Historic American Buildings Survey
Level II Report

LORSTA
NARROW CAPE

Kodiak Island, Alaska

Final
October 2011

Prepared by

JACOBS™

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HISTORIC AMERICAN BUILDINGS SURVEY
National Park Service
U.S. Department of the Interior
240 West 5th Avenue, Suite 114
Anchorage, Alaska 99501

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ATTACHMENTS

Name: USCG LORAN-C Station Historic District,
Kodiak (Narrow Cape), AK

Location: USCG LORSTA Kodiak
P O Box 190032, Kodiak, AK 99619

Present Owner: U.S. Fish and Wildlife Service, 605 West 4th Avenue,
Rm G-61, Anchorage, AK 99501

Present Use: None

Significance Long Range Aid to Navigation (LORAN) was a government-provided terrestrial navigation system established for military and civilian users throughout the United States, Canada, Europe, Asia, and Russia. Since its inception in 1940, LORAN provided marine, air, and land positions to users during World War II (WWII), through the Cold War, and into the twenty-first century. LORAN-C, a later version of the long-range navigation series, operated as a low frequency hyperbolic navigation system using the time difference in pulses from three or more transmitting stations to obtain a position. It was highly accurate, all-weather, and available twenty-four hours a day. In 2010, the United States and Canada both ceased operation of the system.

The LORAN-C station at Narrow Cape was established in 1976 by the United States Coast Guard (USCG). It is eligible as a historic district under Criterion A, at the national level of significance, for its role as an historic aid to navigation representing the federal government's growing involvement and responsibility for safe navigation. The station is also eligible under Criterion Consideration G as a property of exceptional importance that has achieved significance within the past fifty years. The transmission tower and all buildings associated with the operation of LORAN-C are considered contributing elements to the district.

Historian: Terri Asendorf, Architectural Historian, MSHP
Jacobs Engineering Group Inc. (Jacobs)

Project Information: The USCG LORAN-C station Historic District, Narrow Cape, Kodiak, Alaska recording project was performed under contract with the United State Army Corps of Engineers (USACE) for USCG under the direction of the Alaska State Historic Preservation Officer and the Advisory Council on Historic Preservation. The historical reports and photographs were prepared by Jacobs. Terri Asendorf served as architectural historian, and Casey Martin served as architect.

I. Historical Information

I.a. Physical History

I.a.i. Date of Erection

1976

I.a.ii. Architect

USCG

I.a.iii. Original and Subsequent Owners, Occupants, Uses

USCG

I.a.iv. Builder, Contractor, Suppliers

625′ guyed antenna - Stainless, Inc., Model 1300

I.a.v. Original Plans and Construction

These are discussed individually below and on the attached architectural building inventory forms. Site plans and architectural drawings of the facilities are also provided.

I.a.vi. Alterations and Additions

These are discussed individually below and on the attached architectural building inventory forms. Site plans and architectural drawings of the facilities are also provided.

I.b. Historical Context

I.b.i. LORAN-A to C

Historically, maritime and aviation positioning was done using dead reckoning, celestial navigation, and later, radio beacon. With the approach of WWII, the development of a more accurate system was needed for defense operations, and in 1940 the Army Signal Corps issued a requirement for “Precision Navigational Equipment for Guiding Airplanes.” The pulsed, hyperbolic, long-range radio navigation system that eventually became known as LORAN was proposed by physicist Alfred L. Loomis, who was working under the direction of the National Defense Research Committee (NDRC). In 1941, his proposal was accepted and trial stations were established at inactive USCG lifeboat stations at Montauk Point in Long Island, New York, and Fenwick Island, Delaware. Corporations such as RCA, Sperry, Bell Laboratories, Westinghouse, and General Electric filled equipment orders for the model stations (Pierce, McKenzie, and Woodward 1948).

LORAN was further developed by scientists at the Radiation Laboratory of the Massachusetts Institute of Technology. Generally derived from the British GEE (generalized estimating equation) system, the first iteration of LORAN operated at the 1,850 and 1,950 kilohertz (kHz) frequencies. Later called “LORAN-A,” its use by naval and air convoys in defense missions quickly increased due to requirements by the Allied forces for a means of a tactical bombing system (Joint Aids to Navigation Panel 1957). Under the Lend-Lease program established in

1941, the United States used LORAN-A to guide planes and bombers to the former Soviet Union during the war (Thomas 2011).

Between 1942 and 1944, LORAN-A use rapidly increased, and by 1945, there were stations built all over the world providing some sixty million square miles of coverage (Pierce, McKenzie, and Woodward 1948). The stations were grouped into regional chains consisting of one “master” transmitting station and two or more “secondary” transmitting stations, each separated by several hundred miles. Station location and orientation were determined by coverage requirements. By 1944, approximately 75,000 receivers were distributed to military and civilian users with seventy-five U.S. and fifteen British and Canadian LORAN transmitters that provided coverage over 30 percent of the earth’s surface (Pierce, McKenzie, and Woodward 1948), including high-traffic water and air routes.

Originally a U.S. Army-driven effort, the LORAN-A program was later transferred to the U.S. Navy because of its mission to precisely and safely route convoys and guide and deliver defense material – tasks that could be achieved using LORAN. In November 1941, the U.S. Treasury Department transferred the USCG to the U.S. Navy to support war efforts. Given its official role as operator and administrator of U.S. Aids to Navigation, the USCG assumed management of the LORAN program for the Navy. After the war, in 1946, the USCG was transferred back to the Treasury Department, but retained management of the LORAN program (Thomas 2011). Incidentally, USCG was transferred to the Department of Transportation in 1967, and then again to the Department of Homeland Security in 2002.

In 1947, the International Telecommunications Union Conference (ITU) allocated the frequency band 90–110 kHz for the development of a farther-reaching, long distance, radio navigation system on a worldwide basis (Dickinson 1959). This was partly in response to a need for less signal interference: the higher ranges were allocated solely for military use during wartime, but when they were returned to civilian use after the war, signal interference increased. Over the next decade, various military branches were attempting to improve LORAN including the U.S. Air Force (USAF), which developed the Cycle Matching Tactical Bombing and Navigation System (CYTAC). CYTAC was an experimental electronic strategic bombing system that used the same hyperbolic principles as LORAN-A, but at the lower frequencies allocated by the ITU. Since the tactical bombing application of CYTAC was classified, its use for civilian navigation was limited. Therefore, USAF declassified the civilian application of CYTAC and named it “LORAN-C;” the tactical bombing application remained confidential (Joint Aids to Navigation Panel 1957). The first LORAN-C navigation system was installed on the U.S. East Coast in 1957 at stations in Carolina Beach, North Carolina, Martha’s Vineyard, Massachusetts, and Jupiter Inlet, Florida.

In 1974, LORAN-C was authorized by the Secretary of Transportation to be the federally provided radio navigation system for the U.S. Coastal Confluence Zone (CCZ), which is defined as the area seaward of a harbor entrance to fifty nautical miles offshore, or the edge of the Continental Shelf, whichever is greater. This

mandate drove the expansion of LORAN-C service to all coasts of the United States – including Alaskan waters and the Gulf of Mexico – and to the Great Lakes by 1980. LORAN-C also aided early environmental initiatives. In the 1970s, the system was used to guide oil tankers along the Pacific Coast from Alaska to Canada and the contiguous United States to assure high-precision navigation and minimize potential collision-related damage from growing tanker traffic.

I.b.ii. LORSTA Kodiak

LORAN station (LORSTA) Narrow Cape was constructed in 1976 to replace the LORAN-A signal from Sitkinak, which transmitted from 1960 to 1976. For thirty-three years, LORAN-C Narrow Cape transmitted a one-megawatt signal with a coverage area of 2,400 square nautical miles, providing navigational service to mariners and aviators in an extremely harsh environment.

In 1990, Narrow Cape was renamed Kodiak. It served as a double secondary station with St. Paul (master), Port Clarence, and Attu in the North Pacific Chain; and with Tok (master), Shoal Cove, and Port Clarence in the Gulf of Alaska Chain.

The station was decommissioned in 2010 and the tower is slated for demolition in spring 2012.

Life on the Island

Kodiak Island is in the Gulf of Alaska, approximately 250 miles southwest of Anchorage. The island comprises approximately 3,588 square miles. Travel to Kodiak from mainland Alaska is available by a one-hour flight from Anchorage, a nine-and-a-half to thirteen-and-a-half hour ferry ride (depending on the route) that departs frequently from Homer, or a less-available twenty-two-and-a-half hour ferry ride from Whittier (Alaska Department of Transportation 2011).

In 1972, Air Station Kodiak was established after the U.S. Navy turned over the Naval Station Kodiak to the USCG. At the time, USCG Air Station Kodiak was already operating with three HC-130H airplanes and two HH-52A helicopters. Presently, Kodiak Island is home to thirteen USCG units, including the LORAN-C station. Despite its remote location, the base is the largest USCG base in the country, serving approximately 1,000 active duty members, 1,700 family members, and several hundred civilians (KICVB [Kodiak Island Convention and Visitors Bureau] n.d.). The population of the island, including USCG Air Station Kodiak and surrounding villages, is approximately 13,900.

Unlike most other Alaska LORAN stations, the crew at LORSTA Narrow Cape lived at USCG Air Station Kodiak, not at the station. USCG Air Station Kodiak contains an exchange, commissary, post office, pizza restaurant, convenience store, cinema, bowling alley, auto hobby shop, and morale boats and campers. A gym with a large indoor pool, large modern weight and cardio rooms, and other facilities are also provided. All of the crewmembers working at the LORAN-C station would commute one-and-a-half hours from USCG Air Station Kodiak to Narrow Cape and back each day. One crewmember would be required to stand watch overnight at Narrow Cape. A bunk room was provided at the station. The

USCG Air Station Kodiak was also responsible for delivering supplies every two weeks to Attu, Port Clarence, and St. Paul.

I.b.iii. State of LORAN

In 1993, as a response to the advent of Global Navigation Satellite Systems (GNSS), the Department of Defense advised that there was no longer a requirement for LORAN. As a result, USCG attempted to close U.S. LORAN stations and returned operation of all international stations to the host countries. The Russian-American Chain that included Attu remained in operation as a gesture made by both countries to promote peace after the Cold War. Moreover, Congress did not allow for closure of U.S. stations based on the protests of civilian users, and the program continued in operation for another fourteen years (Thomas 2011).

In October 2009, in an overall effort to eliminate unnecessary federal programs, the U.S. Department of Homeland Security signed into law an act terminating the LORAN-C system. USCG began a phased decommissioning of LORAN-C stations throughout the United States in February 2010 including demolishing transmission towers, which were an obstruction to air traffic, and placing all associated buildings in layaway. LORAN-C remains in use in several countries including the United Kingdom, France, Germany, Norway, Saudi Arabia, India, Korea, Japan, China, and Russia.

The signal at Kodiak was terminated on February 8, 2010. By October 1, 2010, all U.S. LORAN systems had ceased operation.

