surveillance. All fire control elements are linked

together through the medium of submarine and subterranean cable for the immediate coordination by the harbor defense commander.

Of the four main fixed harbor defenses the most elaborate exists at Kodiak with that at Sitka as close second. The most difficult items of construction were encountered at Seward where the Rugged Island installations taxed engineering and construction ingenuity as well as the best of equipment and water transportation. Difficult outpost construction was also encountered by the Naval Construction Battalions at the Constantine Point, Erskine and Wislow installations at Dutch Harbor.

Anti Motor Torpedo Boat gun emplacements and necessary magazines have been authorized at nine of the seacoast stations and construction is now underway. Many of the fixed and temporary harbor defenses have, or will have in the near future, special seacoast radar installations for the detection and tracking of surface craft.

Due credit should be given to Coast Artillery Troops who laid aside their training program to aid the Engineers in expediting construction of the Seacoast Defenses throughout Alaska.



No "easy" job... to build gun mounts, barracks and observation towers on stony cliffs like this...



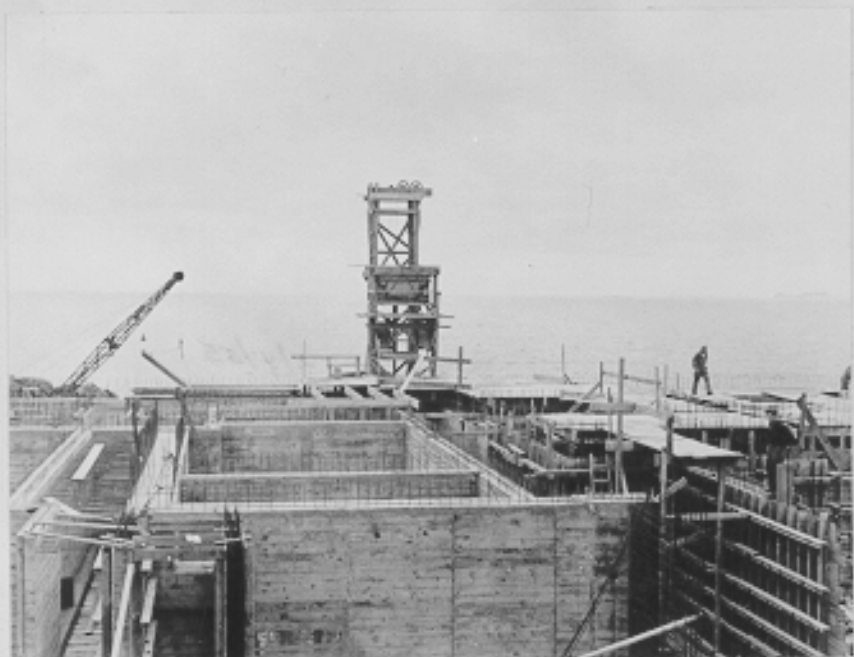
(C528)



No. 1 Gun, 6" Battery #296, mounted with  
shield. Long Island, Fort Greely, Alaska.  
5-20-43



(C504C) Magazine, 6" Battery #296. Long Island,  
Fort Greely, Alaska. 5-20-43



Walls ready for roof slab - shoring and forms.  
Makhnati Island, Sitka, Alaska. 7-17-43



(C504) Walls and footings, 8" battery #403. Chiniak  
Point, Fort Greely, Alaska. 6-1-43



Installing 6" Gun. Dutch Harbor, Alaska.  
November, 1942



6" gun emplacement on Sheep Point. Fort  
(C504B) Glenn, Alaska. 9-15-42



Panama Mount #1, looking east. Rocky Point,  
Battery 293, Seward, Alaska. 5-10-43



(C504A) Panama Mounts #2 and #3, looking north. Rocky  
Point, Battery 293, Seward, Alaska. 5-10-43

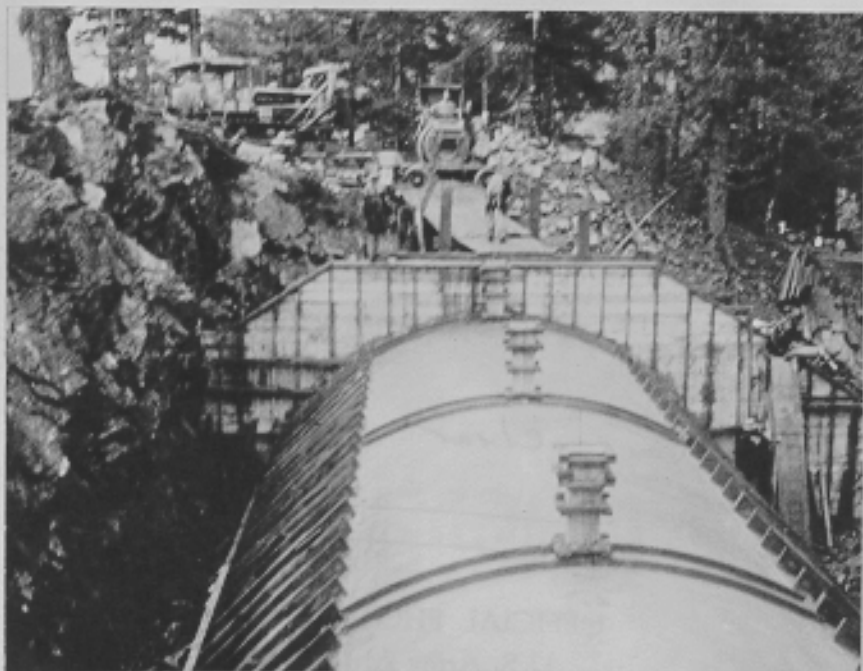
## AMMUNITION STORAGE

At the start of the construction program ammunition storage was considered a relatively vital feature. Planning and design went into the construction of reinforced concrete igloo magazines. Thirty of these magazines were constructed at Fort Richardson and sixteen at Ladd Field. A few more were built at smaller stations.

As in the case of many other plans and features of construction, the policies changed. By 1943 ammunition storage, except in the case of Coast Defense Fortifications, was practically deleted. The trend towards dispersion and camouflage eliminated the necessity of expensive concrete work required for the igloo magazines. The storage of bombs and ammunition in more widely dispersed areas, camouflaged by artificial means or hidden amongst tree growth, was an economical and practical substitute.

The concrete igloos constructed were 26' by 60', the shell varying from 6" to 1' in thickness, and entirely covered with 3' of earth and camouflage. This structure could withstand the direct hit of only a small bomb.

Since the deletion of reinforced concrete igloos from the ammunition storage program, only corrugated metal structures (Elephant shelters and prefabricated housing such as the Quonset and Cowin huts) were used where dry ammunition storage was required.



Caines Head Magazine, looking south.  
Fort Raymond, Alaska. 9-20-42



(C505) Concrete underground magazine after first lift  
of 6' was poured. Salamanders were required to  
keep concrete from freezing. Chilkoot Barracks,  
Alaska. 11-4-42



Construction of Powder Magazine and dock for  
construction. Excursion Inlet, Alaska.  
4-22-43



Backfilling elephant shelter ammunition storage  
(C505A) (using a D-8 bulldozer). CAA Cordova, Alaska.  
4-8-43

## CAMOUFLAGE PROGRAM

The camouflage of military installations and works in Alaska is considered essential. However essential and important camouflage is, the practice of the principles of camouflage and its incorporation into construction plans is a major problem in this theater.

The first semblance of an attempt to officially direct that camouflage be considered and planned for in Army installations within this command was contained in a letter of October 11, 1941 from Headquarters, Alaska Defense Command to the Commanding Officers of all posts of the Alaska Defense Command. On December 4, 1941, the Commanding General, Western Defense Command authorized the Commanding General, Alaska Defense Command to modify the painting policy for mobilization type construction, within available funds, to afford protective concealment and deception by painting to conform to the general natural color scheme of the surrounding terrain.

This authority was transmitted to each of the Alaskan bases then under construction at Annette, Ladd Field, Fort Richardson, Seward, Yakutat, Nome and Fort Greeley. Within a few months after the start of the war, a comprehensive camouflage program was authorized and funds in excess of \$6,000,000 allocated to carry on the proposed program. It then became the responsibility of the constructing agency to include in their plans provision for adequate camouflage.

Material lists were prepared, procurement initiated and great quantities of camouflage materials delivered to each of the projects under construction at that time. Even though the necessity of adequate

camouflage was recognized, the urgency of airfields, housing, docks, and other essential facilities was usually given priority during construction. Camouflage technique and principles, except for dispersion of all construction was ordinarily neglected in the haste for completion of tactical construction features. However, as essential construction progressed to a useable state at the projects, the arrival of a camouflage company which was assigned to the Alaska Defense Command, and the need for protective concealment became more apparent, the construction and occupying forces gradually worked camouflage into those features already constructed and those under construction. Because so much had been done in violation of the simple rules of camouflage, the toning down of buildings and other installations was, in many cases, all that could be accomplished. Camouflage, other than toning down with paint, was virtually impossible at the several bases, construction of which was initiated in pre-war days. The soldierly, closely grouped and peacetime layouts of these bases precluded the installation of effective camouflage.

With the advent of camouflage-conscious construction practices, the natural cover of the heavily timbered areas of Southeastern and Central Coastal Alaska was put to good advantage and adequate results obtained. With the assistance of nets and garlands, replanting of vegetation, proper dispersion and camouflage discipline, these bases and their extent became more and more deceptive. The natural growth of vegetation assisted considerably in concealing the earth scars and camouflage violations permitted earlier.

The Interior stations of Alaska, apparently well beyond any area which might be subject to enemy observation or action, usually employed the simple expedient of toning down, in addition to the dispersion of features. The absence of appreciable stands of timber did not ordinarily permit the use of wooded vegetation as a means of camouflage.

The camouflage of the Aleutian area stations was a major problem and continues to be so. Aside from the relatively little importance which could be placed on camouflage at the inception of construction, the natural features of terrain and total absence of timbered areas made effective and adequate camouflage a seemingly impossible task. Since areas to the westward are without trees of any kind, every ridge of any rise in the ground is devoid of a break in its regular outline against the sky. Against low flying aircraft or water borne forces, the outlines of buildings near the top of any rise in the ground, would be obvious. Construction of any kind viewed from a vertical or high oblique position was obvious on these otherwise bleak and barren areas. By reason of the magnitude of these stations and the dispersion of their features, regular defined routes of travel could not always be followed. In violation of one of the primary rules of successful camouflage, routes of travel to isolated positions were easily observed. Roads which began at a central point radiated in all directions, often ending at some isolated point near the coast or other observation post. In many cases, the route of travel traversed the only route possible and therefore could not continue

in the proscribed circuitous route. At some installations, particularly the Aircraft Warning installations, supplies of construction and maintenance items were landed at the only beach available and from there an access road continued overland by a single route through valley floors and followed contours to the site of this important detector installation. The man-made, even, broad grade of an airfield runway among otherwise gently rolling, and at times, extremely rugged hills and mountains was obvious. Complete camouflage or toning down of landing strips and wide and long graded areas was impossible, due to the prevalence of rain and the absence of any rigid, manufactured surface upon which wood chips, feathers, paint or other such surfacing could be placed. By casual examination of an aerial photograph the evenness of the graded surface was easily seen when compared with the surrounding rugged or swampy terrain. Innumerable physical features prevented the use of the usual methods of camouflage. Huge hard-standings and revetments, to be properly camouflaged, require miles of steel cable, large areas of nets and many man-hours of labor.

Regardless of the almost impossible task of camouflaging the Aleutian area stations, the constructing forces have gradually accomplished much in protective concealment. By the use of both artificial and natural expedients, hutments, gasoline and fuel oil storage systems, shops, service buildings have been partially concealed from aerial observation. Buildings and other installations have been dug in, benched in and revetted into the hillsides, artificial nets and garlands and flat tops erected and buildings toned

down (often with a simple mixture of mud and water). Driftwood, native grasses and weeds, tin cans, chicken wire, old clothing, rope and numerous other items have been put to use in accomplishing a camouflage program. The condition of varying hues of colors contained in the vegetation during the summer and the predominating white of snow in the winter has entailed a problem that cannot ordinarily be met with rule-of-thumb camouflage treatment.

Generally speaking, it is believed that an honest effort has been expended toward adequate camouflage of the stations in Alaska, considering the conditions under which emergency construction has progressed, the urgency of completion of the more essential facilities, the materials with which available personnel has had to work, and the tactical situation.



Rolls of wire ready to be used to camouflage  
gas tanks. Adak, Alaska. 3-29-43



(C506B) Engineers threading garlands through chicken  
wire for Air Corps gas tanks. Adak, Alaska.  
3-29-43



155 MM gun in temporary location. Fort  
Carrew, Yakutat Landing Field, Alaska.  
7-15-42



Completed camouflage on tank No. 6 in Operations  
Reserve Gasoline System. Looking northeast from  
(C506C) 300' away. Annette Island Landing Field, Alaska.  
2-20-43



Artificial road going over T-hangar #1.  
Adak, Alaska. 6-29-43



Showing complete camouflage on top of T-  
(C506A) hangar #1. Adak, Alaska. 6-29-43



Tundra camouflage of Elephant Shelter.  
Adak, Alaska. 6-8-43



Camouflage details, revetment #37. (By  
(C506) 639 Engineer Company (Cam.)). Fort  
Richardson, Alaska. 3-24-43

## RAILROAD CONSTRUCTION, MAINTENANCE AND OPERATION

Railroad construction has played an important but not a major part in Alaska construction. Railroad activities involving construction, maintenance and operation were carried on at Cordova, Yakutat, Fort Richardson, Ladd Field, Nome and Whittier. With the completion of the standard gauge Portage-Whittier cut-off, the biggest single piece of railroad construction in Alaska by the Army Engineers was finished. (For details of construction of the tunnel features of this project see Tunnel Construction.)

## Construction of the Portage-Whittier Cut-off

The Alaska Railroad was completed in September 1923, from Seward, the ocean terminal, to Fairbanks. At this time, however, it was known that a shorter but more difficult route existed between the Gulf of Alaska and the Port of Anchorage, 115 miles north of Seward, on the railroad. Just east of the Port of Seward is the indented coast line area known as Prince William Sound. An arm of this Sound extends westward to within approximately 14 miles of a point on the line between Seward and Anchorage. This arm is known as Passage Canal and is navigable to oceangoing ships at all times of the year.

The nearest point on the railroad to Passage Canal is Portage. However, the difficulties of railroad construction over this route were many. Either a tortuous route around Turnagain Shoulder or a tunnel through it would be required. To add to the difficulties,

a glacier exists at the head of Passage Canal. This Portage route from Passage Canal was established approximately 40 years ago as a pack route. In 1913, Mr. F. A. Esterbrook, locating engineer for the Matanuska and Portage cut-off route, investigated this route for the purpose of establishing a means of tapping the resources of the Matanuska coal fields.

In 1914, Mr. R. J. Wier of the Alaska Engineering Commission, made a preliminary survey from the present dock site at Whittier at the head of Passage Canal to a connection with the Alaska Railroad (then known as the Alaska Northern Railway Company). At that time track had been laid from Seward to the head of Turnagain Arm of Cook Inlet. Mr. Wier advocated a tunnel through Turnagain Shoulder, and Mr. Esterbrook, a route around the Shoulder.

Nothing further was done until 1939 when Messrs. Berryhill and Grammer of the Alaska Railroad made a preliminary survey along Mr. Wier's line. It was on the basis of the results of this preliminary survey that the entire project was planned. Congress appropriated the necessary money on 5 April 1941, by the Fifth Supplemental National Defense Appropriation Act, 1941, which allocated \$5,300,000 for the construction of two tunnels and 14 miles of new line for the Alaska Railroad. The two tunnels totaled 19,000' in length. On 13 June 1941 a contract was let to the West Construction Company of Boston, Massachusetts for this work.

On 23 April 1941 a survey party under Mr. O. V. Kukkola, acting under orders of the Area Engineer in Anchorage, established

a camp at Portage Valley. From this camp the final location of the railroad from the junction at Portage to the north end of the Whittier tunnel was made. Primary survey control for the Turnagain (or smaller tunnel) was made by this party. On 22 May 1941 a similar party under the supervision of Mr. Anton Anderson was organized in Anchorage, outfitted in Cordova, and arrived at Whittier at the head of Passage Canal. This party established a camp and proceeded with necessary primary work such as soundings at the head of the Canal and locating the terminal dock. In addition, the difficult section between the dock and the south portion of Passage tunnel was located. After this, the party from Portage worked in conjunction with the Whittier party and established primary control for the Whittier (or larger) tunnel. All of this primary field engineering work was accomplished in the face of hazardous mountain and glacier climbing, severe wind and rain conditions, and lack of adequate inter-camp communication.

Construction of the railroad line from Portage was commenced during the summer of 1941 and was completed in the fall of 1942. Considerable difficulty was encountered because this work was carried on under winter conditions. Excavation and embankment operations involved many problems. One hundred and nine acres of timber and heavy underbrush, some of it on steep hillsides and bluffs, were cleared. Two miles of this line was constructed on a muskeg swamp or marsh. Gravel fill was hauled approximately one mile.

The most difficult portion, excluding the tunnels, of the entire line from Portage to the dock site at Whittier was between the terminal dock and the south portal of the Whittier tunnel, where the grade for approximately three-quarters of a mile had to be literally blasted out of solid rock. The railroad sub-grade was completed from Portage to Whittier in October 1942.

Track laying was started during the fall of 1942. The 177th Engineer Regiment (GS), 42nd Engineer Regiment (GS), 714th Railroad Battalion, the Alaska Railroad and West Construction Company accomplished the track laying and ballasting. The 177th Engineers laid the track from the Alaska Railroad at Portage to the midpoint of the Whittier tunnel, and the West Construction Company laid the track from a point half mile outside to the midpoint of Passage tunnel. The remainder of the track was laid by the others. The only track laid by the Alaska Railroad was the turn-out and approximately 500' of curvature at Portage. The final track laying on the main line was completed 30 April 1943.

Many difficulties retarded construction on all of the above work. Snow drifts from 10' to 15' deep in places had to be removed. Most of the track material received during the winter was buried under these snow drifts and considerable manpower was used in recovery. Lack of tie plates caused several ballast cars to be derailed. Winds of 30 to 40 miles per hour and zero temperatures were common. Winds as high as 72 miles per hour were recorded. Due to the ruggedness of the terrain and before suitable access

roads could be built, the contractor had considerable repair of heavy equipment. Spare parts at that time were difficult to obtain because of priorities and shipping difficulties, and frequent shut-down time because of this was experienced.

#### Yakutat and Southern Railway

The Libby McNeil and Libby Canning Company built and owned at Yakutat a 10 mile standard gauge railroad. This railroad runs from the village of Situk to the Cannery at Yakutat.

When construction of the Yakutat air base and garrison was commenced by the Army Engineers in the latter part of 1940, an agreement was reached whereby the Army was allowed the operation of a portion of the rolling stock on this railway. The track was in fair condition, although it was necessary for the Army Engineers to perform a small amount of maintenance work. This agreement continued in effect until April 1941, by which time a highway from the dock to the garrison was completed.

#### Seward Peninsula Railroad

From the city of Nome on the Seward Peninsula to the village of Shelton, approximately 86 miles due north, is a 30" narrow gauge railroad known as the Seward Peninsula Railroad. This railroad was completed in 1906 by the Alaska Road Commission and its use is free to the public. Mr. O. M. Powell of Nome owned and operated the majority of the rolling stock over this railroad through a small company called the Kougarok Limited Incorporated.

When it was decided in June 1942 to expand the Nome Garrison the facilities owned by this company were acquired by the War Department. The Corps of Engineers in August 1942 purchased the rolling stock consisting of 12 small power units or dinkies and 48 flat cars. The Army Engineers maintained and operated approximately 10 miles of this railroad. This was the only portion which was required by the War Department in view of the close proximity of the garrison to the terminus of the railroad line at Nome. On 10 May 1943 all rolling stock purchased from Mr. Powell was transferred to the Post Utilities Officer of the Nome Garrison.

#### The Copper River & Northwestern Railroad

In 1911 the Kennicott Copper Mining Company completed a standard gauge line known as the Copper River & Northwestern Railroad from the town of Cordova on Prince William Sound to the Kennicott Copper Mine near McCarthy, Alaska, some 196 miles northeast. In view of the fact that this railroad skirted many glaciers and crossed glacier-fed streams, its maintenance was extremely difficult. In 1939 the railroad was abandoned by the Copper River Mining Company, a subsidiary of the Guggenheim Interest, when the copper mines could no longer be profitably mined.

After the Civil Aeronautics Administration had constructed a major runway at Cordova, the War Department decided to place a garrison there. This airfield site was approximately 13 miles

from the city of Cordova, paralleling the railroad tracks. Representatives of the United States Engineer Department arrived 16 March 1942 and commenced construction of this garrison. The necessary rolling stock and the maintenance of the 13 miles of line to the airfield were taken over by the Army Engineers. The Copper River Mining Corporation ceded to the Government the right to operate over their line free of charge. The construction Engineers maintained and operated this 13 mile section of railroad, together with the necessary rolling stock until 15 October 1942, at which time its operation was transferred to a detachment of Railroad Engineers.

#### Fort Richardson Railroad

Approximately 13.4 miles of standard gauge railroad spur and yard track was built for the Fort Richardson Project. Of this total the Constructing Quartermaster under the Quartermaster General, built 2.4 miles before responsibility for all work at this project was assumed 16 January 1941 by the Corps of Engineers.

No unusual construction difficulties were experienced and the entire 13.4 miles were built on the glacial gravels underlying 18" of moss or on low gravel fills.

#### Ladd Field Railroad

A total of approximately 9.9 miles of standard gauge railroad line was authorized for the Ladd Field Project as of November 1943. Prior to 16 January 1941 the Constructing Quartermaster under the

Quartermaster General, had built 4.4 miles from the City of Fairbanks to the project site. As of November 1943 the Corps of Engineers had constructed 2.3 additional miles. The additional authorized trackage will be constructed in 1944.

No unusual but several difficult problems were encountered in the construction of the 4.4 miles from Fairbanks to the project. As stated above, this section was built by the Constructing Quartermaster but its maintenance and operation were assumed by the Engineers. The line crosses the Chena River between the city and the project and requires a trestle bent pile bridge 592' in length. In view of the heavy ice accumulated on the river during the winter season and its subsequent break-up in the spring, it was necessary to build steel ice breakers on the up-stream side of the bridge. During the spring ice break-up of 1942 and 1943 these shears successfully prevented the loss of the bridge. However, one bent was washed out in the 1943 season.

An additional problem of maintenance was the constant thawing action of the sub-grade during spring thaw. This resulted in upheavals and depressions of the track as well as disalignment of curvature. Hence, considerable maintenance was required. The construction and maintenance of the spur line into the post proper presented no problems.



Drifting snow on railroad grade at station 48 +  
00. Alaska Railroad Cut-Off Project, Whittier,  
Alaska. 1-10-43



(C507C) Laying track in Railroad yards. Note snowbanks  
of dozed snow. Accumulative snowfall this date  
about 8'. Alaska Railroad Cut-Off Project,  
Whittier, Alaska. 2-2-43



Looking south from station 63 + 00 towards ballasting operations. Alaska Railroad out-off Project, Whittier, Alaska. 4-5-43



(G507) Ballast train approaching through cut at station 57 + 00. Ballast crew in foreground. Alaska Railroad out-off Project, Whittier, Alaska. 4-5-43



Railroad yards, looking west from point near dock approach. Depot site in foreground. Whittier, Alaska. 6-8-43



(C507A) Railroad spur to gasoline loading racks, Fort Richardson. 12-1-42



Railroad track maintenance, Cordova ~~Alaska~~  
~~Alaska~~ . 6-16-42



Maintenance and operation at Kougarok Railroad  
 (C507B) (Narrow Gauge) Nome Garrison Project. 10-15-42

## TUNNEL CONSTRUCTION

No tunnel work of any importance was carried on in Alaska by the Army Engineers with the exception of the Portage-Whittier Project. Coyote holes and small tunnels for quarry work were constructed at various projects. In addition, several short rock tunnels were driven at Fort Mears and at Sitka in connection with underground magazines. However, these were relatively unimportant operations.

In the preceding chapter on "Railroad Construction" the reasons for the establishment of the Portage-Whittier cut-off were set forth. In that chapter it was stated that the 11 miles of new railroad line, including two tunnels totalling 19,000' in length, was required. The shorter tunnel, known as "Morain", was approximately 5,000' long, and the longer, or "Whittier" tunnel, was approximately 14,000' long. The Whittier tunnel commenced near the head of Passage Canal and was known as the "Southern End". A short valley, known as "Bear Valley", lay between the two tunnels. The north portal of the Morain tunnel and the north portal of the Whittier tunnel were known as the "Northern End" of operations. The clear cross-section or "pay line" of both tunnels proper (exclusive of snow sheds) was rectangular with arched roof. The rectangular section is 16' wide by 15' high, topped by the arched semi-circular portion, whose diameter is 16'.

The establishment of construction camps and primary survey control was covered in the preceding chapter on Railroad Construction. During the first week in July 1941, two representatives of the West Construction Company, the prime contractors, arrived at the site; then, in

company with representatives of the United States Engineer Department, they made extensive investigations prior to preliminary construction. The West Construction Company representatives were Mr. A. M. Coker and Mr. Victor Humason. Preliminary planning was for the housing of 600 men; 2 power plants with a total capacity of 1,200 KW; 8 miles of 13,000 volt transmission lines; several miles of secondary and distribution lines; 4 miles of access roads; tunnel service buildings at three portals; construction of a 50' by 250' temporary dock; railroad spur and junction for unloading supplies at Portage; miscellaneous utilities, warehouses and facilities for equipment repair.

On the access road it was necessary to bridge the Portage River in two places, in addition to several creeks. This preliminary construction was started the latter part of July 1941, and completed in March 1942. The northern permanent portal operations were begun in December 1941. It was necessary to construct snow sheds at all four portals. Tunneling was started in November 1941, at the Whittier or southern end.

Standard tunnel driving practices were followed insofar as were practicable. However, difficult problems of construction were encountered. Proper drainage of seepage was necessary to prevent severe "glaciating" conditions. Water was pumped from the heading to the portal on the northern end of both tunnels, inasmuch as construction was on a down grade toward Whittier. The problems of construction which were covered in the preceding chapter on Railroad Construction also pertained to and affected tunnel driving operations. Muck was dumped on the valley floor as well as in fills for the main line. Trestles,

bridges and access roads were frequently washed out by heavy rains, snowfalls and high winds. The snow sheds were built under trying weather conditions, with temperatures dropping as low as 30° below zero, then intermittent thawing conditions accompanied by snow and high winds.

The isolation of the camp at the head of Passage Canal plus the over-all Alaska shortage of man power, provided an additional problem for the contractor. The only means of communication at first, between the camp on the Portage side and the camp on the Whittier side, was by runner. The trail led over precipitous mountains as well as the Portage Glacier. Later a telephone line greatly improved contact between the camps, but this line over the mountain tops was frequently down from wind or snow.

The Morain tunnel was "holed through" on 18 November 1942, and the Whittier tunnel was "holed through" two days later. The latter tunnel is the fourth longest in the world. These tunnels were completed approximately six months ahead of schedule, and for this outstanding piece of construction, under such trying conditions, the West Construction Company was awarded the Army and Navy "E".

When the tunnels were "holed through", an additional maintenance difficulty presented itself. It was found that because of the peculiar weather circumstances the north portals of both tunnels iced up to a distance of 2,000' in length and 3' in depth. Icicles up to 3' in diameter and 15' in length were formed from the tunnel arch. Before tunnel drilling operations could proceed, this icing condition had to be overcome. After two months of continuous application of forced draft

heat from 10 salamanders, the ice was finally thawed.

It may be said that both tunnels and all allied operations in connection with the Portage-Whittier Project were excellently performed under most difficult construction conditions.



#### PORTAGE - WHITTIER TUNNEL

Equipment consisted of standard tunnel drilling equipment such as jumbos, mucking machines, compressors, jackhammers, narrow gauge dump cars and locomotives. Actual drilling operations started 15 January 1942 and the tunnels were "holed thru" on 18-20 November 1942. For their outstanding performance in completing both tunnels approximately six months ahead of schedule, West Construction Company of Boston, Massachusetts, were awarded the Army and Navy E.



(C520C)



Snow shed at south portal of Passage Tunnel showing drifted snow at entrance and sides. Alaska Railroad Cut-Off Project, Whittier, Alaska. 1-10-43



(C508A) Drifted snow at entrance to snowshed also heavy frost formed by condensed tunnel vapor. Picture taken from portal, set looking south. Alaska Railroad Cut-Off Project, Whittier, Alaska. 1-10-43



Turnagain Tunnel interior, looking through  
toward Bear Valley. Whittier, Alaska.  
6-10-43



(G508) Portage portal and camp, center background.  
Whittier, Alaska. 6-10-43

## QUARRY OPERATIONS

Quarry operations were carried on in one form or another at all projects. The type of material quarried varied with the locality, the material desired and the terrain.

Quarry material in the Coastal Area consisted of rock and gravel. Annette Island runways, constructed on muskeg, were built entirely of rock quarried by standard quarry operations such as drilling and blasting. Much heavy equipment (5, 10 and 20 yard trucks together with  $2\frac{1}{2}$  yard shovels) was used. Quarry run rock only was used for the runways and roads. On the Alaska Barge Terminal (Excursion Inlet) Project, quarry operations for fills in the dock areas were extensive and much heavy equipment (20 yard trucks) was used. Quarry operations at Fort Richardson and Yakutat consisted mainly of borrow from gravel pits. Shovels and small trucks ( $1\frac{1}{2}$ -3 cubic yard) supplemented by carryalls, were the main types of equipment used.

Practically all quarry operations were pit run gravel borrow in the Interior Area. A notable exception was the road surfacing at Nome. The material used there consisted of mine tailings which required no crushing. It was necessary in the winter time to steam-thaw gravel banks and pits prior to excavation at Ladd Field and Fairbanks. A slack line operated in the Chena River provided the majority of gravel used at that project. Galena, Big Delta and Gulikana used pit-run gravel for most surfacing operations. Pit-run gravel for the most part was satisfactory for concrete. This pit-run

gravel at most Interior stations was from glacial deposits, uniform in size (from pea to egg), normally round, and fairly smooth. At Bethel and McGrath fills for runways and roads consisted mainly of sand. A sand and gravel mixture was used at Naknek. Shovels, trucks, tractors, and carryalls were used in the Interior Area.

The most extensive quarry operations in Alaska were performed in the Aleutian Area. Three types of materials were quarried. Volcanic cinder and ash were used to construct all runways and roads at Fort Glenn (Umnak Island). This volcanic ash made excellent road and runway metal. Its excavation required no drilling or blasting operations. It was deposited in beds varying in depths up to 40'. Shovels (2½ cubic yards) together with trucks up to 20 cubic yards in capacity were used in these operations. Sand fill was used for the runways at Atka, Adak, Amchitka, Shemya, and Attu. The Cold Bay runway was composed of sand and gravel. Rock excavation was necessary at Amchitka, Adak, Attu, and Kiska for road construction. Coyote holes supplemented drilling and blasting in the quarry operations. Ordinary jackhammers, wagon and drifter drills were used for drilling.