Future of LORAN

The termination of LORAN-C in the United States and Canada has incited speculation on the need for a backup navigation system should disruptions occur with GNSS. Enhanced LORAN, or eLORAN, is the latest iteration of LORAN technology, providing navigation services completely independent of GNSS. The eLORAN system has enhanced the LORAN-C signal by providing: (1) better control and tolerance of timing and pulse shape; (2) time-of-transmission synchronization to universal coordinated time (UTC) at each transmitter site independent of any changes in signal propagation; and (3) the addition of a digital data broadcast capability called the LORAN data channel which can be used to send time-synchronization and text messages.

Several European countries, including the United Kingdom, Saudi Arabia, and South Korea, are converting former LORAN stations to eLORAN technology, while other countries including Ireland and Sweden are building new stations (Schue 2011). In North America, debate over which system should serve as backup for GNSS has prevented a transition from LORAN-C to eLORAN.

II. Architectural Information

II.a. Physical History of Buildings

II.a.i. Old Transmitter Building, 1976

This building is a 9,553-square-foot, one-story rectangular structure. It is approximately 255′ x 42′ and was constructed in 1976. It is a concrete tilt-up building with a concrete steel reinforced slab-on-grade foundation and reinforced concrete piers supporting the tilt-up concrete panels and roof structure. The roof is formed with corrugated steel panels with Firestone membrane covering. The windows are fixed with aluminum frames. There is a dry sprinkler system and fire pump, two cooling towers, a domestic hot water boiler, and a hydronic baseboard heating system (The Environmental Company, Inc. 2004).

II.a.ii. New Transmitter Building, ca. 2005

The New Transmitter Building consists of an operations room, electrical room, generator room, mechanical room, and transmitter room. This one-story building was constructed sometime between 2005 and 2008. The building comprises approximately 2,500 square feet. The exterior consists of exposed aggregate concrete wall panels. The foundation appears to be concrete slab-on-grade. The roof is flat, concrete, with metal ducting surrounding the plenum. There are no windows.

II.a.iii. 625' Guyed Antenna, 1976

The antenna or “tower” is a 625′ tower comprised of galvanized steel structural members (legs, girts and diagonals) anchored by guy wires; it was also constructed in 1976. The tower featured a ladder, safety rail, and lighting system. It was entirely covered in orange and white aviation warning paint. The base of the tower consists of an approximately 10′ x 10′ reinforced concrete foundation that is 9′ thick. The tower rises out of a fiberglass rod insulator, which is supported by the foundation. It is connected to the Transmitter Building by the signal feed line. The Kodiak tower was the first tall tower on which tower aircraft warning lights were changed out from incandescent bulbs to new light emitting diodes (LED), which had greater longevity and saved in maintenance costs and visits.

The tower is scheduled for demolition spring 2012.

III. Site Description

The facilities at LORSTA Kodiak were minimal, as the crewmembers lived at USCG Air Station Kodiak rather than at the LORAN-C station. In addition to the tower, only one major building was needed. That building contained the transmitter, which was originally built in 1976, and was rebuilt in 2005. Both buildings are extant.

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Bayside Drive Road
Chiniak
Kodiak Island Borough
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Phyllys Callina, photographer, under the supervision of Terri Asendorf, March 2011

Photographic documentation was conducted according to the National Register of Historic Places (NRHP) standards, per the stipulations in the Programmatic Agreement.

Date	Frame	Description
		Exteriors
3/17/2011	1	Station - East Perspective
3/17/2011	2	Transmitter Tower
3/17/2011	3	New Transmitter Building - Southeast Elevation
3/17/2011	4	New Transmitter Building - Southwest Elevation
3/17/2011	5	New Transmitter Building - Southeast Perspective
3/17/2011	6	New Transmitter Building - Northwest Elevation
3/17/2011	7	New Transmitter Building - South Perspective
3/17/2011	8	Operations Building - Southeast Elevation
3/17/2011	9	Operations Building - Southwest Elevation
3/17/2011	10	Operations Building - Partial Southeast Elevation 1
3/17/2011	11	Operations Building - Partial Southeast Elevation 2
3/17/2011	12	Operations Building - Partial Southeast Elevation 3
3/17/2011	13	Station - North Elevation
		Interiors
5/26/2010	14	Operations Building - Common Area Restroom
5/26/2010	15	Operations Building - Common Area Restroom Entrance
5/26/2010	16	Operations Building - Common Area Restroom Shower
5/26/2010	17	Operations Building - Common Area Restroom Toilet
5/26/2010	18	Operations Building - Conference Room
5/26/2010	19	Operations Building - Conference Room Janitorial Closet
5/26/2010	20	Operations Building - Conference Room
5/26/2010	21	Operations Building - Conference Room
5/26/2010	22	Operations Building - Coupler Room
5/26/2010	23	Operations Building - Former Gym

5/26/2010	24	Operations Building - Former Transmitter Room
5/26/2010	25	Operations Building - Former Transmitter Room
5/26/2010	26	Operations Building - Former Transmitter Room
5/26/2010	27	Operations Building - Former Transmitter Room
5/26/2010	28	Operations Building - Shop Room - Generator
5/26/2010	29	Operations Building - Shop Room - Generator
5/26/2010	30	Operations Building - Shop Room - Generator
5/26/2010	31	Operations Building - Shop Room - Generator
5/26/2010	32	Operations Building - Shop Room Workspace
5/26/2010	33	Operations Building - Kitchen
5/26/2010	34	Operations Building - Kitchen
5/26/2010	35	Operations Building - Living Quarters - Large Room
5/26/2010	36	Operations Building - Living Quarters - Large Room
5/26/2010	37	Operations Building - Living Quarters - Small Room
5/26/2010	38	Operations Building - Living Quarters - Small Room
5/26/2010	39	Operations Building - Hallway
5/26/2010	40	Operations Building - Hallway
5/26/2010	41	Operations Building - Laundry Room
5/26/2010	42	Operations Building - Living Quarters Restroom
5/26/2010	43	Operations Building - Living Quarters Restroom
5/26/2010	44	Operations Building - Officer in Charge Office Entrance
5/26/2010	45	Operations Building - Plenum Room
5/26/2010	46	Operations Building - Plenum Room
5/26/2010	47	Operations Building - Plenum Room - Cooling Towers
5/26/2010	48	Operations Building - Shared Office
5/26/2010	49	Operations Building - Supply Office/Former Transmitter Room Doorway
5/26/2010	50	Operations Building - XPO Office
5/26/2010	51	Transmitter Building - Electrical Room
5/26/2010	52	Transmitter Building - Electrical Room
5/26/2010	53	Transmitter Building - Generator Room
5/26/2010	54	Transmitter Building - Generator Room
5/26/2010	55	Transmitter Building - Inactive Transmission Equipment
5/26/2010	56	Transmitter Building - Mechanical Room - Glycol System
5/26/2010	57	Transmitter Building - Inactive Transmission Equipment
5/26/2010	58	Transmitter Building - Transmitter Room
5/26/2010	59	Transmitter Building - Inactive Transmission Equipment
5/26/2010	60	Transmitter Building - Inactive Transmission Equipment