The biggest quarry operations carried out in the Aleutians were at Kirilof Point on Amchitka Island in the construction of the jetty in Constantine Harbor, (see Breakwaters). Approximately 384,300 cubic yards of obsidian-breccia rock was quarried and placed in the jetty. Jetty specifications called for stone varying from pit-run to two cubic yards. (Obsidian-breccia rock is composed of minutely broken fragments of black volcanic glass recemented with Silica.)



Hauling muck away from quarry face after shooting two coyote holes, looking east. Excursion Inlet, Alaska. 2-23-43



(C509B) Umnak Island - shovel and trucks loading cinder-gravel material for road and runway construction. Pit located across 33 creek from 802nd camp. Fort Glenn, Alaska. 7-7-42



Aggregate crushing plant, Battery 294. Conveyor belt and long bin in foreground takes out fine, ahead of crusher, for road surfacing, looking east. Seward, Alaska. 8-2-43



(C509A) Gravel Plant - Fort Richardson, Alaska. 6-24-41



General view of Quarry. Amchitka, Alaska.  
4-1-43



Race Hill Road Pit. View of initial stage of  
(C509) development using dozer loading. Kiska Island,  
Alaska. 9-19-43

## LUMBER OPERATIONS

Extensive military construction in Alaska demanded the use of vast quantities of lumber. Numerous small logging and sawmill operations were carried on by the Army to meet local needs. However, the total output from such sources was but a fractional part of the demands. Lumber, in the quantities needed, was shipped from mills operating in the Pacific Northwest--particularly Oregon and Washington. In view of the lack of adequate shipping space and the long haul involved, it was necessary to augment even this source.

The combined efforts of Southeastern Alaska lumber mills produce an average monthly total of approximately seven million board feet of lumber during the summer months. In order to take advantage of this additional source, it was decided to contract for practically the entire output. This was done, although in several cases only a portion of a mill's entire output was contracted for. The demands of other governmental agencies as well as civilian needs has to be met. These operations required coordination and in March 1943, Mr. James W. Huston, then Resident Engineer at Juneau, was appointed Lumber Coordinator, acting under the Commanding General, Alaska Defense Command.

Lumber requisitions from both the District Engineer and from this Headquarters were passed on to Mr. Huston for fulfillment. He placed the requisitions on order with the mills and then arranged for the

shipment of the lumber to the various Alaskan projects when the orders were ready for shipment. Authority was granted to make lumber releases to governmental and civilian agencies; however, civilian releases were not to be in such amounts as to jeopardize cutting schedules. When the orders were complete, the lumber was turned over to the Army Transport Service for shipment.

In addition and to further supplement the supply, Lend-Lease arrangements were made with the Russian Government to furnish approximately twenty-two million board feet of rough lumber. The first shipment arrived and was discharged at the ports of Seward and Fort Randall in January 1943. Plans were under way, as of November 1943, to obtain an additional twenty million feet under this Lend-Lease arrangement.



Cutting power and telephone poles. CAA  
Garrison, Galena, Alaska. 3-30-43



Saw mill and south creek - 331st Engineer  
(C510) Operation. Excursion Inlet, Alaska.  
12-18-42

## CONSTRUCTION PROBLEMS

Construction in Alaska has had many problems. From one end of the Territory to the other those problems were varied only in intensity. Basically, they were the same everywhere - from Annette to Nome and Attu to Fairbanks, thousands of miles apart.

Initially, and to a certain extent during the entire period, the greatest single hindrance to construction was the lack of adequate shipping facilities. During the early part of 1941 only a handful of transports and commercial freighters served the few Alaska ports.

In January and February 1941 shipping first became critical. Previously the principal difficulty was experienced in heavy lifts, inasmuch as only small vessels were available without winches and booms of a sufficient capacity to handle heavy construction equipment and materials. This critical situation in shipping continued until August 1943 the most critical months being June, July, August and September of each year. The ice locked ports requirements always created an acute shortage of shipping for other projects during the months of August and September.

Transshipping facilities, such as tugs and barges, were equally scarce (see Water Transportation). Gradually, with the stepped-up shipbuilding program in the States, the flow of materials, equipment and men increased. By the spring of 1943 the shipping schedules for urgently needed supplies was being met.

During 1941 the District Engineer shipped 182,531 Measurement Tons of construction materials, equipment, and supplies to Alaska; in 1942 585,443 and the first ten months in 1943 712,389 totaling

1,480,363 tons. Maximum shipments during one month occurred in August 1943 to the extent of 96,069 tons.

Railhead facilities at the Canadian Port of Prince Rupert were expanded and put to use. The Alaska Barge Terminal, at the head of the Inside Passage at Excursion Inlet, was built and in use. Freight shipped by barges to this point could be loaded on ocean going vessels for movement Westward. The port of Whittier on Prince William Sound was built and its connection to the Alaska Railroad and the Interior Area Projects completed and in use. The facilities at the ports of Juneau, Seward and Anchorage were expanded. Every Aleutian station could receive cargo from transports. Docking facilities were constructed at all projects except Fort Mowrow and Atka. Because of the shallow coast line it was more practicable to lighter cargo ashore at Naknek, Moses Point and Nome than it was to attempt docking facilities. The ports of Seattle no longer had a back log of 150,000 tons of material waiting to be shipped.

The second difficult problem encountered was the shortage of adequate construction equipment and spare parts. Always it was necessary to "borrow" equipment from projects under way to outfit new projects. New equipment would eventually reach the new sites but the "borrowed" equipment was seldom returned to its original projects. Sometimes the older, more established projects would be repaid with new equipment intended for the new stations. Always it was a case of maintaining a balance that could best serve the requirements of the tactical situation. Few major projects were ever adequately equipped before the peak of construction was reached. The demands of other

Theatres of Operation for similar equipment had to be met. Often Alaska priorities were not high enough to secure the needed equipment.

The above applies to spare parts as well. Frequently "cannibalism" was resorted to. Under the circumstances there was no alternative. Months often passed before needed requisitions could be filled at the projects. Again the demands of other Theatres had to be considered.

The requirements of the War Program were beginning to exceed production of iron, steel, and aluminum, in the late spring and summer of 1941. However, procurement could not be considered critical prior to December 1941. After this date procurement of all items of special equipment for construction such as refrigeration, laundry, dry cleaning, bakery, etc. became progressively more and more difficult.

Prior to January 1942 the Division Engineer's approval was necessary for the purchase of construction plant and equipment. After that date the District Engineer was permitted to procure materials and equipment on the open market until July 1942 when the program of allocation, which was gradually to encompass more and more finished products, was inaugurated by the Chief of Engineers. After 17 June 1943 all field requisitions for other than materials for approved construction were processed through the Western Defense Command.

The summer and fall of 1942 and the spring of 1943 were extremely critical periods of procurement. All War Agencies were buying material for a rapidly expanding construction program and the purchase of even standard items from dealers stocks became an impossibility. From the beginning of the War Program it was recognized by Washington that a

rigid control of production and distribution was necessary. The first step in this direction was made when the priorities system was established about January 1941. This procedure had a very definite effect on procurement since it granted War Agencies preference in obtaining critical materials. However, the low priority already assigned in Alaska retarded delivery and prevented the Seattle District from obtaining materials for the deadlines required to meet construction schedules. Action initiated by the District Office resulted in the assignment of a higher priority namely A-1-A on 5 September 1941. This priority placed Alaska on a par with other War Agencies and was a definite aid to procurement since it allowed the Seattle District to obtain materials and equipment within a reasonable time. The priority system served the purpose, but it did not reach far enough into the sources of basic materials such as iron, steel and aluminum. It placed the materials in the hands of the War Agencies but it did not pro-rate the diminishing stock of raw materials to the various using agencies. As a solution to this situation CMP Program was initiated on 1 August 1943 and with its inception iron, copper and aluminum were divided throughout the War Program, and a system established to control a material from the source to the finished product. The adoption of this program, a basis for more even distribution of materials, facilitated the procurement of many items inasmuch as production was controlled by known estimates.

While the control of raw materials in the manufacture of basic construction items was being developed, another problem confronted procuring agencies. The production of many finished items such as

heavy construction equipment, refrigeration equipment, laundry equipment, etc. had reached its limit. Many of the manufacturers had turned their facilities toward production of other war materials thereby decreasing the availability of manufacturing facilities required to meet the expanding War Program. To solve this problem the responsibility for designing and inspecting, requisitioning and procuring of certain critical items was assigned to the various War Agencies namely the Chief of Engineers, Q. M. Corps, Ordnance, Medical Corps, Signal Corps, etc. As a result of this action the responsible agencies standardized procurement and established depot stocks. The Chief of Engineers began directing procurement through his office July 1942 and from this date the lists of controlled items became more and more comprehensive. Items on these lists were 100% controlled and all issuances from depot stock, and all releases for procurement were approved by the responsible agencies through channels. This action had a profound effect on Alaska since it permitted the procurement of equipment and other materials for delivery corresponding to the importance of the jobs under construction. A development of all these procedures and policies tended to standardize procurement and made it possible to provide materials for the highly important construction in the Aleutian Islands.

Unlike the shipping problem the supply of experienced construction personnel was adequate during the early stages of construction. However, as the war progressed more and more men were called into the armed forces and to other essential war work. As the civilian supply diminished more Engineer units were sent into the Territory. Many

members of these units were skilled in construction but the vast majority were not. With new units it was found best to augment the force with older civilian construction men who were able to act as instructors as well as foremen. Gradually, through experience, their construction efficiency increased. As of November 1943 there were approximately 14,000 Engineer troops in Alaska engaged in construction work. At the same time there were 5,800 civilian force account and contractor employees.

The Alaska climatic conditions were a major and unpredictable construction problem. The ice bound ports of the Bering Sea and the stormy weather of the North Pacific delayed delivery of supplies - months in the first case and days and weeks in the second. Some ships were lost in the ice, some in storms and some on the rocky coasts.

Snow, sleet, wind and rain that turned runways and roads into snow drifts or muck holes were common at all Projects. The same elements, accompanied in the winter by low temperatures, sometimes reaching 70° below zero, lessened the efficiency of men and machines. Frozen ground varied from crusts a few inches deep at some of the more southerly projects to permanently frozen ground and sub soil in the Interior Area. Rooters, rippers, dynamite, jackhammers and steam points were required in order to excavate.

The short construction season in Alaska was soon over and the winter months brought fewer hours of daylight. At Ladd Field, Nome, Galena and certain Interior projects there were but four hours of daylight in the middle of winter.

The varying and harsh weather in Alaska did not make for efficient

construction. Morale of men dropped, the wear and tear on equipment was increased, materials and supplies were ruined and work under construction was damaged.

The last problem was the lack of contact between the projects and the offices which served them. The design and procurement were carried on thousands of miles from the sites of construction. The field problems could not easily be presented to the design, approving and procurement offices. On the other hand, the latter could not readily express their desires to the field. This was not a problem which could have been easily overcome. The great distances involved were bridged by radio and mail, and representatives visited the projects or the higher offices. Nevertheless, time was always lost when air or boat transportation was necessary for communication. Delays due to weather were expected and often occurred. Mail from many Alaska projects frequently required thirty or more days to reach Anchorage. In the early stages of construction it was necessary for projects to secure the approval of the Area Engineer and Commanding General, Alaska Defense Command, at Anchorage, Alaska, the District Engineer at Seattle and the Commanding General, Western Defense Command at San Francisco before procurement or construction could start. Frequently months elapsed before the necessary approvals were secured and construction and procurement started. Some delegation of authority later eliminated to a certain extent a portion of this loss of time.



Warehouse damage, Cordova, Alaska. 1-14-43

Heavy wet snow causes unusual difficulties in Alaska and considerable repairs or replacements are necessary to maintain service.



(C520E)

View of steam thaw points. Nome Garrison,  
Alaska. 3-29-43



Interior Alaska projects are faced with the year-round problem of frozen ground. In order to excavate in the winter time, cold water or steam must be used to thaw the site. This frozen condition known as "perma-frost" ranges to depths of two hundred feet below the surface.



Drilling holes for steam thawing of trench.  
(C513E) Fort Richardson, Alaska. 12-27-41

Blowing snow on EW runway. Fort Randall,  
Alaska. 11-21-42



The Aleutian Islands, often called "Weather Headquarters", probably generate or start more different kinds of weather without warning than any other part of the world. During winter snow storms men follow ropes hand over hand (see below) from huts to messhalls though the distance may be only 1,000 feet. At one Aleutian project nine men were lost five hours trying to reach the mess-hall for dinner. Planes are often grounded for weeks at a time due to the weather.



(C513) 60 mile gale. Fort Glenn, Alaska. 11-21-42

Dozer being used in snow removal. Nome Garrison,  
Alaska. 3-29-43



From Nome and Fairbanks to Attu and Annette snow is a hazard and hindrance to construction. Completion dates are changed and delayed by unforeseen snowstorms.



(C513A) Mountain outline looking south from Engineers'  
Headquarters. Fort Randall, Alaska. 12-12-42



Glacial action beneath runway caused cracks in  
1000 feet of west end of east-west runway.  
Naknek, Alaska. March, 1942



Femmer dock piling. Braces consumed by teredos.  
These marine boring worms have been known to com-  
pletely collapse entire docks of untreated piling  
(C513B) within four months. Juneau Sub-Port of Embarka-  
tion, Alaska. 7-24-42

Mile 6 - Cat train (Athey trailer) stuck in muskeg. Amchitka, Alaska. 2-4-43



Long hours and hard usage for men and equipment. Makeshift contraptions were often necessary to retrieve mired equipment. Project work like this went on night and day -- 2700 miles from supply bases in the States. Best known comparison to Alaska muskeg is soft chocolate. Construction supplies and equipment were hauled over and through it. Runways, roads, huts, hangars, and gas, oil and water lines were built in it.



(C488G) D-8 Cat bogged down in muskeg. Fort Morrow, Port Heiden, Alaska. 4-20-43



North Ramp Road showing muskeg. Excursion  
Inlet, Alaska. 4-28-43



Tractors stuck in muskeg flats of Sweeper Creek  
Valley. When covered with  $3\frac{1}{2}$ ' of sand these same  
(C520F) bogs supported the heaviest equipment. Adak,  
Alaska. 8-30-42

Cleared and grubbed row of main line taxi-  
strip showing muskeg. CAA Garrison, Juneau,  
Alaska. 9-28-42



Muskeg conditions are encountered on many  
Alaska projects.



(C520B) Taxiway location. Yakutat Landing Field,  
Alaska. 7-8-42

General view of barge dock damage and debris  
caused by storm and loose barges. South  
Fustoi Bay, Fort Glenn, Alaska. 9-22-42

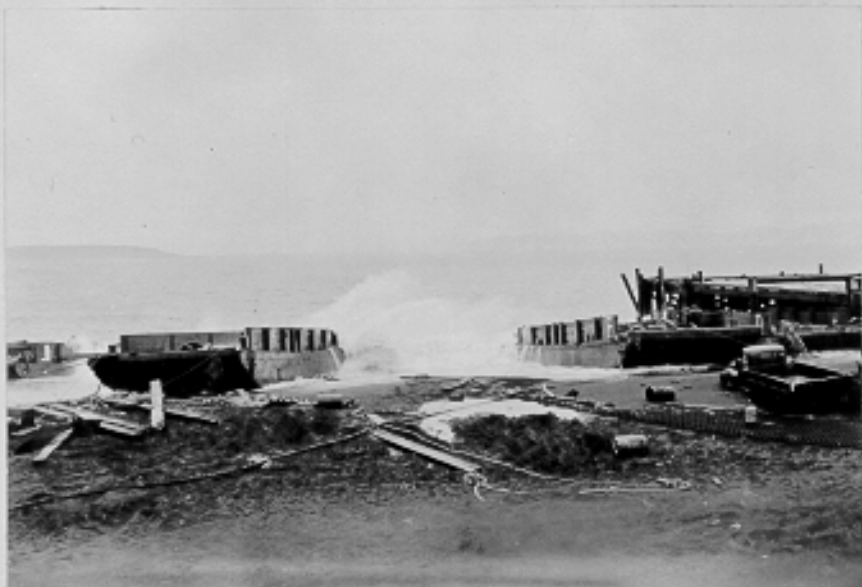


② Aleutian storms smashed equipment and instal-  
lations again and again. For years the beaches  
will be littered with the wreckage of piling,  
timber, boxes of supplies, barges, barrels and  
ships.



(C513C) Men struggle through surf with cable to pull  
loose barge on beach. Fort Glenn, Alaska. 9-22-42

Waves beating barges in South Pustoi Bay  
during storm. Fort Glenn, Alaska. 9-15-42



(B) The winter Williwaws, freak winds of the Aleutians, strike with sudden force. Barges unloading at docks and towed in the open sea, in spite of all precautions, extra lashings and extra tow lines, were often lost or smashed upon the rocks or beaches.



(C513D) Tractor trying to pull barge from Dock #3  
storm wreckage. Fort Glenn, Alaska. 9-22-42

## SAFETY

At the time construction work was taken over by the Corps of Engineers in Alaska, the general safety program of the Office, Chief of Engineers was put into effect. In February of 1941, a Safety Engineer was assigned to work under the Area Engineer and to organize a program of accident prevention for the Area as a whole.

Project Safety Engineers were assigned to the major construction projects to promote accident prevention, investigate, and report accidents using the uniform system of investigation and reporting of accidents as set up by the Office, Chief of Engineers. Individual accident reports and monthly narrative inspection reports were forwarded to the Office, Chief of Engineers through the Seattle District and Portland Division offices. Safety memoranda and publications were issued to the projects to assist the accident prevention program. Safety meetings, held by the foreman on the job, were found to be one of the most effective means of promoting safety. Reports of the meetings were forwarded by the project Safety Engineers to the Anchorage Area Safety Section.

From 16 January 1941 to December 1941, there was a marked decrease in the frequency rate of accidents to Government employees. During the first months of 1942 the frequency of accidents continued to decrease, and then increased slightly

due to the pressure of wartime construction. However, the frequency rate for 1942 showed a decrease of approximately 25 per cent over 1941.

Because of the increased construction, high labor turnover, and loss of experienced workers and necessity of using untrained workers on many projects, there was no appreciable decrease in the accident rate for Government employees during 1943.

The frequency rate of accidents to contractor employees was considerably higher than that of Government employees during 1941; however, it compared favorably with similar work in private industry. The rate for 1942 decreased approximately 13 per cent over the 1941 rate and up to August 1943, when the Safety Section was transferred to the Alaskan Department, the frequency rate showed a decrease of over 60 per cent above the 1942 rate.

On the basis of the 1941 figures, it can be estimated that approximately 116 accidents to Government employees and 356 accidents to contractor employees were prevented during 1942-43, with a consequent saving in man-hours of effective work. This saving has helped to reduce the costs and increase the efficiency on the various projects affected.

## DEFINITIONS

MUSKEG - With the exception of the timbered areas, sections of river valleys and certain hillsides, the interior of Alaska is covered with a plant association commonly known as "muskeg". The Muskeg consists of tufts, or "niggerheads", of bunch grass surrounded by sphagnum moss, out of which grow scrub spruce, tamarak, compact willow thickets, clumps of ground birch, and an assortment of small plants including cranberry, cloudberry, blueberry, and the Alaskan variety of Labrador tea. The Muskeg contains numerous small pools, occasional "quaking bogs", and offers great resistance to mobility on foot or on wheel.

TUNDRA - (From Webster) One of the level or undulating treeless plains characteristic of Northern Arctic regions in both hemispheres. The tundras mark the limit of arborescent vegetation. They consist of a black mucky soil with a permanently frozen sub-soil, but support a dense growth of mosses and lichens, as the reindeer moss, and dwarf caespitose herbs and shrubs, often showy-flowered.

The following are from "Permafrost" published by the Office, Chief of Engineers, in March 1943.

FROST-BOIL - Accumulation of excess water at a place of accelerated spring thawing of ground-ice. It usually weakens the surface and may break through causing a quagmire.

The accumulation is due to impervious frozen ground below and to the sides of the affected area.

FROST-HEAVING - An upward force usually manifested by a more or less marked upward due to the swelling of frozen ground.

A very destructive type of swelling of ground is due to hydrostatic pressure of ground water which is trapped during the winter freezing between the impervious permafrost below and the frozen active layer above. This type of swelling is most common where the permafrost table is close to the surface and where the active layer freezes clear through and ultimately merges with the permafrost. Under this condition bodies of shallow ground-water with no avenue of escape are squeezed, as in a vise, and cause the overlying ground bulge and crack open.

WILLILOW - A violent, shifting, and sudden windstorm occurring in mountainous coastal areas.

STREAM THAWING - Artificial thawing by steam of frozen ground to permit excavation for construction or mining purposes. Live steam is percolated through the frozen section by pipes sunk vertically in the ground.

P A R T V

This section contains fourteen analyses of reports covering Special Reconnaissances, Investigations and Surveys. They are placed in order with respect to date of submission of report.

## RECONNAISSANCE AND SURVEYS

In addition to construction at the projects described thus far, surveys and reconnaissance throughout Alaska have been carried out for airfields and transportation routes. Some of the work was not new. Partial road and railroad locations between Fairbanks and Council on the Seward Peninsula, for example, were first investigated in the early part of the century but advanced construction methods, different modes of travel and war conditions required up to date information.

## Transportation

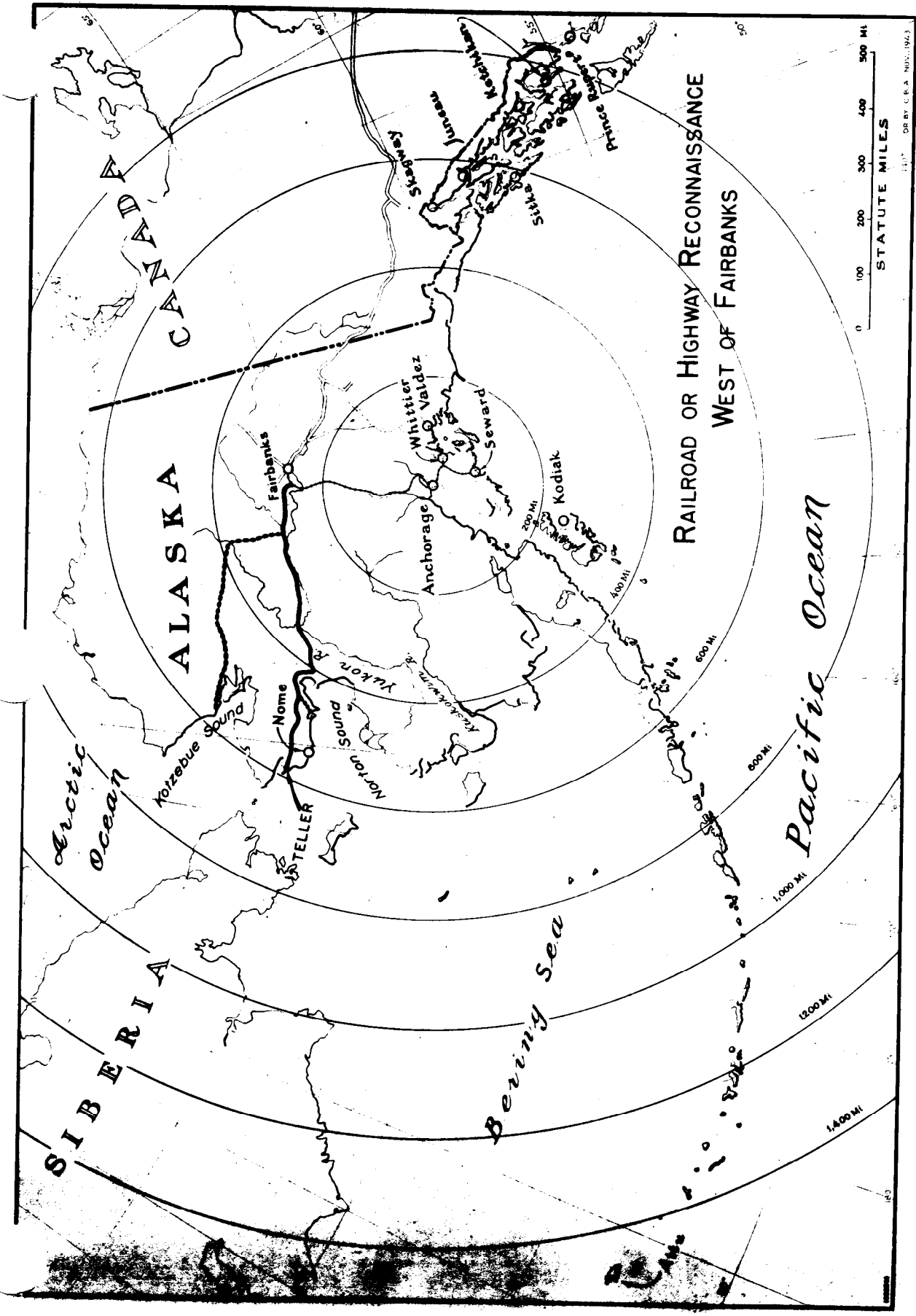
1- Reconnaissance for railroad ~~or~~ highway routes west of Fairbanks, to and including locations of suitable sites for ocean terminals from Norton Sound to Point Barrow.

The report made for this project covers the reconnaissance to determine the most feasible and practical route for a railroad or highway from Fairbanks, Alaska to an ocean terminal on the coast of Alaska between Norton Sound south of the Seward Peninsula and Point Barrow on the Arctic ocean. Two main routes to the coast were planned -- one to Norton Sound and the Seward Peninsula by way of the Tanana and Yukon valleys, and one to Kotzebue Sound by way of the Tanana, Tozitna, Alatna and Kobuk River valleys. The routes were covered by field parties using available means, such as dog team, air transportation, snow shoes, boats, rafts and on foot.

The investigation and survey established the facts that the shortest and most logical route for a railroad or highway from the standpoint of construction, supply and maintenance, is westward from Fairbanks, through the Yukon River valley and the coastal mountains to the Bering Sea. Owing to the shallow coast line no ocean terminals were found to be suitable for harbor facilities as needed for terminal uses, with the exception of two locations. Ocea-going vessels have to stand off shore on Alaska's west coast 2 to 11 miles in order to discharge or take on cargo. However, Port Clarence (Teller) and Golofnin Bay, both on the Seward Peninsula, have harbors where sufficient depth of water for shipping facilities can be reached economically. The ports considered in this report cannot be efficiently and economically operated because of ice conditions. The average time in which these harbors are free of ice is from June to October.

It was found that either a railroad or highway construction project would not entail any great construction problem except for severe winters and frozen ground conditions.

The reconnaissance was made in May 1942, under the direction of Captain (now Lt. Colonel) James D. Bush, Jr., CE, assisted by Lieutenant Byron J. Clark, CE, and Mr. Bruce Rider. A complete survey, including location, was made the winter of 1942-43, under the direction of the Seattle District Engineer. Colonel James G. Truitt was in charge of this survey.



RAILROAD OR HIGHWAY RECONNAISSANCE  
WEST OF FAIRBANKS

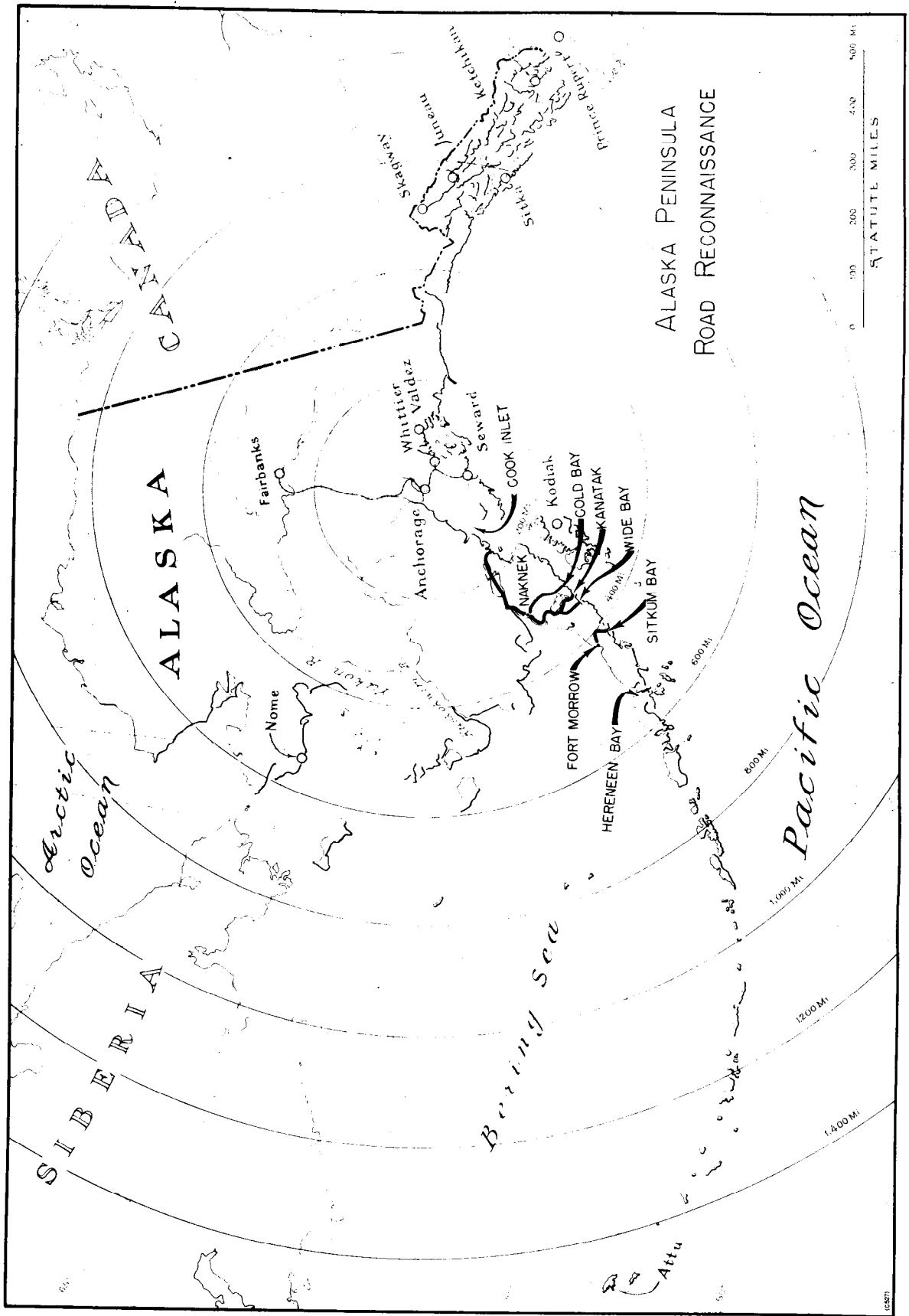
0 100 200 300 400 500 MI  
STATUTE MILES

MAP BY U.S.A. NAVY (1943)

2- Road reconnaissance on the Alaska Peninsula.