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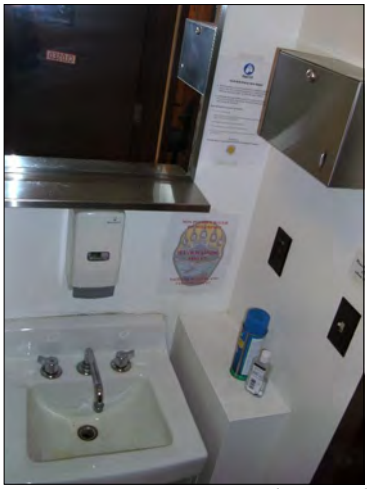
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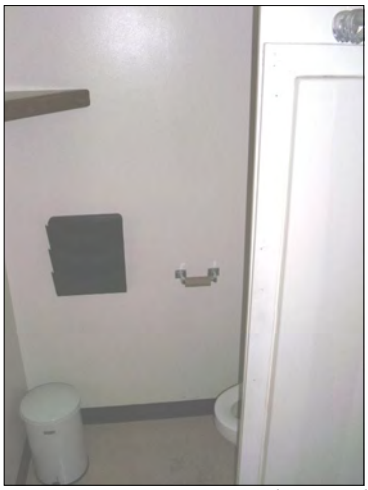
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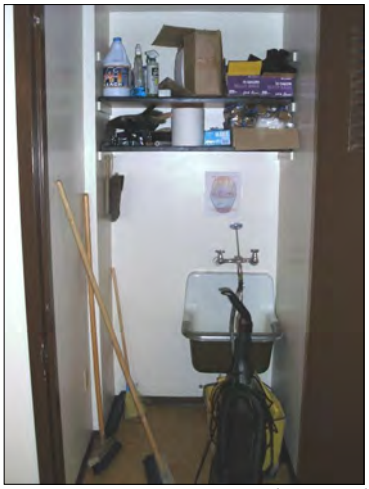
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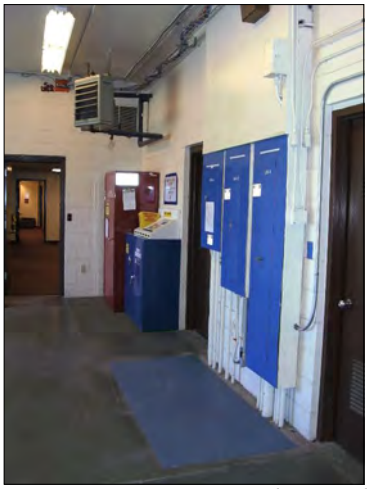
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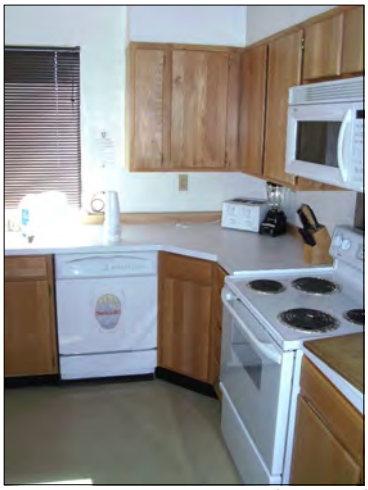
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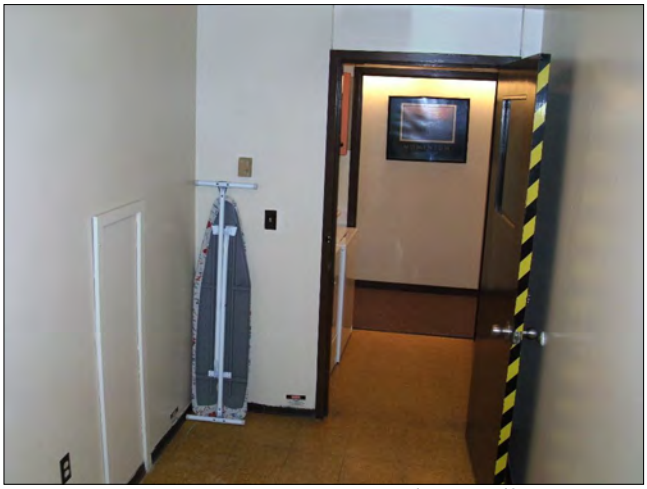
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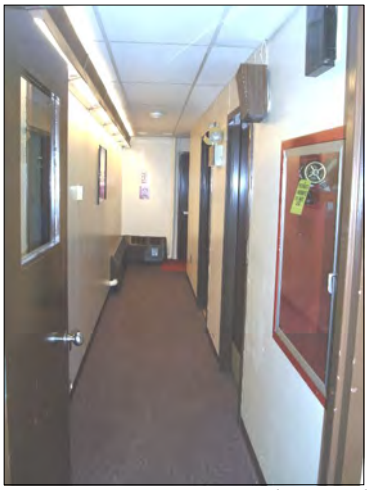
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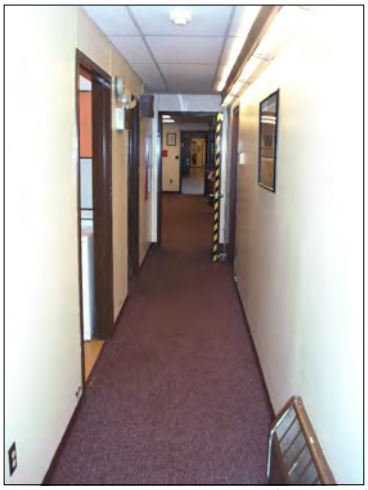
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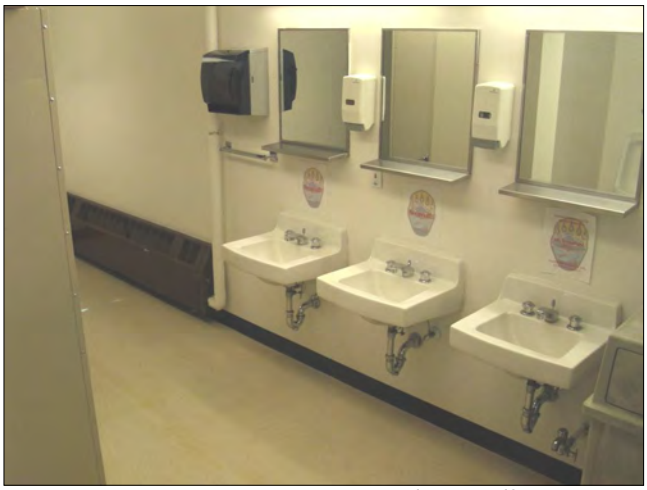
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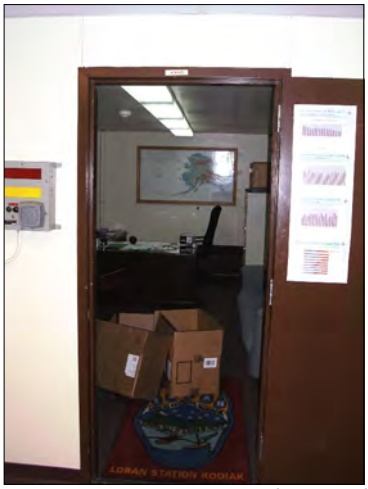
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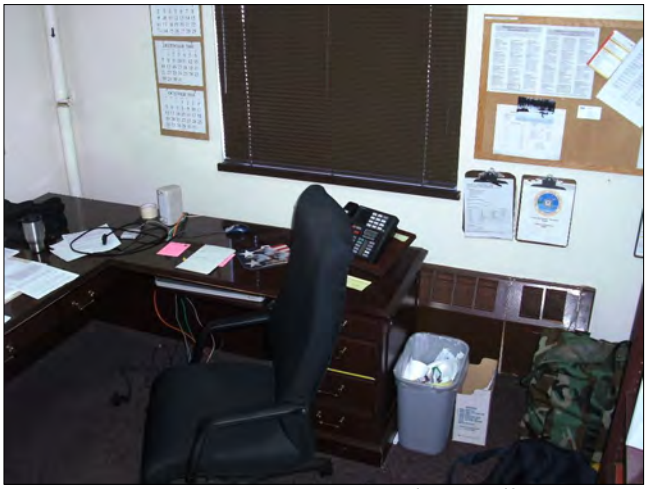

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ALASKA BUILDING INVENTORY FORMS

USCG LORAN-C Station
Historic District
Narrow Cape (Kodiak)

Alaska Building Inventory Form

AHRS: KOD-1122 **Associated District:**

Historic Name: Old Transmitter Building		**Other Name:** N/A	
Building Address:		**City:** Kodiak, AK	
Current Owner's Name and Address: United States Coast Guard, Civil Engineering Unit, PO Box 21747, Juneau, AK, 99802-1747			
USGS Quad Name and Map Sheet: Kodiak, D-2	**Section:** 4	**Township:** 32 S	**Range:** 19 W
GPS Coordinate (NAD-27 Alaska): 57° 25' 55", -152° 20' 30"		**UTM:** **Zone** 5V	**Easting** 539518.04 **Northing** 6365681.35

Historic Associations

Historic Function and Sub-function: 1. Defense	2. Coast Guard Facility	3.	4.
Current Function and Sub-function: 1. Defense	2. Coast Guard Facility	3.	4.
Significant Person(s): 1. N/A	2.	**Significant Dates** 1.1976	2.
Architect, Builder, Contractor, Designer: USCG		**Original Owner:** USCG	

Architectural Information:

Date of Construction: 1976	**Date Moved:** N/A	**Destruction Date:** N/A	**Reconstruction Date:** N/A
Alteration Dates 1.	2.	3.	4.
Resource Type **[ ] Building [ ] Site [x] Structure [ ] Object**		**Stories** 1. one	2.
Architectural Style: N/A		**Building Type:**	
Number of Ancillary Structures:	**Plan:** Rectangular	**Cultural Affiliation:** US Government	
Foundation Materials: 1. Concrete 2.	**Roof Materials:** 1. Concrete Panels 2.	**Exterior Wall Materials:** 1. Concrete 2.	**Other Materials:** 1. Fixed aluminum windows 2.

Architectural Description (Include setting & outbuildings):	**Statement of Significance:**
The Old Transmitter Building is a 9,553-square-foot, one-story rectangular structure, approximately 255' × 42', constructed in 1976. It is a concrete tilt-up building with a concrete steel reinforced slab-on-grade foundation and reinforced concrete piers supporting the tilt-up concrete panels and roof structure. The roof is formed with corrugated steel panels with Firestone membrane covering. Windows are fixed with aluminum frames. A dry sprinkler system and fire pump, two cooling towers, a domestic hot water boiler, and a hydronic baseboard heating system are also present.	The LORAN-C Station at Kodiak is eligible as a historic district under Criterion A, at the national level of significance, for its role as a historic aid to navigation within the Gulf of Alaska. Long-Range Aid to Navigation (LORAN) was the federally-provided radio navigation system for maritime and some aviation activity from approximately 1940 to 2010. The station is also eligible under Criterion Consideration G as a property of exceptional importance that has achieved significance within the past 50 years. At the beginning of WWII, positioning was done using dead reckoning, celestial navigation, and later, radio beacon. As state and federal responsibility for providing navigational aids increased, the development of a more accurate system was needed. The LORAN system was developed under a program of the federal government by scientists at MIT, and modeled after the British Gee system. LORAN-C provided a highly accurate, all-weather navigational system, available 24-hours-per-day. It operated as a low-frequency hyperbolic radio navigation system using the time difference in pulses from two pairs of transmitting stations to obtain a navigation fix. Operation and maintenance of LORAN stations was transferred to the U.S. Coast Guard in 1943. Stations were built throughout the U.S., Russia, Canada, Asia, and Europe eventually to provide some 70 million square miles of coverage. The Kodiak LORAN-C Station was constructed in 1976 by the USCG and decommissioned in 2010. It served as a double secondary station with St. Paul (master), Port Clarence, and Attu in the North Pacific Chain; and Tok (master) and Shoal Cove in the Gulf of Alaska Chain. The station consisted of an Old and a New Transmitter Buildings and a 625-foot guyed tower. The New Tranmitter Building is a contributing feature to the Kodiak LORAN-C Station Historic District.
Eligibility: [x] Yes [ ] No If yes: [x] A [ ] B [ ] C [ ] D	Criteria Considerations: [ ] B [ ] C [ ] D [ ] E [ ] F [x] G
Prepared by: Terri Asendorf	Reviewed by Professional that meets the following Professional Qualifications: [ ] Architect [x] Architectural Historian [ ] Historian [ ] Historic Architect [ ] None	Date:
SHPO Response: [ ] Eligible (Concur) [ ] Eligible (Do Not Concur) [ ] Not Eligible (Concur) [ ] Not Eligible (Do Not Concur)	
Minor Recommendations and Comments Include: [ ] Need more information related to: [ ] Historic Context [ ] Integrity [ ] Architectural Description [ ] Period of Significance	
Authorized Signature:	Date:

USCG LORAN-C Station
Historic District
Narrow Cape (Kodiak)

Alaska Building Inventory Form

AHRS: KOD-1123 **Associated District:**

Historic Name: New Transmitter Building		**Other Name:** N/A	
Building Address:		**City:** Kodiak, AK	
Current Owner's Name and Address: United States Coast Guard, Civil Engineering Unit, PO Box 21747, Juneau, AK, 99802-1747			
USGS Quad Name and Map Sheet: Kodiak, D-2	**Section:** 4	**Township:** 32 S	**Range:** 19 W
GPS Coordinate (NAD-27 Alaska): 57° 25' 55", -152° 20' 30"		**UTM:** **Zone** 5V	**Easting** 539518.04 **Northing** 6365681.35

Historic Associations

Historic Function and Sub-function: 1. Defense	2. Coast Guard Facility	3.	4.
Current Function and Sub-function: 1. Defense	2. Coast Guard Facility	3.	4.
Significant Person(s): 1. N/A	2.	**Significant Dates** 1.ca. 2005	2.
Architect, Builder, Contractor, Designer: USCG		**Original Owner:** USCG	

Architectural Information:

Date of Construction: ca. 2005	**Date Moved:** N/A	**Destruction Date:** N/A	**Reconstruction Date:** N/A
Alteration Dates 1.	2.	3.	4.
Resource Type [x] **Building** **[ ] Site** **[ ] Structure** **[ ] Object**		**Stories** 1. one	2.
Architectural Style: N/A		**Building Type:**	
Number of Ancillary Structures:	**Plan:** Rectangular		**Cultural Affiliation:** US Government
Foundation Materials: 1. Concrete 2.	**Roof Materials:** 1. Concrete Panels 2.	**Exterior Wall Materials:** 1. Concrete 2.	**Other Materials:** 1. Fixed aluminum windows 2.