Projects located on the north side of the Alaska Peninsula are relatively near the Pacific Ocean, but ships have to travel many hundreds of miles around the narrow Alaska Peninsula to reach them. In addition, these ports are ice-bound during the winter. Reconnaissance was undertaken to locate all-weather roads from the Pacific side to Naknek and Fort Morrow. The same party was to investigate the coal deposits at Herendeen Bay, and reconnoiter a road location from there to the Pacific coast.

Routes to Naknek included the following: The existing road from Iliamna Bay on Cook Inlet, to Iliamna Lake, a distance of 15 miles, and then by water through Iliamna Lake and Kvichak Bay to Naknek, a total distance of 205 miles. This location was not considered feasible because it is also ice-bound and limited to shallow draft craft. Routes from three possible harbors on the Pacific, Cold Bay, Kanatak and Wide Bay, were investigated. The 85 mile location from Cold Bay appeared to be the most feasible. A 60 mile location from Sitkum Bay to Fort Morrow was reconnoitered. This route is mainly located on high ground where road construction may be economically done in contrast to possible shorter routes traversing great areas of swamp and marsh. Coal deposits at Herendeen Bay appeared worthy of further investigation and a road nine miles long would connect the area with the Pacific coast. Such a road might also be used for transshipping freight to shorten the distance to Fort Morrow and Naknek.



This reconnaissance was made during the fall of 1942, by Captain Ernest F. Fox, CE, assisted by Mr. Norman Sylar and Mr. Frank Chick.

3- Liquid fuel pipe line from Whittier to Fort Richardson.

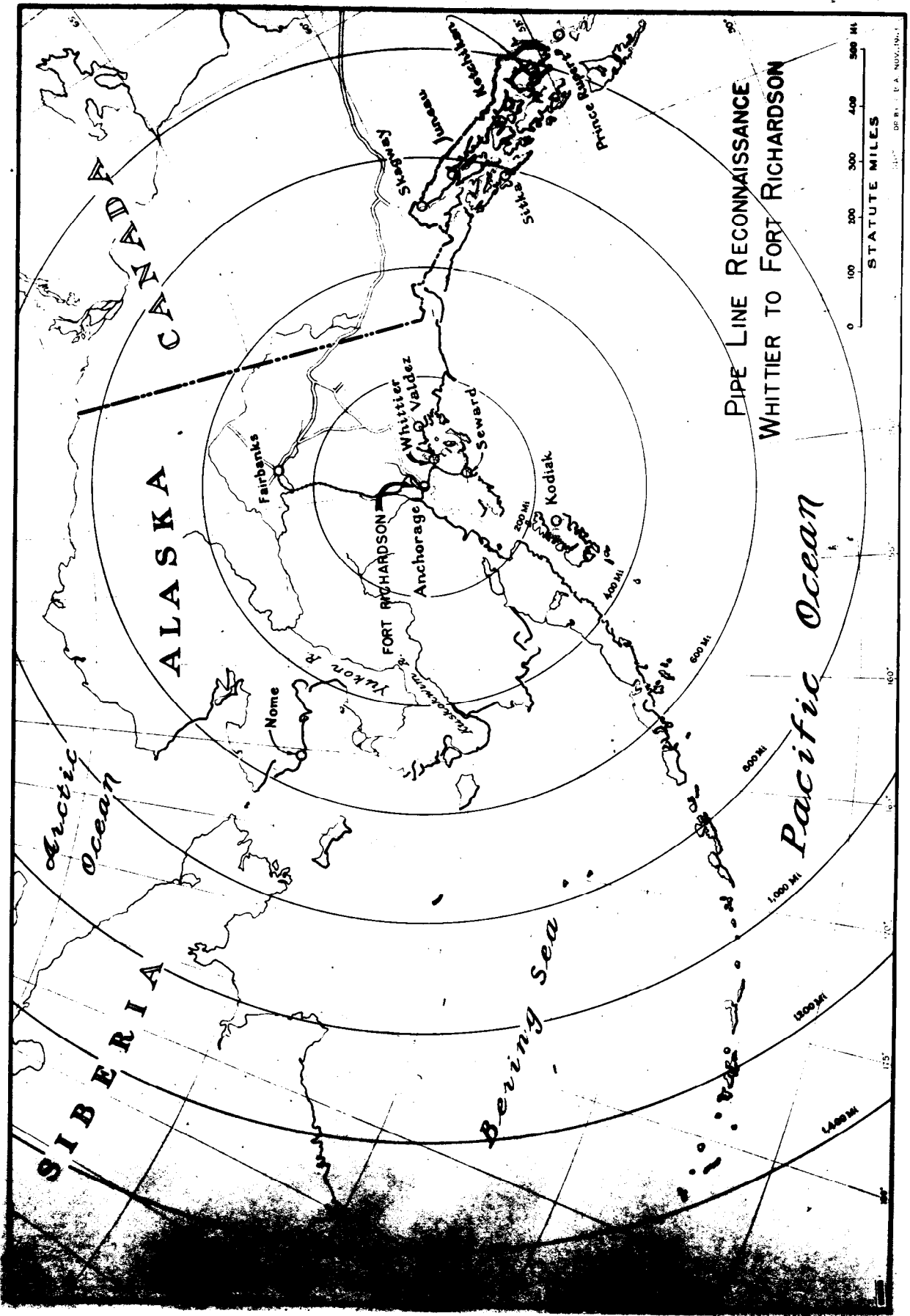
This reconnaissance was made in order to determine a possible route for a pipe line between the ocean terminal at Whittier, and the air base at Fort Richardson, a distance of approximately 68 miles by rail in a northwest-southeast direction. The two localities are separated by the glacier covered Chugach Mountains.

It was found that a pipe line could be built, generally following the Alaska Railroad, and would have a length of approximately 64 to 65 miles. Of this total mileage, 54 miles could be surface laid, 0.9 miles suspended, 6.5 miles trench laid and 3.5 miles could be laid through existing tunnels of the Alaska Railroad. Four pumping stations would be required for the efficient operation. The cost for a 4" line was estimated at \$675,000 and the estimated cost for a 6" line was \$800,000.

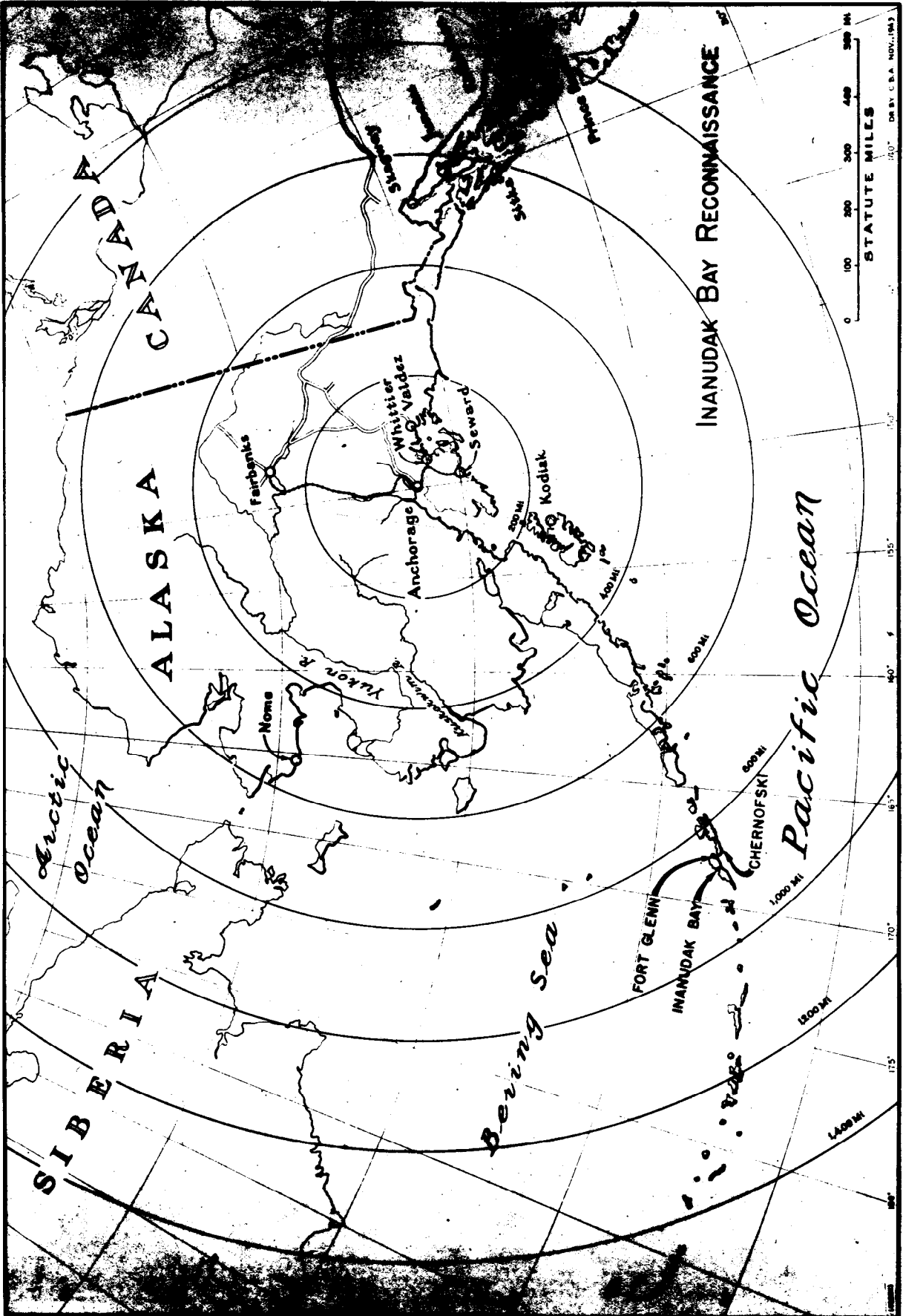
This reconnaissance was made during the months of February and March 1943, by Captain Henry F. Thomas, CE, and two civilian Engineers, Mr. Norman E. Sylar and Mr. Norval L. Walker.

4- Inanudak Bay harbor development.

There are no adequate harbor facilities on Umnak Island in the immediate vicinity of the airfield and garrison. It is necessary to lighter all materials, equipment and supplies by means of barges from Chernofski Harbor on Unalaska Island, to Fort Glenn, some 12



U.S. GOVERNMENT PRINTING OFFICE: 1957



INANUDAK BAY RECONNAISSANCE

STATUTE MILES

0 100 200 300 400 500 MI

DA BY C.B.A. NOV. 1943

miles distant. The Strait across which these supplies must be barged is often stormy. Much cargo and equipment were lost, thus causing loss of much valuable construction time. On the north side of Umnak Island lies Inanudak Bay, some 30 miles distant from the main garrison and airfield. It was known that this bay afforded good possibilities for adequate harbor facilities to be constructed there.

In the spring of 1943, a survey under the direction of Captain E. F. Fox, CE, was made of the bay, as well as the possibility of road construction from the garrison at Otter Point to Inanudak Bay.

The report covers utilitarian and tactical location and accessibility. The recommendation made therein estimates the time needed for construction of adequate harbor facilities and road to be approximately one year. Inasmuch as the tactical situation no longer demands the urgent speed of construction at Fort Glenn, there has been to date (November 1943) no action taken on the recommendations of this report.

#### Airfields

##### 1- Fort Glenn Reconnaissance.

What was probably the most important airfield investigation from the point of view of the war effort in the Territory of Alaska was the Otter Point (Fort Glenn) reconnaissance and survey conducted in October and November of 1941. The increasingly hostile attitude of the Japanese in the Pacific and the increased tempo of their preparation for actual hostilities was the basis for the decision on the part of the War Department that military protection, including

air protection, for Naval stations then under construction in Alaska would be provided.

With a view toward providing such protection and to establishing a forward operating air base in the Aleutians, the investigations of certain sites in the vicinity of Dutch Harbor were conducted by Colonel B. B. Talley (then Major), Colonel Everett Davis of the Air Corps (then Major), and assisting military personnel. Although previous reconnaissances had been made in this area by Naval and civilian groups, no favorable sites for airfield construction had been located. Preliminary investigation by Colonel Talley, Colonel Davis, etc., indicated a possible site at Fustoi Point on Umnak Island.

Operating under orders from Colonel Talley, this site was investigated by civilian engineers under Mr. William Muldrow, Associate Engineer, staff of U. S. Engineer Office, Anchorage, and in report dated 7 December 1941 it was recommended for favorable consideration. Cost estimates were prepared, and in conjunction with the report and in compliance with orders from the Alaska Defense Command, were taken by Colonel Talley personally to the District Office in Seattle, Washington, thence for approval to the Commanding General, Western Defense Command, and then to Chief of Engineers Office, Washington, D. C.

A statement of the authority under which construction funds were granted, and the narrative of the actual construction of Fort Glenn, are contained at another place in the body of this report.

## 2- Fort Randall Reconnaissance.

Concurrent with investigation of airfield site at Fort Glenn,

it was necessary to establish intermediate fields further back on the Aleutian Peninsula, and survey parties were assigned for this duty from the U. S. Engineer Office at Anchorage. An investigation and survey of the site at Fort Randall was made by a party in charge of Mr. Norman E. Syllar, civilian, Associate Engineer, and a report dated 21 November 1941 recommended favorable consideration of this location.

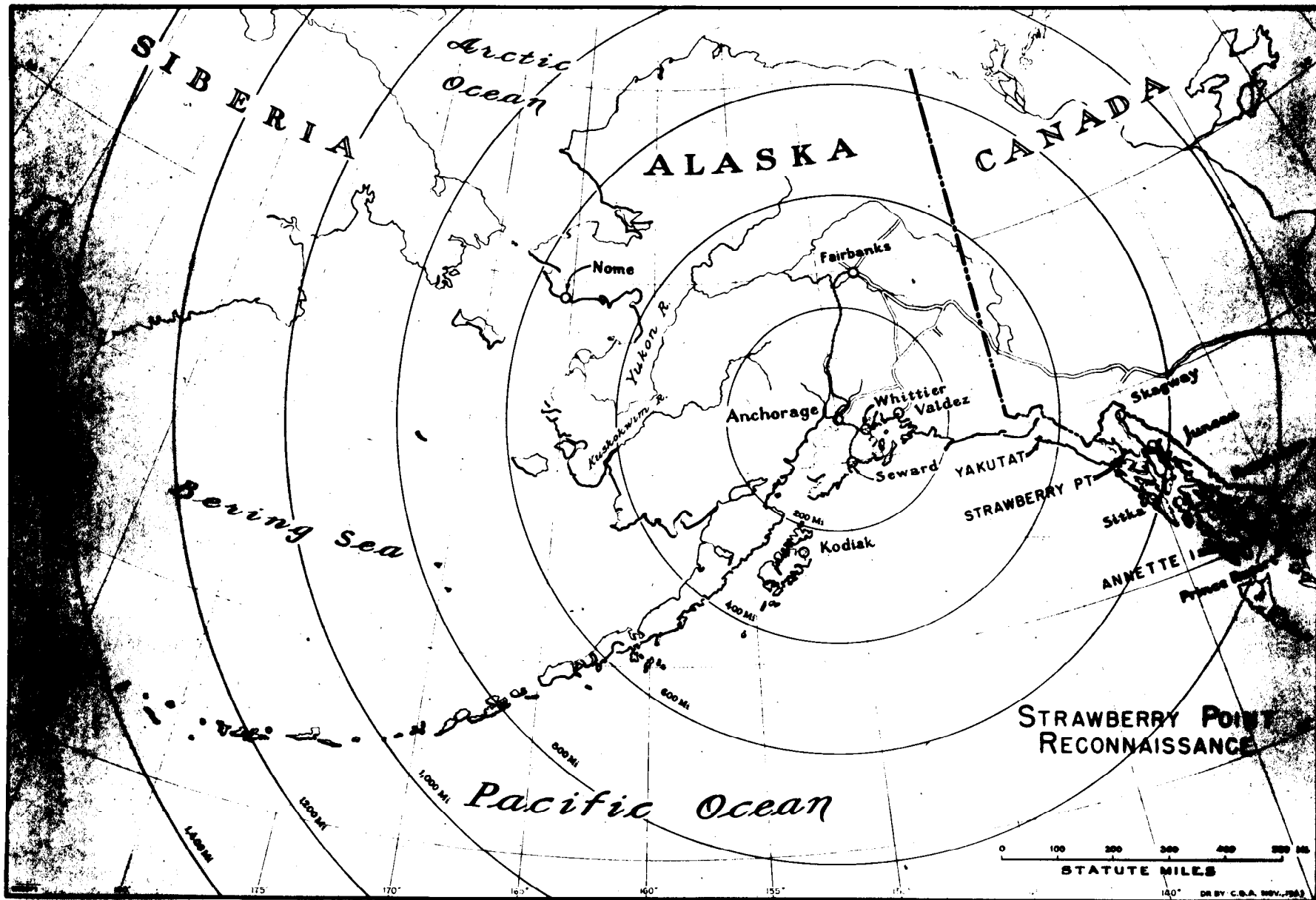
3- Port Heiden Reconnaissance.

The need for an additional intermediate airfield to be established in the Aleutian Peninsula led to the investigation of a site at Port Heiden, Alaska, by personnel of the U. S. Engineer Office, Anchorage, Alaska, in March and April of 1942. Investigation was made under the direction of Mr. James Huston, civilian, Associate Engineer. Preliminary investigation of the Port Heiden site had been initiated by technical personnel of the CAA.

At another place in this report, the reference authority for the construction of the airfields at Cold Bay (Fort Randall) and Port Heiden (Fort Morrow) is given, and quite a detailed statement of actual construction at these projects is incorporated.

4- Strawberry Point Reconnaissance.

In January 1942, Lieutenant Bryon J. Clark, CE, investigated a proposed airfield site at Strawberry Point on Icy Strait, about 50 miles west of Juneau. The area is only a few feet above sea level but it has good flying weather and excellent approaches. It is one of the few extensively level areas in southeastern Alaska. The advanced stage of construction of the Juneau Civil Aeronautics



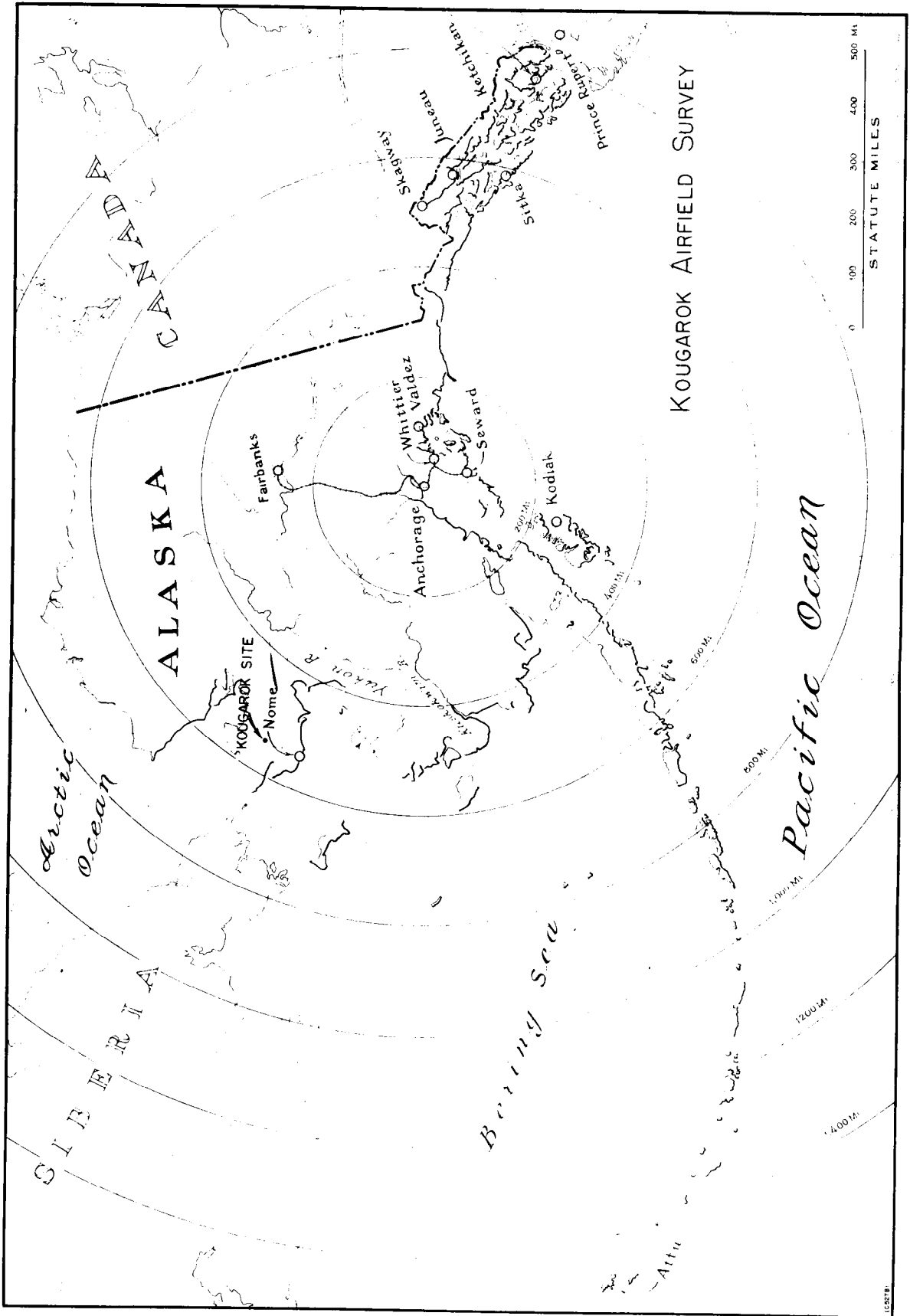
Administration airfield and the coastal fields at Annette Island and Yakutat made construction at Strawberry Point unnecessary.

5- Kougatok Airfield Survey.

A reconnaissance for possible military airfields throughout the entire Seward Peninsula was made in March and April of 1942 because of the need for better weather conditions, a better runway approach, and a location farther from the vulnerable coast line. The party consisted of two Air Corps officers, Captain Clarence W. Jilkes and Captain John M. Cross, and an Engineer officer, Lieutenant Byron J. Clark. A site known as the Kougatok Field was found to be most favorable from a weather and flying viewpoint. The area is 65 air miles north of Nome, in the center of the Seward Peninsula.

The area was investigated in May and June 1942 by Lieutenant Byron J. Clark and Mr. E. F. Fox, geologist (now Captain, CE) and airfield construction was found to be feasible, regardless of the fact that the runway locations would be entirely underlain by permanently frozen ground containing large amounts of free ice. General construction procedure would be to build a thick fill of silty gravel, which is available in extensive banks near the site. Bituminous or steel mat surfacing might then be applied.

Continued investigations of airfield sites in the Seward Peninsula are underway and a definite location has not yet been determined.



6- Quinhagak Reconnaissance.

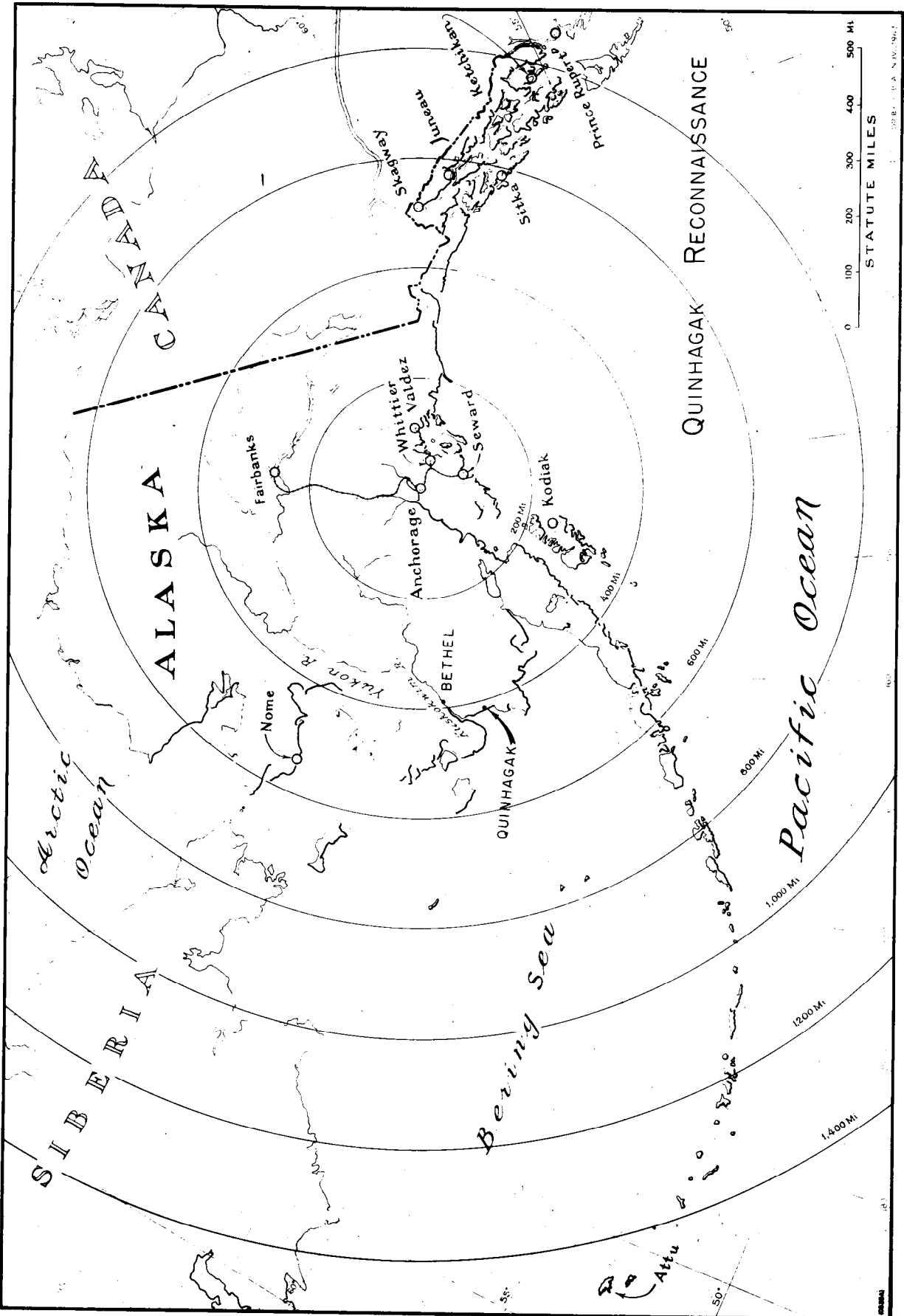
To plan for further airfield development in Western Alaska, a large site, located approximately 75 miles south of Bethel and 8 miles inland from the Bering Sea coast was reconnoitered. Advantages of the site are an unfrozen gravel sub-soil and freedom from coastal fogs. The area is situated on a broad plain with ideal approaches. Specifically, the site is near the mouth of the Kanetok River, 8 miles upstream from the native village of Quinhagak.

Harbor conditions are poor, for the shallow coastal depths require extensive lightering in unprotected waters. Limited protected anchorage for harbor craft is available in Kanetok River. In July 1942, Mr. Norman E. Sylar, engineer for the Officer in Charge, Alaska Construction, made a detailed reconnaissance of the site, but further work was held in abeyance.

7- Tanaga Island Reconnaissance.

Parties led by Colonel B. B. Talley, CE, on two occasions, in June and October 1942, studied the possibilities of airfield and garrison construction on Tanaga Island. Tactical consideration, however, fixed the location of airfields on other Aleutian islands.

Included in the second party were Lt. Colonel Marc J. Logie, Inf., Lt. Colonel L. H. Foote, CE, Lt. Colonel L. B. DeLong, CE, Lt. Colonel G. E. Linkswiler, CE, four enlisted men and one civilian guide.



0 100 200 300 400 500 MI  
STATUTE MILES

QUINHAGAK RECONNAISSANCE

ALASKA

Arctic Ocean

SIBERIA

Bering Sea

Pacific Ocean

SPR-1 (P.A.N.V.) 1967

000000



The first reconnaissance was made using a Navy seaplane starting from Fort Glenn. The Japanese had just occupied Kiska and there were no American bases in the western Aleutians.

8- Amchitka Reconnaissance.

A reconnaissance was made of Amchitka during November 1942 to ascertain if a site existed there to construct an airfield suitable for the operation of bombardment aircraft and the necessary garrison.

The reconnaissance party consisted of Colonel B. B. Talley, CE, Lt. Colonel W. J. Verbeck, Inf., Lt. Colonel L. B. DeLong, CE, Lt. Colonel Alvin E. Hebert, AC, Captain Paul M. Buffalo, AC, Captain Theodore L. Barbara, AC, and seven enlisted men.

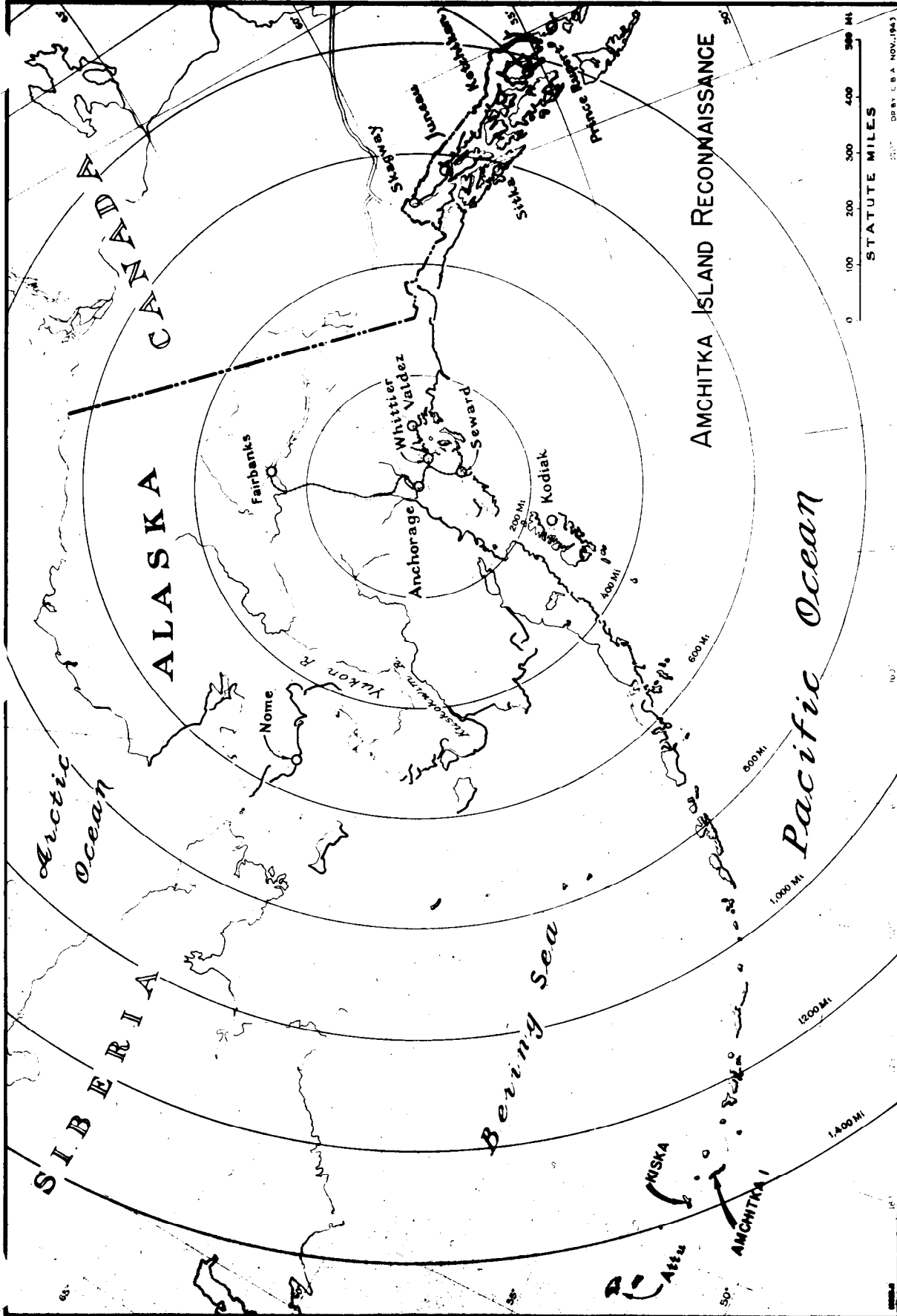
The recommendations submitted were that suitable airfield sites existed, that harbor sites were available for landing operations and ample water supply existed for garrison use.