Architectural Description (Include setting & outbuildings):
The New Transmitter Building consists of an operations room, electrical room, generator room, mechanical room, and transmitter room. This one-story building was constructed some time between 2005 and 2008. The building is approximately 2,500 square feet. The exterior consists of exposed aggregate concrete wall panels. The foundation appears to be concrete slab-on-grade. The roof is flat concrete with metal ducting surrounding around the plenum. There are no windows.

Statement of Significance:
The LORAN-C Station at Kodiak is eligible as a historic district under Criterion A, at the national level of significance, for its role as a historic aid to navigation within the Gulf of Alaska. Long-Range Aid to Navigation (LORAN) was the federally-provided radio navigation system for maritime and some aviation activity from approximately 1940 to 2010. The station is also eligible under Criterion Consideration G as a property of exceptional importance that has achieved significance within the past 50 years.

At the beginning of WWII, positioning was done using dead reckoning, celestial navigation, and later, radio beacon. As state and federal responsibility for providing navigational aids increased, the development of a more accurate system was needed. The LORAN system was developed under a program of the federal government by scientists at MIT, and modeled after the British Gee system. LORAN-C provided a highly accurate, all-weather navigational system, available 24-hours-per-day. It operated as a low-frequency hyperbolic radio navigation system using the time difference in pulses from two pairs of transmitting stations to obtain a navigation fix. Operation and maintenance of LORAN stations was transferred to the U.S. Coast Guard in 1943. Stations were built throughout the U.S., Russia, Canada, Asia, and Europe eventually to provide some 70 million square miles of coverage.

The Kodiak LORAN-C Station was constructed in 1976 by the USCG and decommissioned in 2010. It served as a double secondary station with St. Paul (master), Port Clarence, and Attu in the North Pacific Chain; and Tok (master) and Shoal Cove in the Gulf of Alaska Chain. The station consisted of an Old and a New Transmitter Buildings and a 625-foot guyed tower. The New Tranmitter Building is a contributing feature to the Kodiak LORAN-C Station Historic District.

Eligibility: [x] Yes [ ] No If yes: [x] A [ ] B [ ] C [ ] D	Criteria Considerations: [ ] B [ ] C [ ] D [ ] E [ ] F [x] G
Prepared by: Terri Asendorf	Reviewed by Professional that meets the following Professional Qualifications: [ ] Architect [x] Architectural Historian [ ] Historian [ ] Historic Architect [ ] None
Date:	
SHPO Response: [ ] Eligible (Concur) [ ] Eligible (Do Not Concur) [ ] Not Eligible (Concur) [ ] Not Eligible (Do Not Concur)	
Minor Recommendations and Comments Include: [ ] Need more information related to: [ ] Historic Context [ ] Integrity [ ] Architectural Description [ ] Period of Significance	
Authorized Signature:	Date:

USCG LORAN-C Station
Historic Distric
Narrow Cape (Kodiak)

Alaska Building Inventory Form

AHRS: KOD-1124 **Associated District:**

Historic Name: LORAN-C Transmission Tower		**Other Name:** N/A	
Building Address:		**City:** Kodiak, AK	
Current Owner's Name and Address: United States Coast Guard, Civil Engineering Unit, PO Box 21747, Juneau, AK, 99802-1747			
USGS Quad Name and Map Sheet: Kodiak, D-2	**Section:** 4	**Township:** 32 S	**Range:** 19 W
GPS Coordinate (NAD-27 Alaska): 57° 25' 55", -152° 20' 30"		**UTM:** **Zone** 5V	**Easting** 539518.04 **Northing** 6365681.35

Historic Associations

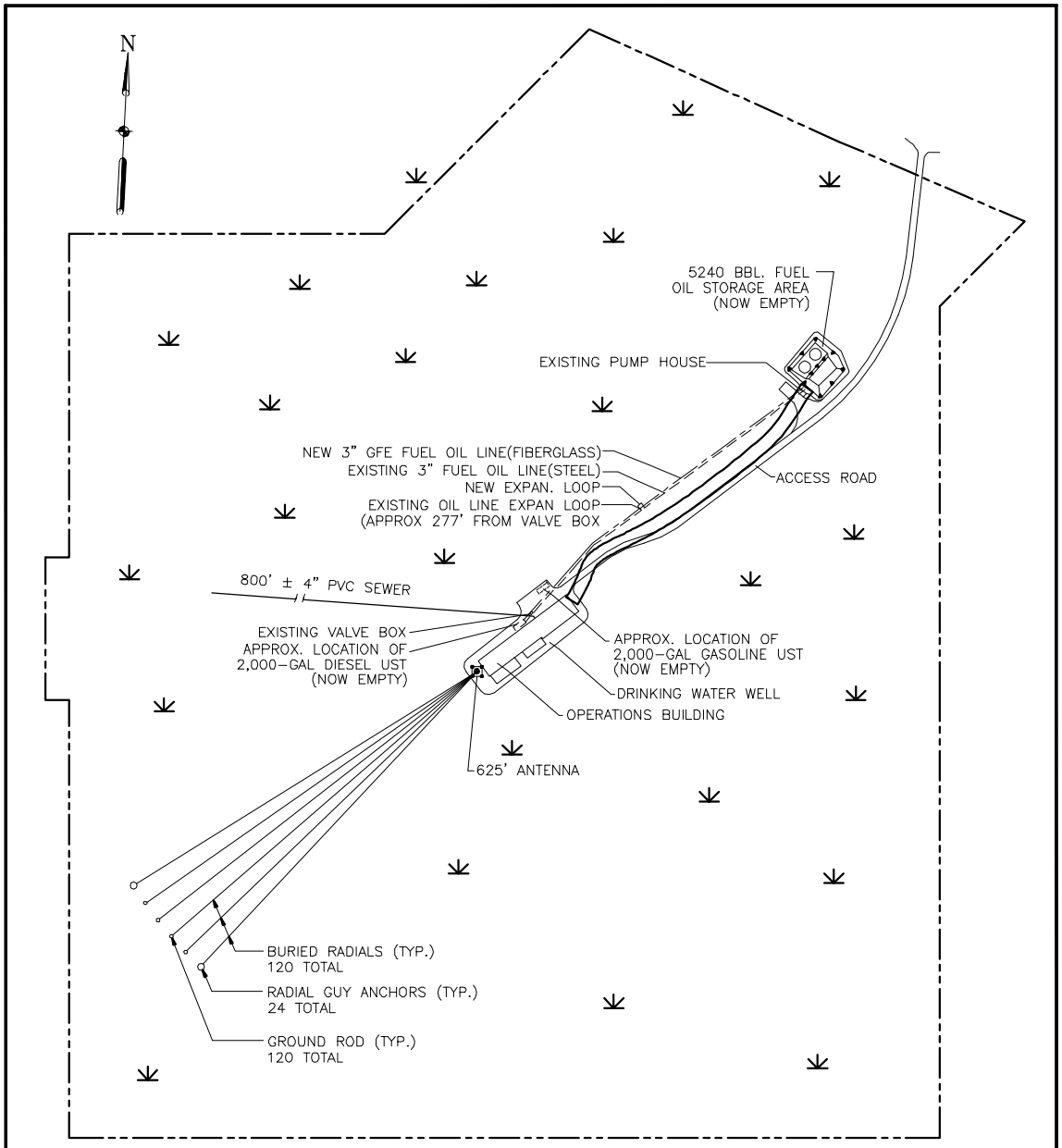
Historic Function and Sub-function: 1. Defense	2. Coast Guard Facility	3.	4.
Current Function and Sub-function: 1. Defense	2. Coast Guard Facility	3.	4.
Significant Person(s): 1. N/A	2.	**Significant Dates** 1. 1976	2.
Architect, Builder, Contractor, Designer: USCG		**Original Owner:** USCG	

Architectural Information:

Date of Construction: 1976	**Date Moved:** N/A	**Destruction Date:** 8-Feb-10	**Reconstruction Date:** N/A
Alteration Dates 1.	2.	3.	4.
Resource Type **[ ] Building** **[ ] Site** **[x] Structure** **[ ] Object**		**Stories** 1.	2.
Architectural Style: N/A		**Building Type:**	
Number of Ancillary Structures:	**Plan:**	**Cultural Affiliation:** US Government	
Foundation Materials: 1. Concrete 2.	**Roof Materials:** 1. 2.	**Exterior Wall Materials:** 1. 2.	**Other Materials:** 1. Steel 2.

Architectural Description (Include setting & outbuildings):	**Statement of Significance:**
The 625-foot tower with a base anchor and guy wires was built in 1976. The tower is slated for demolition in the summer of 2011.	The LORAN-C Station at Kodiak is eligible as a historic district under Criterion A, at the national level of significance, for its role as a historic aid to navigation within the Gulf of Alaska. Long-Range Aid to Navigation (LORAN) was the federally-provided radio navigation system for maritime and some aviation activity from approximately 1940 to 2010. The station is also eligible under Criterion Consideration G as a property of exceptional importance that has achieved significance within the past 50 years. At the beginning of WWII, positioning was done using dead reckoning, celestial navigation, and later, radio beacon. As state and federal responsibility for providing navigational aids increased, the development of a more accurate system was needed. The LORAN system was developed under a program of the federal government by scientists at MIT, and modeled after the British Gee system. LORAN-C provided a highly accurate, all-weather navigational system, available 24-hours-per-day. It operated as a low-frequency hyperbolic radio navigation system using the time difference in pulses from two pairs of transmitting stations to obtain a navigation fix. Operation and maintenance of LORAN stations was transferred to the U.S. Coast Guard in 1943. Stations were built throughout the U.S., Russia, Canada, Asia, and Europe eventually to provide some 70 million square miles of coverage. The Kodiak LORAN-C Station was constructed in 1976 by the USCG and decommissioned in 2010. It served as a double secondary station with St. Paul (master), Port Clarence, and Attu in the North Pacific Chain; and Tok (master) and Shoal Cove in the Gulf of Alaska Chain. The station consisted of an Old and a New Transmitter Buildings and a 625-foot guyed tower. The New Tranmitter Building is a contributing feature to the Kodiak LORAN-C Station Historic District.
Eligibility: [x] Yes [ ] No If yes: [x] A [ ] B [ ] C [ ] D	Criteria Considerations: [ ] B [ ] C [ ] D [ ] E [ ] F [x] G
Prepared by: Terri Asendorf	Reviewed by Professional that meets the following Professional Qualifications: [ ] Architect [x] Architectural Historian [ ] Historian [ ] Historic Architect [ ] None
Date:	
SHPO Response: [ ] Eligible (Concur) [ ] Eligible (Do Not Concur) [ ] Not Eligible (Concur) [ ] Not Eligible (Do Not Concur)	
Minor Recommendations and Comments Include: [ ] Need more information related to: [ ] Historic Context [ ] Integrity [ ] Architectural Description [ ] Period of Significance	
Authorized Signature:	Date:

ARCHITECTURAL DRAWINGS



LEGEND

Wetland Area

SCALE 0 150 300 600 FEET

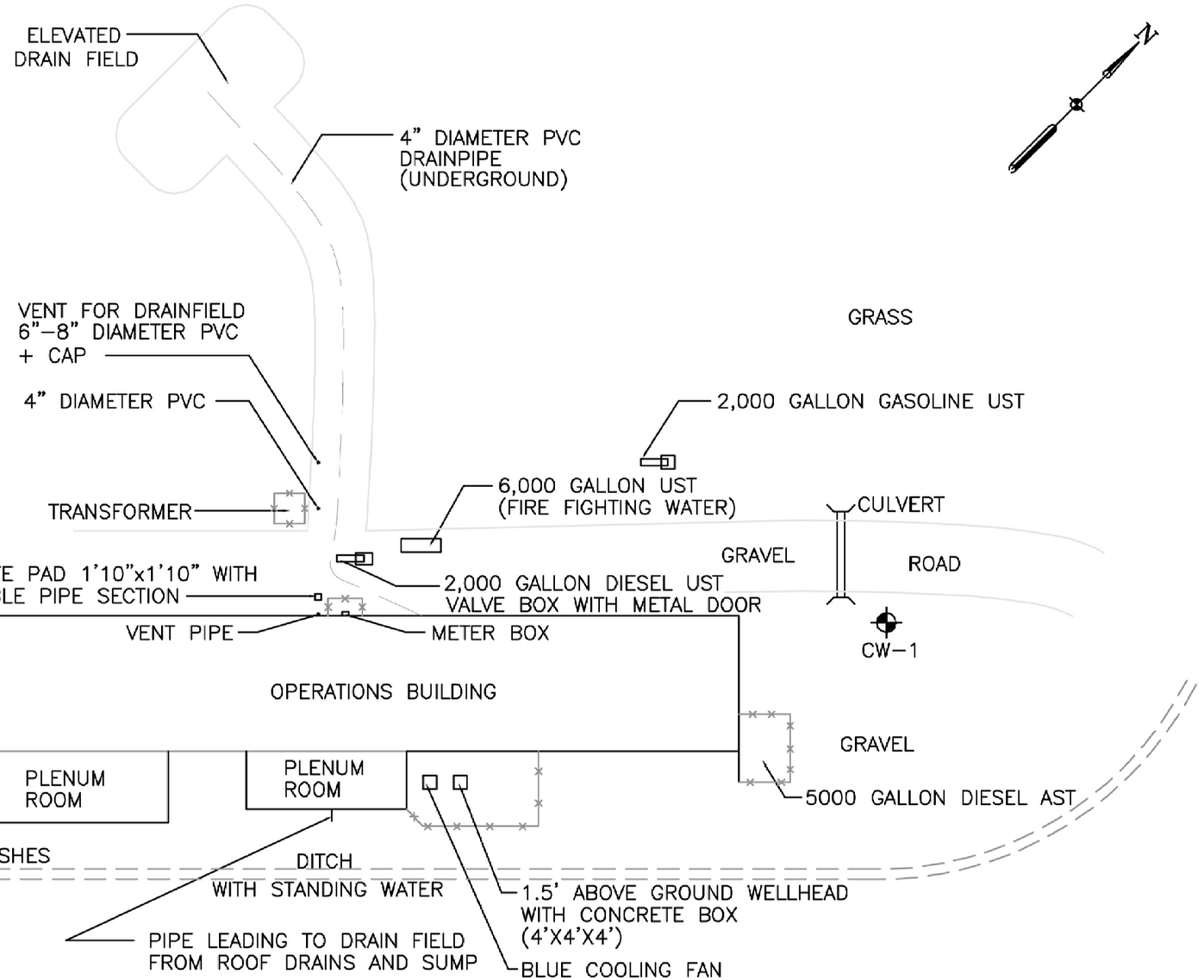
APPROX 1"=200'

NARROW\NARROW-8 10/16/97

Narrow Cape, Kodiak, AK USCG	Project No. R96816	Site Plan of Operations Building and Surroundings LORAN Station Kodiak, Kodiak, AK	Figure 3-2
Woodward-Clyde			

DRAWN BY: WOODWARD - CLYDE

USCG ALASKA LORAN-C STATIONS RECORDATION	SITE PLAN OF OPERATIONS BUILDING AND SURROUNDING AREAS	SURVEY NO.	HISTORIC AMERICAN BUILDINGS SURVEY	
CHINIAK ALASKA		AK-234	1 OF 7	



REFERENCE: ELECTRONIC FILE FROM USCG.
MODIFICATIONS MADE IN THE FIELD.

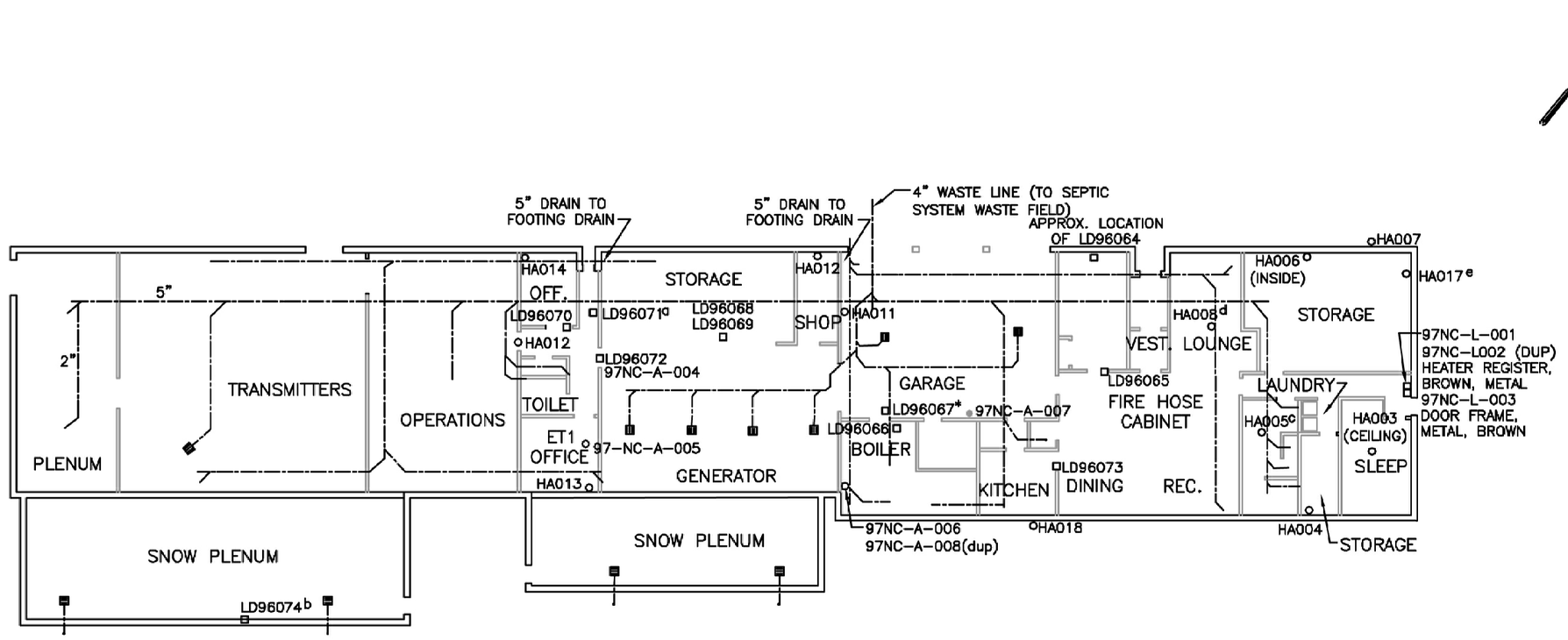
Narrow Cape Kodiak, AK USCG	Project No. R96816
Woodward–Clyde	

Operations Building Floor Plan
LORAN Station Kodiak, Kodiak, Alaska

Figure 3–3

NARROW–4.dwg 9/23/97

HISTORIC AMERICAN BUILDINGS SURVEY
SURVEY NO. AK-234
ALASKA
OPERATIONS BUILDING FLOOR PLAN
CHINIAK
DRAWN BY: WOODWARD – CLYDE
USCG ALASKA LORAN–C STATIONS RECORDATION
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR



NOTES

LD96067* – ANOTHER FIRE EXTINGUISHER ON WEST WALL OF GARAGE
LD97071[a] – BLUE PAINT BENEATH ALL BASEBOARD IN HALLWAY (PHOTO)
LD96071[b] – CREAM/GRAY PAINT ON AIR VENTS OF BOTH SETS OF PLENUMS, INSUFFICIENT DETAIL ON NOTES TO TELL WHICH SAMPLE LOCATION NOTED ON THIS MAP – PEELING PAINT (PHOTO)
HA005[c] – MORE SPECIFIC INFO. FOR LOCATION UNAVAILABLE
HA008[d] – SAMPLE BEHIND BASEBOARD – ON MASTIC
HA017[e] – MORE SPECIFIC SAMPLE LOCATION UNAVAILABLE

SAMPLE RESULTS PRESENTED IN TABLES 5-1 AND 5-3
DRAWING REFERENCES U.S.C.G. DRAWING NO. 2376, SHEET M-1 OF 6

LEGEND

LD96068	Bulk Paint Chip Sample (USCG)
HA014	Bulk Asbestos Sample (USCG)
97NC-A-006	Bulk Paint Chip Sample Woodward-Clyde
97NC-L-003	Bulk Asbestos Sample Woodward-Clyde
	Floor Drain
	Sanitary Sewer System

SCALE 0 10 20 40 FEET

Q:\USCG\NARROW\NARROW-5 8/25/97

Narrow Cape Kodiak, AK USCG	Project No. R96816	Operations Building Floor Plan and Asbestos and Lead-Based Paint Sample Locations LORAN Station Kodiak, Kodiak, Alaska
Woodward-Clyde		

Figure 5-1

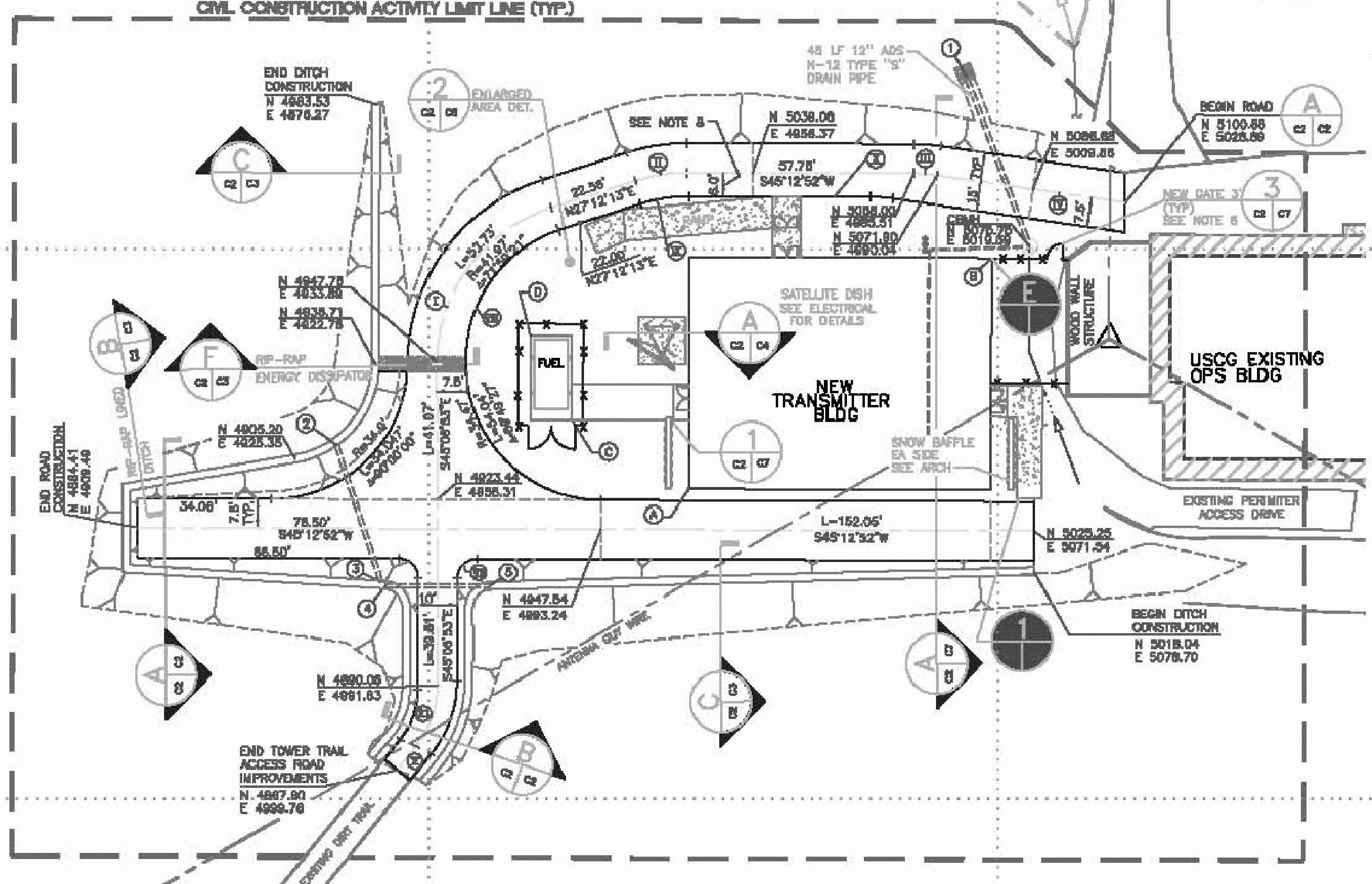
OPERATIONS BUILDING ASBESTOS AND LEAD BASED PAINT SAMPLE LOCATIONS
ALASKA
SURVEY NO. AK-234
HISTORIC AMERICAN BUILDINGS SURVEY 3 OF 7
DRAWN BY: WOODWARD - CLYDE
USCG ALASKA LORAN-C STATIONS RECORDATION
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
CHINIAK

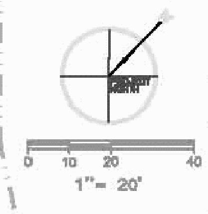
SOLID WASTE TRANSMITTER SITE PLAN

ROAD ℄ COORDINATE SCHEDULE

CURVE No.	LENGTH	RADIUS	DELTA	BEARING
I	52.73'	41.97'	71°39'08"	–
II	13.36'	42.50'	18°00'40"	–
III	5.95'	42.50'	08°04'08"	–
IV	45.47'	–	–	S53°18'55"W
V	7.61'	–	–	S06°15'01"E
VI	16.81'	25.0'	38°32'06"	–
VII	7.85' (TYP.)	5.0'	–	–
VIII	44.49'	34.69'	73°29'23"	–
IX	12.57'	40.00'	18°00'39"	–
X	46.27'	–	–	–

CIVIL CONSTRUCTION ACTIVITY LIMIT LINE (TYP.)





GENERAL NOTES:

1. THE FINISHED FLOOR OF NEW TRANSMITTER BUILDING SLAB IS 107.0 AT THE WEST SIDE OF THE BUILDING. SEE DETAIL E ON SHEET C3.
2. ALL PIPE IS MEASURED CENTER OF MANHOLE OR APPURTENANCE TO CENTER OF MANHOLE OR APPURTENANCE. CULVERTS ARE MEASURED FROM END TO END.
3. EXERCISE EXTREME CAUTION TO PROTECT EXISTING WETLANDS SHOWN ON DRAWINGS. FLAG LIMITS OF WETLANDS USING COORDINATES SHOWN ON C1, PRIOR TO BEGINNING ANY WORK ON SITE. ENSURE THAT WETLANDS ARE PROTECTED FOR THE FULL PERIOD CONSTRUCTION WORKERS ARE ON SITE. ALLOW NO ACCESS.
4. LIMITS OF CLEARING AND GRUBBING MATCH LIMITS OF TOPSOIL AND SEEDING SHOWN IN DET. 2, SHEET C8. INTENT IS TO KEEP AREA OF CLEARING AND GRUBBING TO A MINIMUM.
5. COORDINATE SHOWN FOR CATCH BASIN MANHOLE SHOWS CENTER OF MANHOLE LOCATION.
6. INSTALL NORTH EDGE OF 3' WIDE MAN-GATE 12" OFF EXISTING WOOD WALL.
7. CONSTRUCTION LIMITS SHOWN ON CIVIL SHEETS REPRESENT LIMITS FOR CIVIL WORK ONLY. REFERENCE DESIGN SHEETS FOR OTHER DISCIPLINES FOR ADDITIONAL CONSTRUCTION LIMITS.
8. INSIDE DRIVE LANE WIDTH TRANSITIONS FROM 7.5' TO 6.0' AND BACK TO 7.5' ACCROSS THE ENTRANCE ACCESS RAMP.

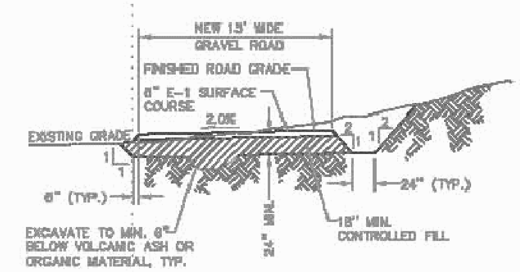
CULVERT COORDINATE SCHEDULE

CULVERT No.	NORTHING	EASTING
1	N 5094.89	E 4977.64
2	N 4915.11	E 4930.35
3	N 4898.55	E 4962.98
4	N 4898.52	E 4984.62
5	N 4917.43	E 4983.46

SEE GRADING SHEET C3 FOR INVERT INFORMATION. COORDINATES INDICATE END POINTS OF CULVERTS AS SHOWN ON PLAN.

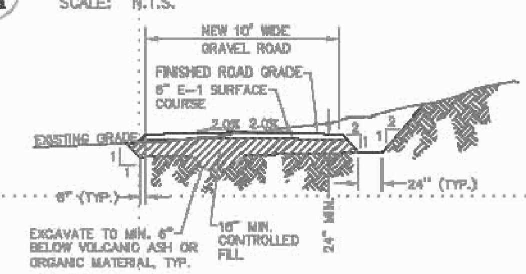
IMPROVEMENTS COORDINATE SCHEDULE

CORNER	NORTHING	EASTING
A	N 4970.67	E 5001.73
B	N 5066.79	E 5014.81
C	N 4952.11	E 4958.06
D	N 4969.71	E 4945.61



A GRAVEL ACCESS ROAD SECTION

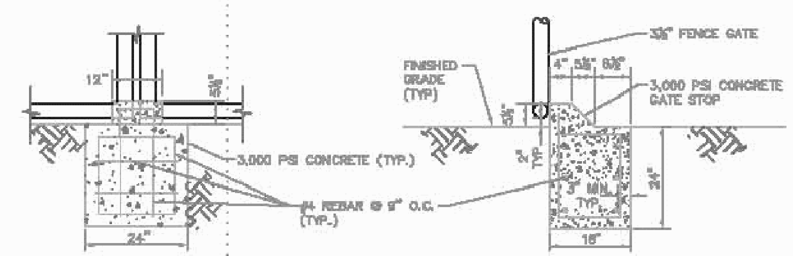
SCALE: N.T.S.



NOTE:
BEGIN TRAIL SECTION B AT CURVE RETURN, 5 FT. OFF SOUTH HAMMERHEAD SHOULDER.

B TOWER TRAIL ACCESS RD SECTION

SCALE: N.T.S.

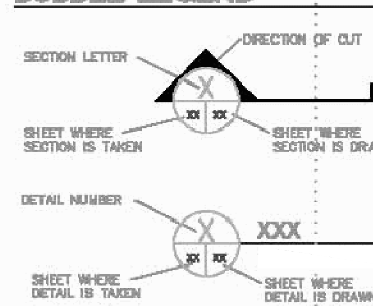


C DOUBLE LEAF GATE STOP SECTIONS

SCALE: N.T.S.

1 SITE PLAN

BUBBLE LEGEND



ABBREVIATIONS

AC	ASPHALTIC CONCRETE	GB	GRADE BREAK
ACC	AIR COOLED CONDENSER	GRD	GRADE
ADS	ADVANCED DRAINING SYSTEM	HDPE	HIGH DENSITY POLYETHYLENE
BEG	BEGINNING	ID	INSIDE DIAMETER
BLDG.	BOTTOM	INV	INVERT
BOT	BUILDING	LF	LINEAR FEET
CBMH	CATCH BASIN MANHOLE	ME	MATCH EXISTING
C.I.	CAST IRON	MECH.	MECHANICAL
℄, CL	CENTER LINE	MFG.	MANUFACTURE
CLR	CLEAR	MIN.	MINIMUM
CONC	CONCRETE	NO.	NUMBER
CP	CONTROL POINT	OC	ON CENTER
CRU	COMPUTER ROOM UNIT	OD	OUTSIDE DIAMETER
CTRL	CONTROL	PSI	POUNDS PER SQUARE INCH
DBL.	DOUBLE	PT	POINT OR PRESSURE TREATED
DET	DETAIL	PVC	POLYVINYL CHLORIDE
EA.	EACH	RD	ROAD
EL	ELEVATION	SAN	SANITARY
EW	EACH WAY	SE	SOUTHEAST
E	ELECTRIC	SPEC	SPECIFICATION
ELEC	ELECTRICAL	SD	STORM DRAIN
EXIST	EXISTING	T	TELEPHONE
FCS	FUEL CONTAINMENT STRUCTURE	TBM	TEMPORARY BENCHMARK
FF.	FINISH FLOOR	TYP.	TYPICAL
FIN	FINISH	U/G	UNDERGROUND
FO	FUEL OIL	W/	WITH
GALV	GALVANIZED		
GENSET	GENERATOR EQUIPMENT		

FILE NAME: 02194.015_C2_RECORD.DWG
DATE PLOTED: 11/21/05

RECORD

TRYCK NYMAN HAYES ENG INC.
KINGSTON, WASHINGTON
(360)297-5210

CONSULTANTS

ARCHITECTURAL : AKS, INC.
MECHANICAL : ABACUS ENGINEERED SYSTEMS
ELECTRICAL : ABACUS ENGINEERED SYSTEMS
COST ESTIMATION : HMS INC.

U. S. COAST GUARD
FD&CC (PACIFIC)
SEATTLE

USCG, FD&CC PACIFIC
915 SECOND AVE., ROOM 2654
SEATTLE, WA 98174-1011

MARK	DATE	DESCRIPTION
A	11/22/05	RECORD WH
	11/08/04	

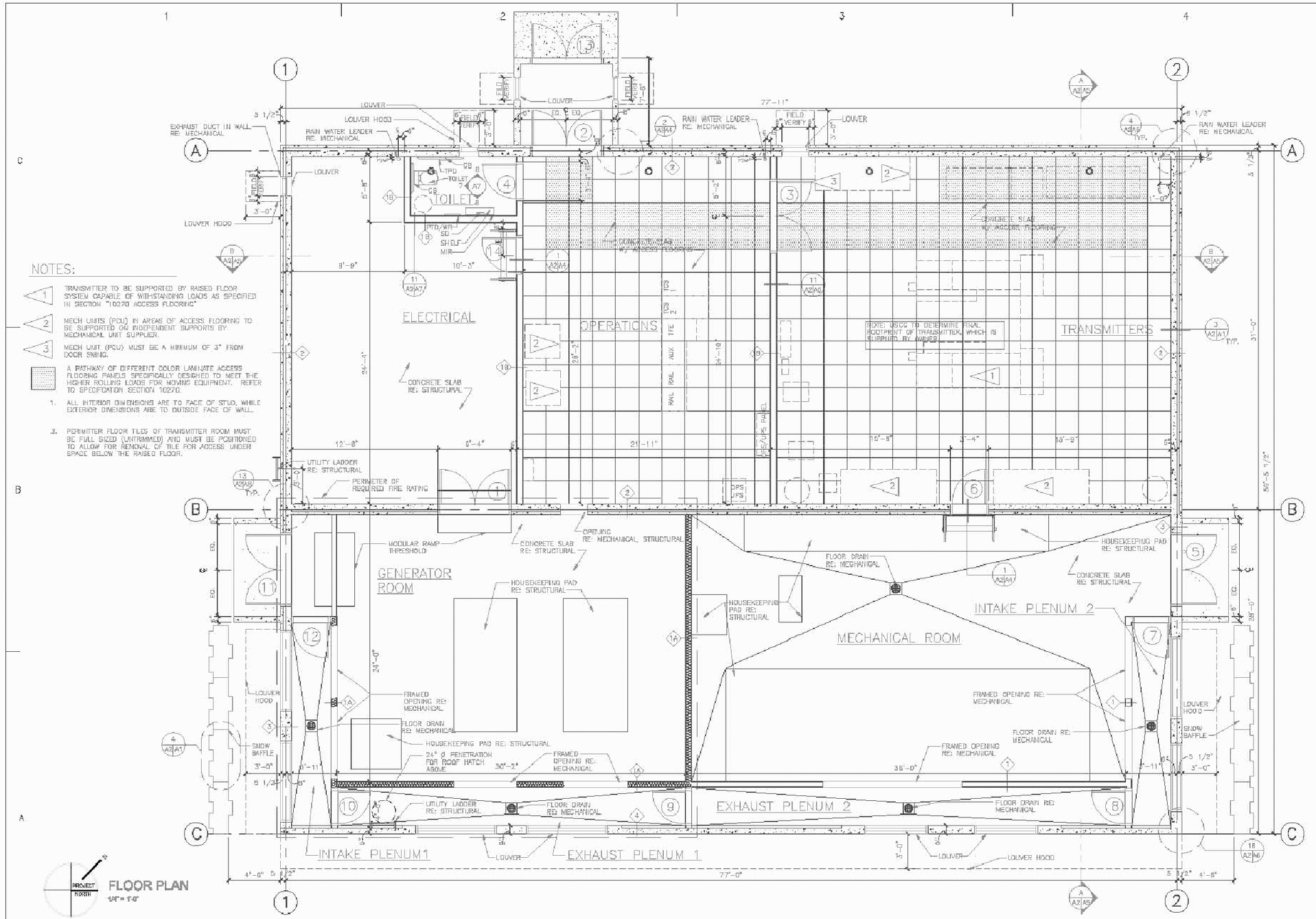
A/E PROJECT NO: 02194.015
CAD FILE NAME: 17S02002_C2_RECORD.dwg
DESIGNED BY: RWW
DRAWN BY: JDC/BED
EDITED BY: JDC/BED
CHECKED BY: RWW
SCALE: AS SHOWN PLOT SCALE: 1 = 1

NEW TRANSMITTER BUILDING
USCG LORSTA KODIAK
KODIAK ALASKA
NARRO1 SOLID STATE TRANSMITTER
CIVIL
SITE PLAN

REVIEWED BY: | REVIEWED BY: | REVIEWED BY:
PROJECT EC | DISCIPLINE
TEAM LEADER | DATE 05/02/08

PROJECT NUMBER: 17S02002
DRAWING NUMBER: 024342
DISCIPLINE/SHT NO: C2
SHEET 03 OF 50

HISTORIC AMERICAN BUILDINGS SURVEY
SURVEY NO. AK-234
ALASKA
CHINIAK
USCG ALASKA LORAN-C STATIONS RECORDATION
DRAWN BY: USCG



TRYCK NYMAN HAYES ENG INC.
KINGSTON, WASHINGTON
(360) 297-5210

CONSULTANTS

ARCHITECTURAL : AIKS, INC.

MECHANICAL : ABACUS ENGINEERED SYSTEMS

ELECTRICAL : ABACUS ENGINEERED SYSTEMS

COST ESTIMATION : HMS INC.

4136 REGISTERED ARCHITECT
F. MARK ADOLPHSEN
STATE OF WASHINGTON

U. S. COAST GUARD
FACILITIES DESIGN AND CONSTRUCTION CENTER

USCG, FD&CC PACIFIC
915 SECOND AVE., ROOM 2864
SEATTLE, WA 98174-1011

ISSUE		
	11/22/05	RECORD
REV 6	03/30/05	RFI #22
REV 5	03/02/05	ADDENDUM #5
REV 3	01/07/05	ADDENDUM #3
REV 1	11/22/04	ADDENDUM #1
–	11/05/04	–
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	200232
CAD FILE NAME:	17S02002_A2_record.DWG
DESIGNED BY:	FMA
DRAWN BY:	JBS
EDITED BY:	JBS
CHECKED BY:	FMA

SCALE: AS NOTED PLOT SCALE: 1:1

SHEET TITLE

NEW TRANSMITTER BUILDING
USCG LORSTA KODIAK
KODIAK ALASKA
NARR01 SOLID STATE TRANSMITTER
ARCHITECTURAL
FLOOR PLAN

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT EIC	DISCIPLINE	
TEAM LEADER		01/01/2005 DATE

PROJECT NUMBER	DRAWING NUMBER
17S02002	Q24342 USCG
DISCIPLINE/SHT NO	
A2	SHEET 10 OF 50

DRAWN BY: USCG

USCG ALASKA LORAN-C STATIONS RECORDATION
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

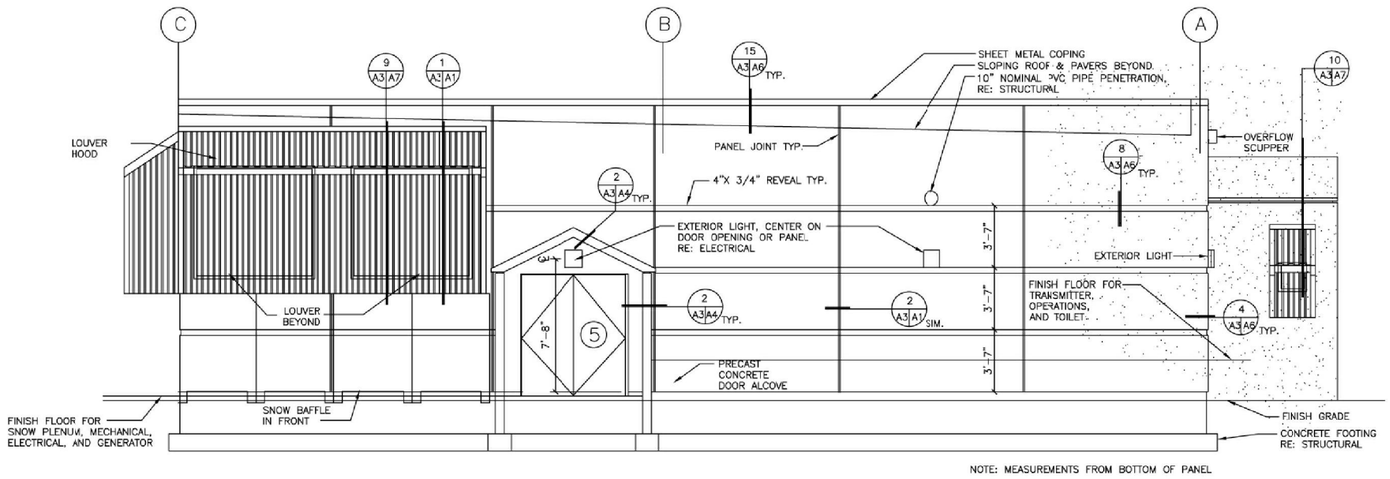
CHINIAK

SOLID STATE TRANSMITTER FLOOR PLAN

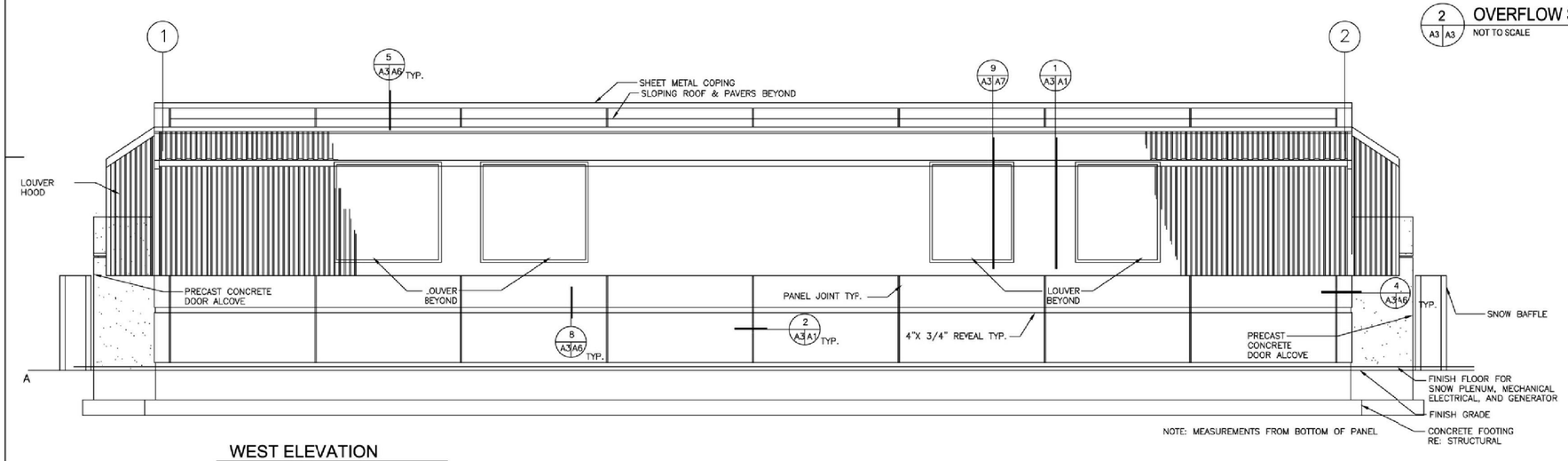
ALASKA SURVEY NO. AK-234

HISTORIC AMERICAN BUILDINGS SURVEY 6 OF 7

LIBRARY OF CONGRESS PRINTS & PHOTOGRAPHS



SOUTH ELEVATION
NOT TO SCALE



WEST ELEVATION
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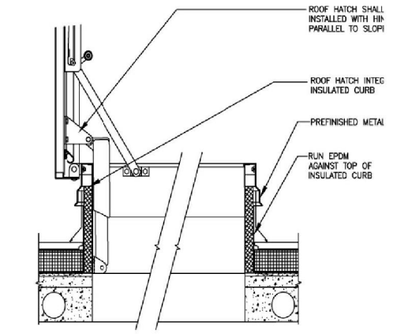
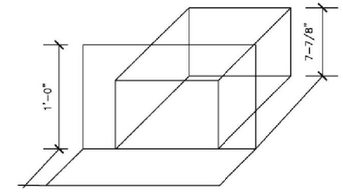


1 A2 A3 **ROOF HATCH DETAIL**
NOT TO SCALE



2 A3 A3 **OVERFLOW SCUPPER**
NOT TO SCALE

RECORD

TRYCK NYMAN HAYES ENG INC.
KINGSTON, WASHINGTON
(360) 297-5210

CONSULTANTS

ARCHITECTURAL : AKS, INC.

MECHANICAL : ABACUS ENGINEERED SYSTEMS

ELECTRICAL : ABACUS ENGINEERED SYSTEMS

COST ESTIMATION : HMS INC.

4136 REGISTERED ARCHITECT
F. MARK ADOLPHSEN
STATE OF WASHINGTON

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ISSUE		
	11/22/05	RECORD
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REV 1	11/22/04	ADDENDUM #1
–	11/05/04	–
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	200232
CAD FILE NAME:	17S02002_A2_record.DWG
DESIGNED BY:	FMA
DRAWN BY:	JBS
EDITED BY:	JBS
CHECKED BY:	FMA

SCALE: AS NOTED PLOT SCALE: 1:1

SHEET TITLE

NEW TRANSMITTER BUILDING
USCG LORSTA KODIAK
KODIAK ALASKA
NARRC1 SOLID STATE TRANSMITTER
ARCHITECTURAL
EXTERIOR ELEVATIONS

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT EIC	DISCIPLINE	

TEAM LEADER — 01/01/2005 DATE

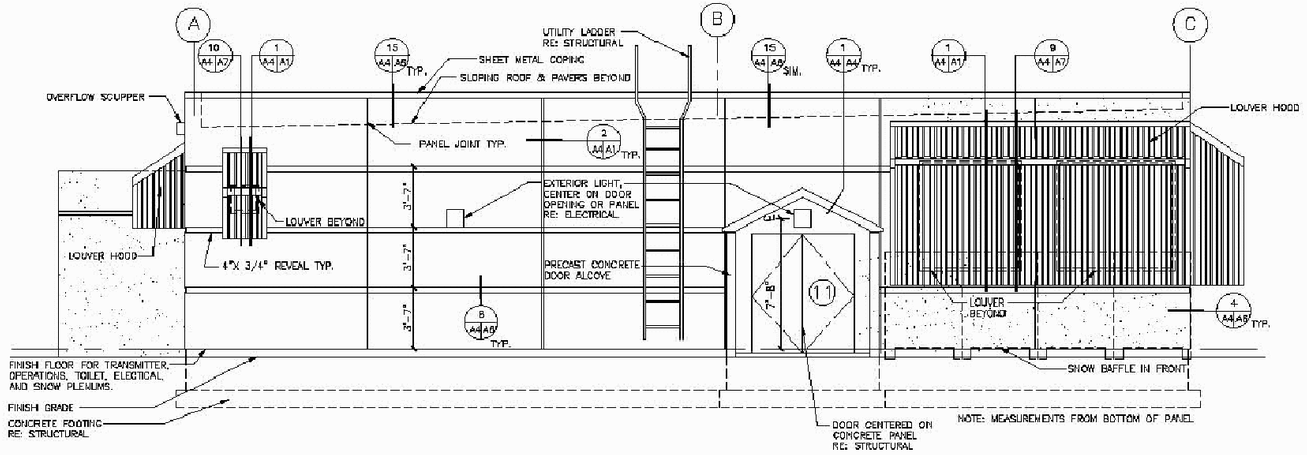
PROJECT NUMBER	DRAWING NUMBER
17S02002	Q24342
DISCIPLINE/SHT NO	
A3	SHEET 11 OF 50

DRAWN BY: USCG

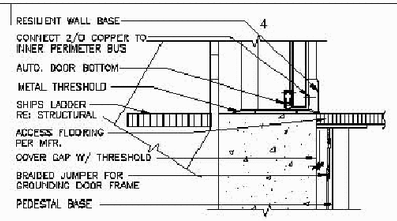
HISTORIC AMERICAN BUILDINGS SURVEY
6 OF 7
SURVEY NO. ALASKA AK-234

SOLID STATE TRANSMITTER EXTERIOR ELEVATIONS
CHINIAK

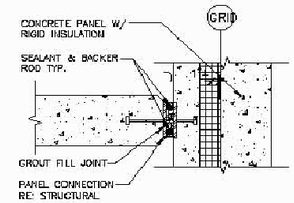
USCG ALASKA LORAN-C STATIONS RECORDATION
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR



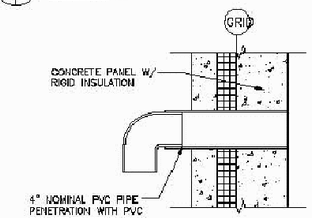
SOUTH ELEVATION
NOT TO SCALE



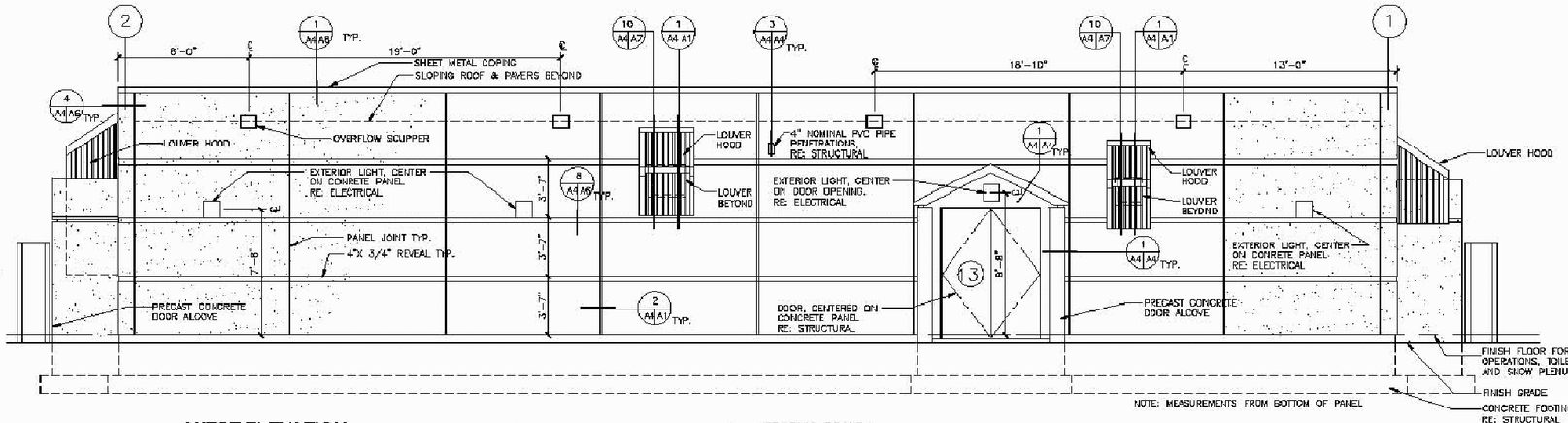
1 A1 A4 DOOR THRESHOLD
NOT TO SCALE



2 A2 A4 ENTRY VESTIBULE CONNECTION DETAIL
NOT TO SCALE



3 A4 A4 CONCRETE WALL PENETRATION DETAIL
NOT TO SCALE



WEST ELEVATION
NOT TO SCALE

NOTE: SMOOTH CONCRETE FINISH AT PANEL SURFACES BEHIND LOUVER HOODS.

GRAPHIC SCALE: 4" 2' 0' 4' 8'

RECORD

TRYCK NYMAN HAYES ENG INC.
KINGSTON, WASHINGTON
(360) 297-6210

CONSULTANTS

ARCHITECTURAL : AKS, INC.

MECHANICAL : ABACUS ENGINEERED SYSTEMS

ELECTRICAL : ABACUS ENGINEERED SYSTEMS

COST ESTIMATION : HMS INC.

U. S. COAST GUARD
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ISSUE		
	11/22/05	RECORD
–	11/05/04	–
MARK	DATE	DESCRIPTION

A/E PROJECT NO:	200232
CAD FILE NAME:	17S02002_A4_record.dwg
DESIGNED BY:	FMA
DRAWN BY:	JBS
EDITED BY:	JBS
CHECKED BY:	FMA

SCALE: AS NOTED PLOT SCALE: 1:1

SHEET TITLE

NEW TRANSMITTER BUILDING
USCG LORSTA KODIAK
KODIAK ALASKA
NARR01 SOLID STATE TRANSMITTER
ARCHITECTURAL
EXTERIOR ELEVATIONS

REVIEWED BY:	REVIEWED BY:	REVIEWED BY:
PROJECT ID:	DISCIPLINE	
TEAM LEADER		05/02/05 DATE

PROJECT NUMBER	DRAWING NUMBER
17S02002	Q24342
DISCIPLINE/SHT NO	
A4	SHEET 12 OF 50

HISTORIC AMERICAN BUILDINGS SURVEY 7 OF 7
SURVEY NO. AK-234 ALASKA
SOLID STATE TRANSMITTER EXTERIOR ELEVATIONS 2
CHINIAK
USCG ALASKA LORAN-C STATIONS RECORDATION
DRAWN BY: USCG

HABS RELEASE FORM

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