This reconnaissance was carried out while the Japanese maintained aerial patrol of the island from Kiska.

9- Reconnaissance of Gareloi Group.

This reconnaissance was made to establish the feasibility of constructing emergency landing fields for fighter aircrafts on Ogliuga Island, Kavalga Island and Ilak Island in the Gareloi Group of the western Andreanof Islands.

This investigation was made during January 1943 by Major William J. Niemi, 807th Engineers, and included representatives of the 32nd Naval Construction Battalion, Lieutenant T. deJang,



0 100 200 300 400 500 MI  
STATUTE MILES  
DR BY U.S.A. NOV. 1943

CANADA

ALASKA

AMCHITKA ISLAND RECONNAISSANCE

Arctic Ocean

SIBERIA

Bering Sea

Pacific Ocean

ALASKA  
AMCHITKA

60°

50°

50°

10°

10°

Lieutenant (JG) G. M. Snyder, and four enlisted survey men.

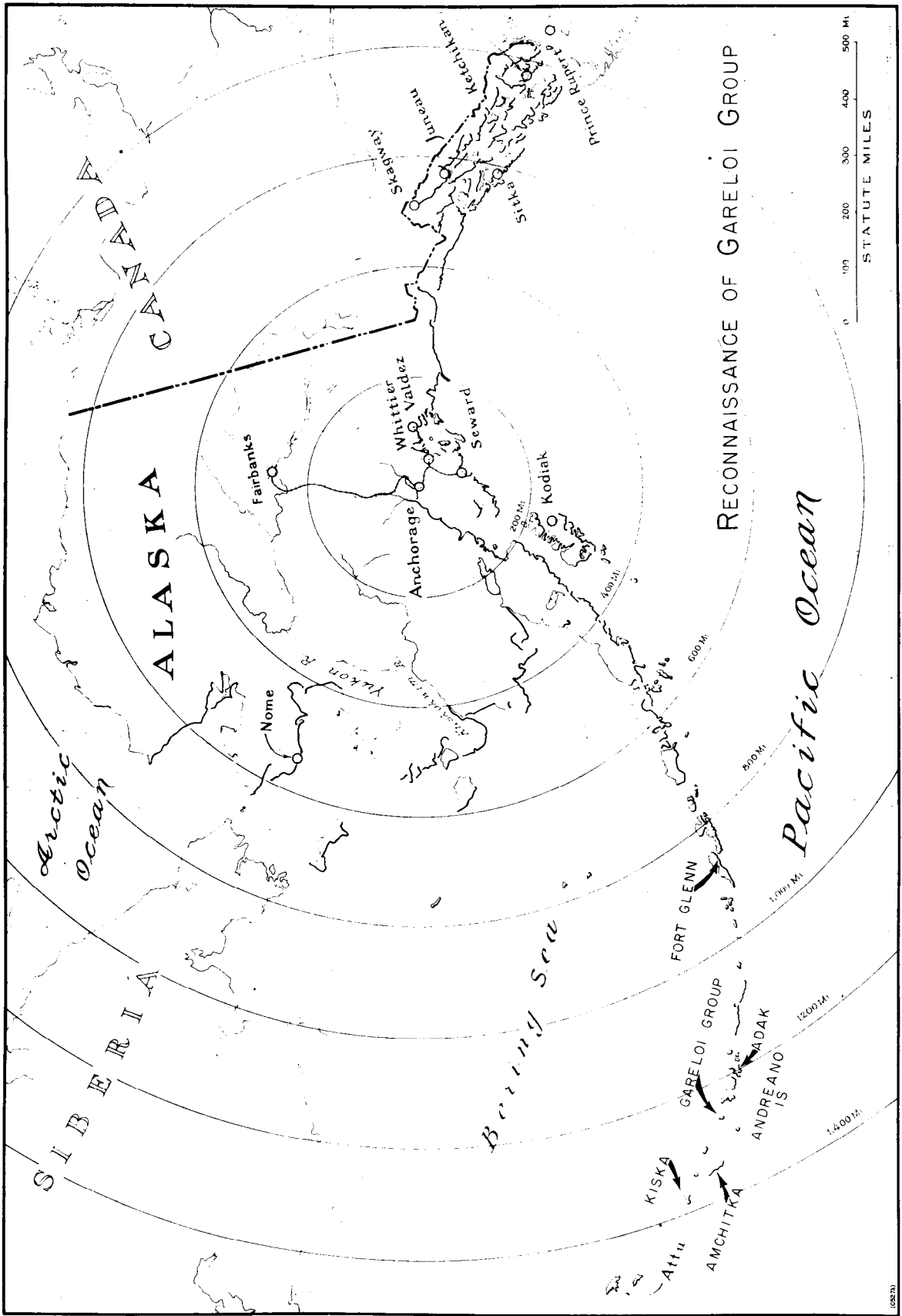
The recommendations made stated that construction of a landing field is possible on Ogliuga Island. However, due to shallow waters and absence of ship landings, all supply operations would have to be done by shallow draft lighterage equipment. No suitable runway locations were found on either Kavalga or Ilak Islands and it was recommended that further consideration of these locations be abandoned for emergency airfield sites. A short steel mat runway was subsequently constructed by the Navy Seabees on Ogliuga Island.

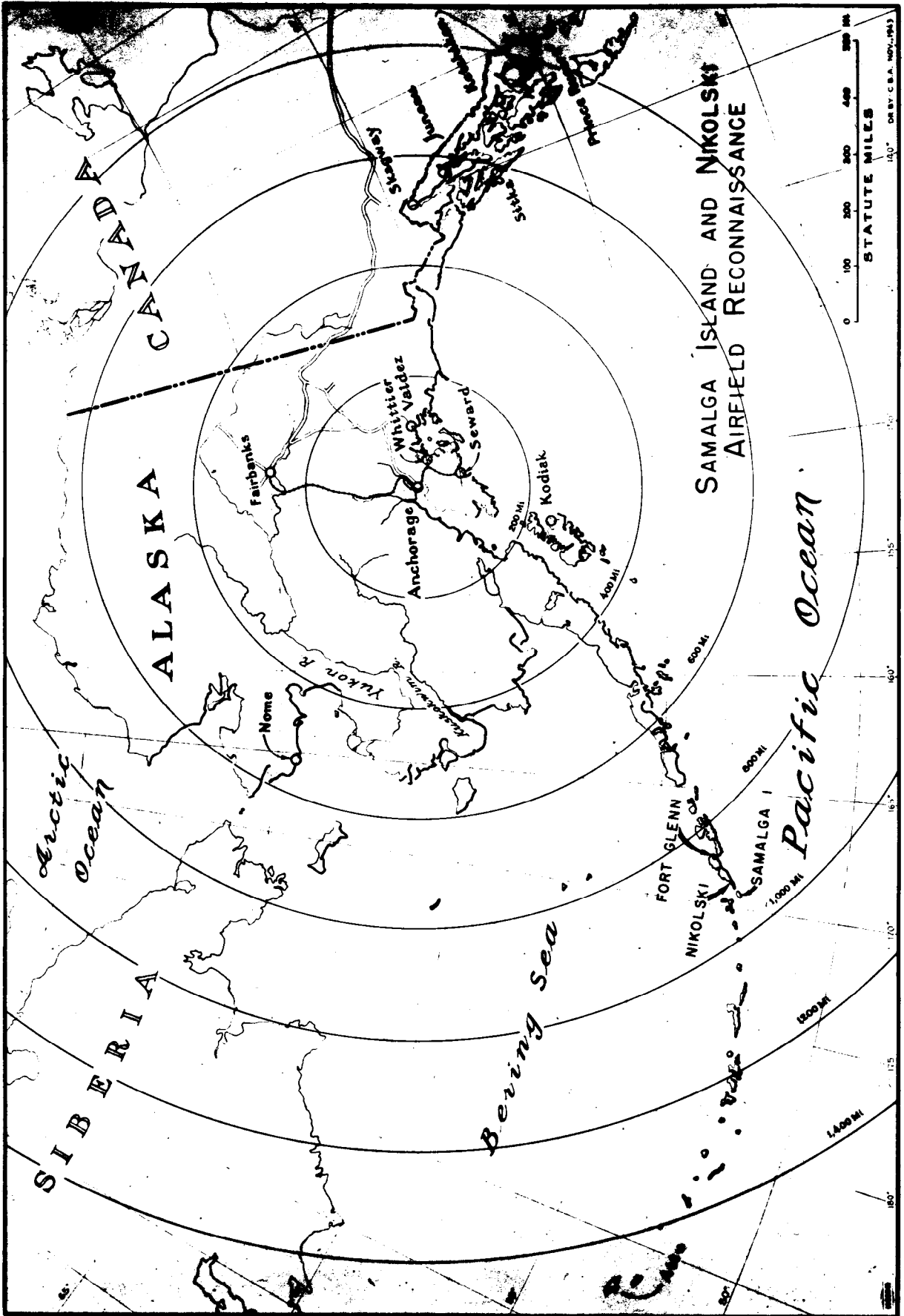
10- Nikolski and Samalga Island Reconnaissance.

Samalga Island is located approximately 10 miles south of Nikolski on Umnak Island. In February 1943 the need for additional emergency landing strips in the vicinity of Fort Glenn necessitated a survey of nearby islands. Inspection of Samalga Island near the southeastern tip of Umnak was desired.

In this same month a small survey party headed by Captain Ernest F. Fox, CE, landed on Samalga. The island has no harbors, and landings by any crafts above the size of small launches are hazardous. After sufficient reconnaissance was made it was determined that no landing strip could be constructed on this field parallel to prevailing winds. The hazardous landing conditions were an additional factor in determining against recommendation of construction at this site.

The same party mentioned above investigated and located three possible sites for emergency landing strips near the Village of





SAMALGA ISLAND AND NIKOLSKI  
AIRFIELD RECONNAISSANCE

STATUTE MILES  
0 100 200 300 400 500

140° OR BY C.B.A. MAP (1943)

CANADA

ALASKA

Arctic Ocean

SIBERIA

Bering Sea

Pacific Ocean

FORT GLENN  
NIKOLSKI  
SAMALGA I

Fairbanks

Anchorage

Whittier  
Valdez

Kodiak

Nome

Yukon R.

Katmai Mts.

Seward

Bethel

Sitka

Juneau

Kodiak

1200 MI

1400 MI

800 MI

1000 MI

200 MI

400 MI

600 MI

800 MI

Nikolski on the southern side of Unak Island. However, no construction to date (November 1943) has been authorized due to the favorable change in the tactical situation in the Aleutians.

11- Agattu Island Reconnaissance.

Agattu Island is the second largest of the Near Island group and located some 25 miles east of Attu at the end of the Aleutian Chain.

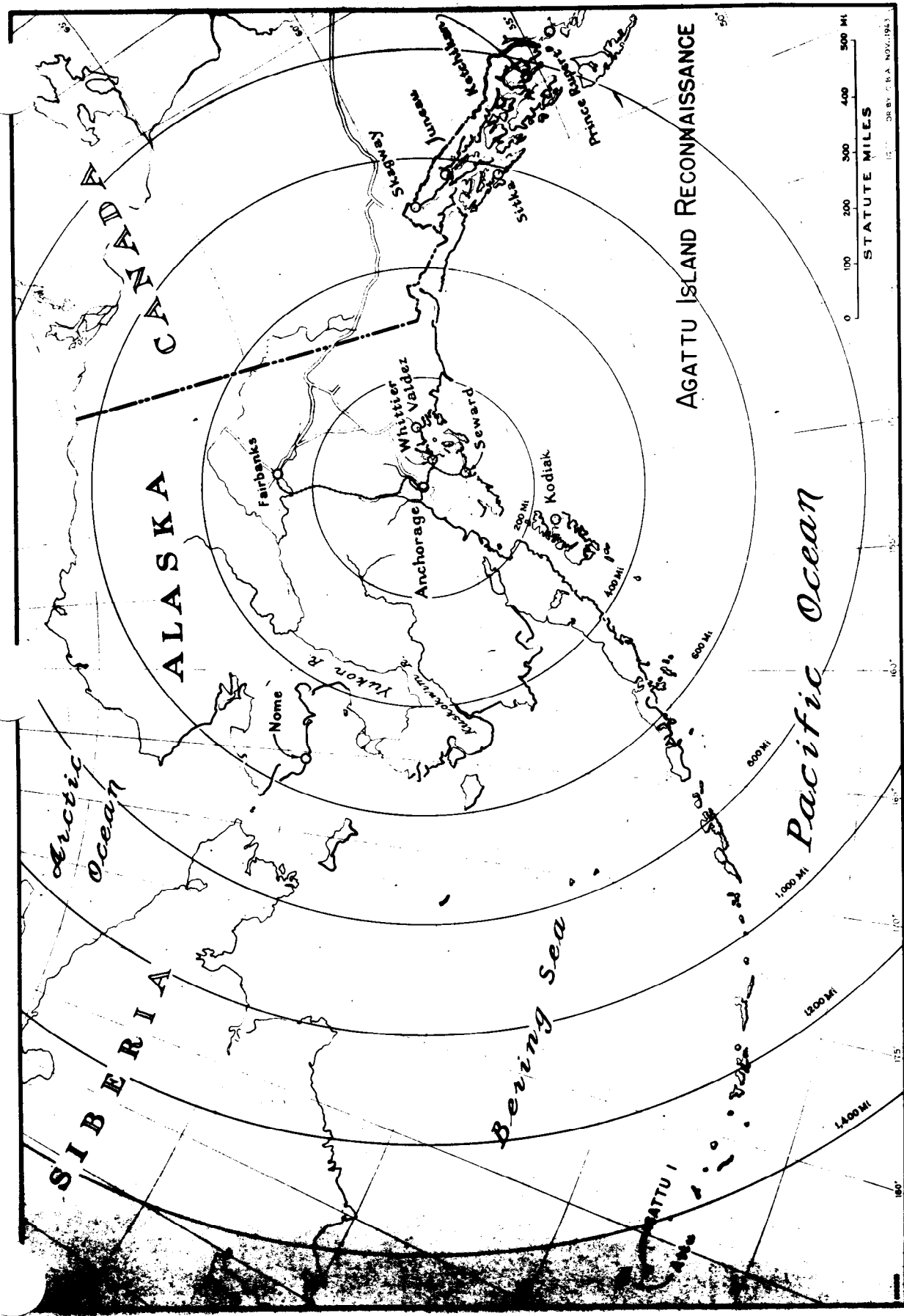
Shortly after the occupation of Attu by American forces in May 1943, a reconnaissance for possible airfields was made on Agattu Island by Lt. Colonel Carlin H. Whitesell, Jr., CE, Commanding Officer of the 807th Engineers, accompanied by a small detachment of Infantry. A previous air reconnaissance had been made approximately three weeks before.

A three day reconnaissance on foot was made. It was determined from the report submitted that construction of runways of sufficient length on this island would entail considerable work. Wind conditions and high mountains, as well as almost perpetual fog made construction impracticable.

The fact that runways were being successfully constructed on both Attu and Shemya in the Near Island group, each within 25 miles of Agattu, eliminated the immediate necessity of an airfield on this island.

12- Fort Davis Airfield Reconnaissance.

Fort Davis is six miles east of the city of Nome, on the Bering Sea. This site was occupied by a small Army garrison in World War I.



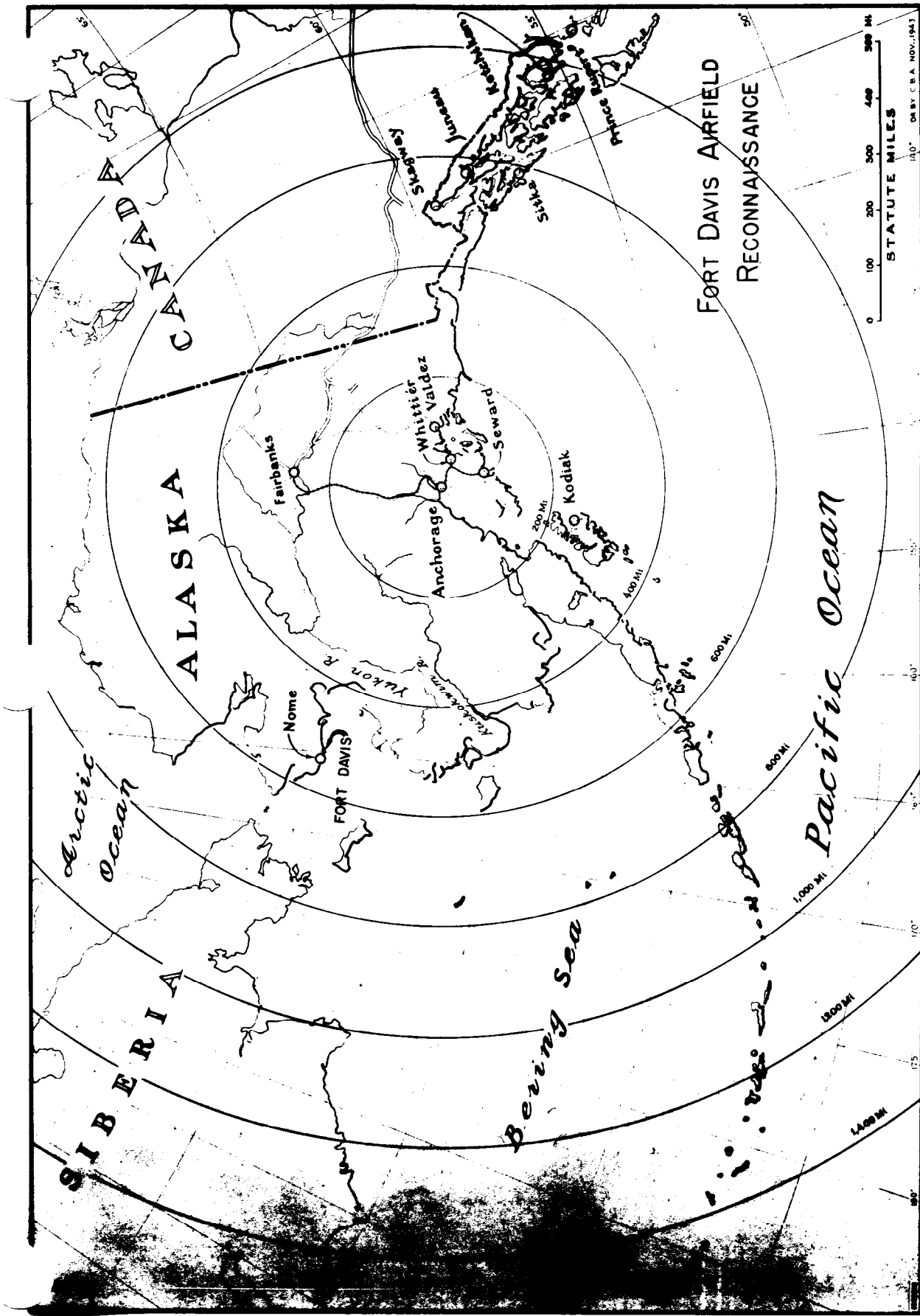
AGATTU ISLAND RECONNAISSANCE

STATUTE MILES

0 100 200 300 400 500 MI

NOV. 1943

U.S. GOVERNMENT PRINTING OFFICE



Cross winds and one bad approach at the Nome airfield made construction of a nearby field necessary. Further, the constant increase of air traffic to Russia through Nome under the Lend-Lease program, added to this necessity. In June 1943 a survey was made by members of the Nome Resident Engineer Force, of a possible runway site in the vicinity of the old Fort Davis area, some six miles east of Nome. The results of this survey indicated that the construction of a field at this location was not feasible. In addition, the results of a survey made by the Civil Aeronautics Administration confirmed this fact. It was estimated that approximately three working seasons would be required to construct a 5,000' runway and the work would entail the movement of from one and one half million to three million yards of cut and fill in frozen muck.

In view of the above, plans for construction at this site were abandoned.

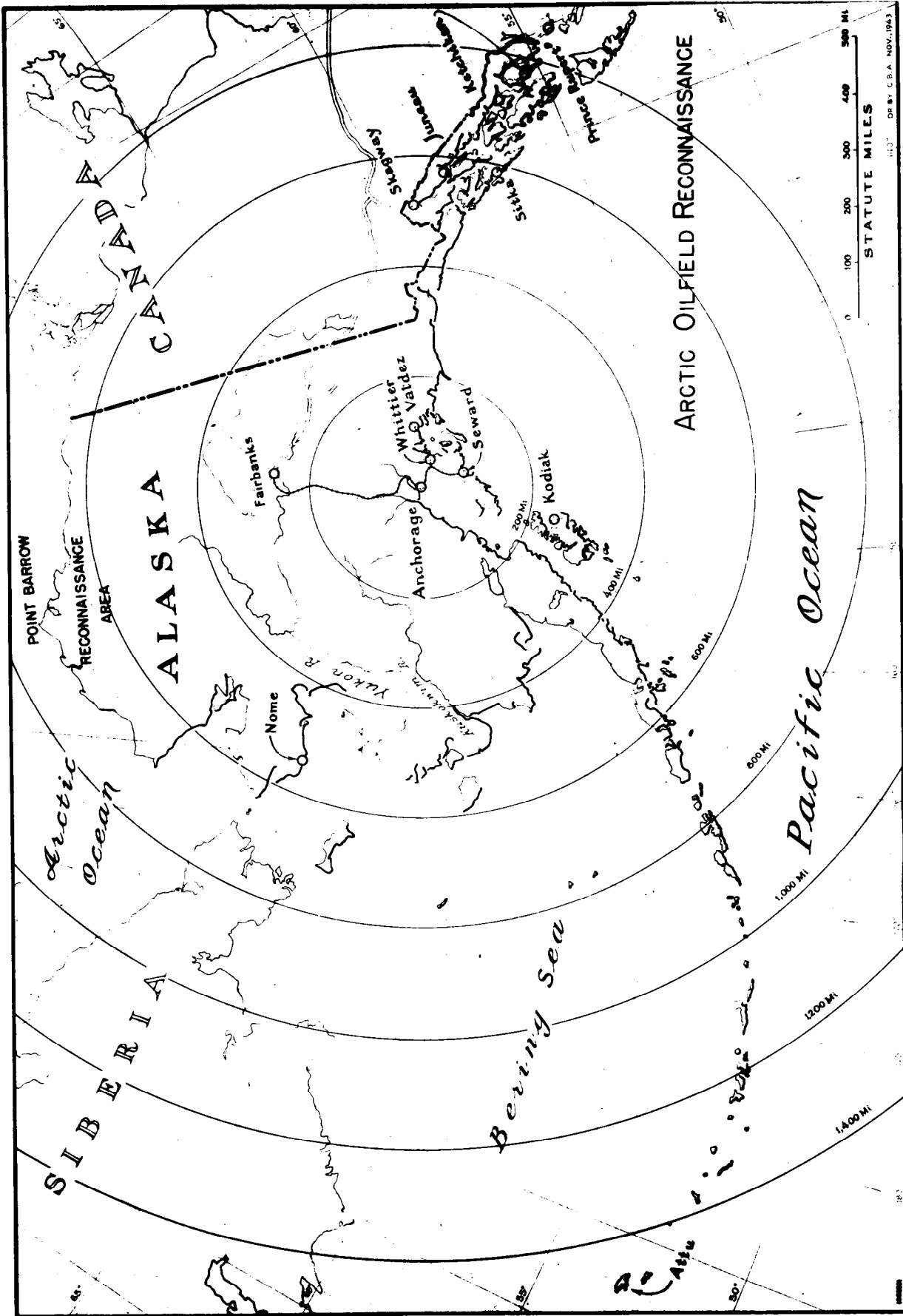
2- Oil Reconnaissance Report.

An expedition to the Arctic Slope to investigate reported "oil seeps" was undertaken by representatives of the United States and Territorial Bureau of Mines for Governor Ernest Gruening of Alaska, in the fall of 1943. Captain Henry F. Thomas, CE, was detailed by the Commanding General, Alaska Defense Command to accompany the party.

Five distinct and separate oil flows were investigated in an area approximately 300 miles long and 100 miles wide. Detailed

findings and recommendations were made to the Governor of Alaska but it may be generally stated that most favorable indications exist for a large petroleum supply. The oil producing locations found are on the flanks of a major uplift and the Arctic Slope will produce oil where favorable structures exist.

The exploration was done from 5 August 1943 to 10 October 1943 with the United States being represented by Mr. Norman Ebbley and the Territorial Bureau of Mines by Dr. Henry Joesting.



P A R T VI

This section contains functions of the Anchorage office with respect to planning and design, real estate, and civil activities (Rivers, Harbors, and Flood Control).

## ANCHORAGE OFFICE

The Area Engineer Office grew from a modest staff in 1941 to a force of 250 at the peak of construction in 1943. At that time, 100 civilian employees consisting of engineers, attorneys, accountants, administrative help, and 67 officers and enlisted personnel handled construction which averaged \$8,000,000 per month and totaled \$135,000,000 in June 1942. As previously explained, Colonel B. B. Talley, CE, was the Officer in Charge; he was succeeded by Colonel Charles F. Baish, CE, with Lt. Colonel Dodson O. Givens, CE, as the executive officer.

Project Office Engineers directed the coordination of details such as directives regarding new work and correspondence with the District Engineer, and the Resident Engineers, details involving planning, design, procurement and shipping. From time to time, specially qualified individuals would visit the projects to assist in utility design and lay-out or other construction problems. Preliminary construction surveys and reconnaissance missions were performed by parties from the Area Engineer Office, and the drafting section prepared field maps, plot plans, and general lay-outs as well as certain types of design. Mr. Alva E. McKennett, Principal Engineer, was the civilian engineer in charge of this work during 1941. Since then, Mr. Victor C. Rivers, Principal Engineer, who is a long time resident of Alaska and well ac-

quainted with the Territory and its construction problems, has been in charge of the Engineering Division.

Project Engineers in charge of coordinating activities are a part of the Operations Division which since January 1942 has been under the supervision of Lt. Colonel James D. Bush.

It became necessary in January 1942, because of the increasing number of military garrisons to open an office to handle all real estate and land acquisition matters. The Real Estate Director, Mr. Harrison Kincaid, first reported directly to the North Pacific Division Engineer in Portland, Oregon, but in May 1942 the Real Estate Office was placed under the jurisdiction of the Officer in Charge of Alaska Construction and established its headquarters at Anchorage.

Principal functions of the Director are to appraise, investigate titles, negotiate with owners, and prepare all papers for acquisition of private property necessary for military purposes. Approximately 125 pieces of land including private property, rights-of-way, dwellings, docks and warehouses have been acquired in all parts of Alaska, as far west as Dutch Harbor and as far north as Kotzebue, and 325 leases for land, warehouses, office space, mining camps, canneries, hotels and sawmills have been processed.

## CIVIL ACTIVITIES

The Area Engineer, and later the Engineer, Alaskan Department, has been the representative of the Seattle District Engineer for river and harbor and flood control matters throughout the entire military construction program. In 1941 the Resident Engineer at Ladd Field completed construction of the Chena Slough flood control project, a 3 mile earth and rock fill dike to divert flood waters from the city of Fairbanks and Ladd Field. The dike has required continued maintenance.

At Nome Harbor, maintenance dredging with United States Engineer Department floating plant is done annually during the open navigation season. The work is necessary to maintain adequate depths in the harbor and approach channel. Since the start of military construction, this work has been done under the direction of the Resident Engineer at Nome. The 2,000' tunnel for diverting flood waters of Lowell Creek from the town of Seward was substantially completed before January 1941; however, final work and wind-up of the contract was conducted by the Area Engineer at Anchorage.

In May 1941, a public hearing and survey of Cordova Harbor for proposed civilian harbor improvements were conducted by the Area Engineer. A similar investigation was made at Valdez in July 1941. Final reports were prepared by the District Engineer for transmission to the Chief of Engineers. Recommendations for no additional work were made in both cases. Existing facilities are adequate for present needs and expansion for military or naval use was unnecessary.

P A R T V I I

C O N C L U S I O N

## CONCLUSION

Wartime construction work in Alaska as of November 1943 is rapidly drawing to a close. Certain westward Aleutian projects have yet to be completed and eight months should see practically all authorized work finished. Unless additional work is added by the middle of 1944, maintenance forces should take over from construction forces. The Construction Division has no plans other than to complete as rapidly as possible the work assigned to it.

Irregardless of the part that Alaska Military Construction has played or will play in World War II, its value to the Territory of Alaska is immeasurable. It can be considered as a long term investment in one of our great undeveloped storehouses. Alaska will return the investment in dividends of progress, wealth, social and economic development.

Three years of work in Alaska have seen the construction and development of two chains of airfields complete with hangars, garrisons and fuel storage. The Alsib or Ferry Command Route follows an interior line behind the coastal mountains from the Central United States, all through Canada and the Yukon Territory, across the northern part of Alaska to Nome on the Bering Sea. This "Main Lane" has its Alaska headquarters in Fairbanks and is used for the transportation of Lend-Lease aircraft to Russia. The second, or Coastal Route, follows the coast line of Canada

and Alaska from the Northwestern United States. From Anchorage on the southern coast, the route continues down the "Chain Lane" southwest over the North Pacific and the bases of the Aleutian Islands. Its ultimate aim is an offensive air route to Japan.

This map should speak for itself:

Alaska is big and rich but it is also youthful and full of energy. The Corps of Engineers are proud of their part in the Alaska operations from 1941-43.

Transportation and communication systems required over 200 years to span the 3,000 miles from the Atlantic to the Pacific in the United States. There are points in Alaska 3,000 miles apart but in three busy war-period years transportation and communication systems have spanned them.

Those in the Army who were stationed in Alaska know of its great distances, its 70° below zero weather, its 160" rainfall, the Aleutian williwaws and the stormy seas.



