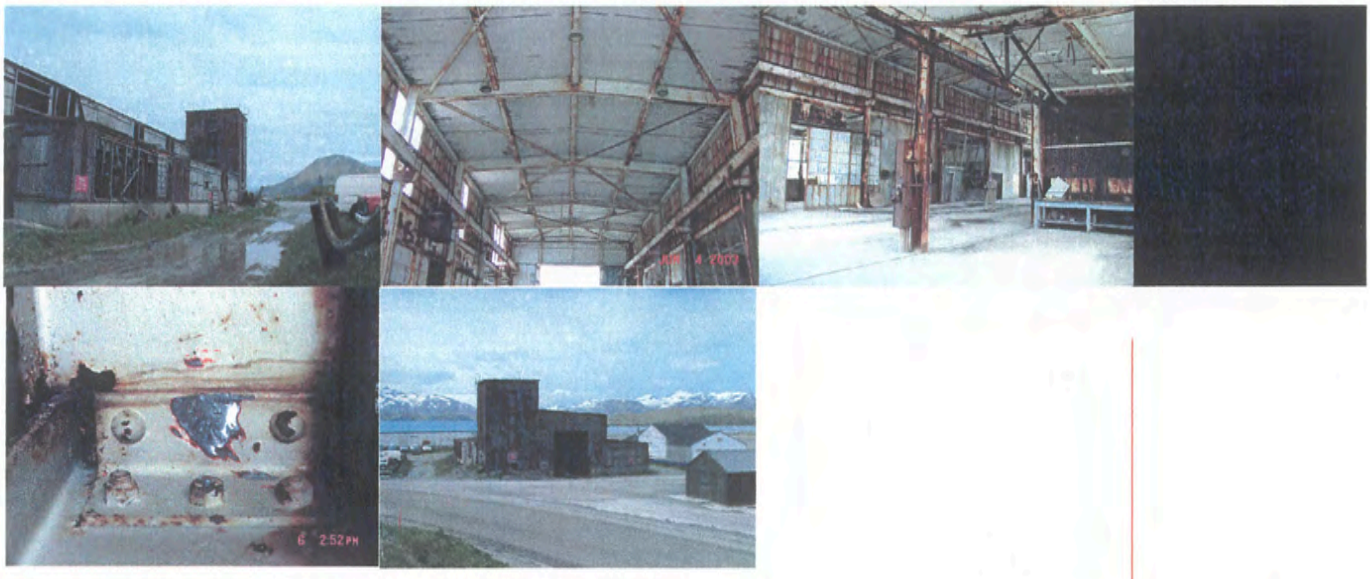
FINAL August 2003
AKSAS 55829
AGREEMENT # P32060

Building Condition Assessment/Materials Investigation

Torpedo Bombsight and Utility Shop, Unalaska Airport, Dutch Harbor, Alaska



PREPARED FOR:

Alaska Department of Transportation
& Public Facilities
Anchorage, Alaska

PREPARED BY:

HYER
ECI/Hyer, Inc.
Architecture
Interiors

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

Alaska Department of Transportation & Public Facilities
Gary Lincoln, PE, Project Manager

CONSULTANTS

ECI/HYER, INC. ..... Architectural
Tryck Nyman & Hayes..... Structural

INTRODUCTION

INTRODUCTION

INTRODUCTION

Report Purpose

The purpose of this report is to identify the soundness of structural components and integrity of building materials of the Torpedo Bombsight and Utility Shop in Dutch Harbor, Alaska. The report documents the observations and findings of an on-site condition assessment and materials investigation conducted June 4-6, 2003. The Department of Transportation & Public Facilities (ADOT&PF) selected ECI/Hyer, Inc. Architects in association with Tryck, Nyman, & Hayes, Inc. Engineers to conduct the investigation. Team members included: Terry Hyer, ECI/Hyer, Inc. Architects, Krista Phillips, ECI/Hyer, Inc. Architects, and Fred Park, Tryck, Nyman, & Hayes, Inc. Engineers. This field inspection was supplemented with copies of original construction documentation and Historic American Building Survey (HABS) drawings provided by the contracting agency to verify as-built conditions. Limitations exist in the review of the original construction documents, as the set provided was not complete. HABS drawings were found to be inaccurate, as well, and should not be considered record drawings unless proper corrections are made to the documentation.

The Torpedo Building, a designated National Historic Landmark subject to historic preservation legislation, is under consideration for demolition by ADOT & PF due to life safety concerns. Within this report, the building's structural frame and foundation components have been deemed sound, yet the building exterior and roof sheathing have been deemed a life safety hazard due to deterioration and flying debris. This contract supports the efforts of the ADOT & PF in its activities performed pursuant to 36 CFR Part 800, the regulations implementing Section 106 of the National Preservation Act [16 U.S.C 470h-2(f)] and Section 110(f) of this Act, [16 U.S.C 470h-2(f)], and Section 303 of the Department of Transportation Act, as amended [49 U.S.C 1653(f)].

Building Location and History

The Torpedo Bombsight and Utility Shop (Torpedo Building) is one of many defense site buildings of the Naval Operating Base (NOB) located on a 1,000 foot wide spit of Amaknak Island west of Dutch Harbor at the Unalaska Airport, Dutch Harbor, Alaska (Appendix, Map A). The Unalaska Airport (DUT) is located on the northern edge of Dutch Harbor near Mount Ballyhoo. The Dutch Harbor NOB was constructed in phases and operational (1941-1947) during the World War II campaign against Japanese attacks on the Aleutian Islands. Designated a National Historic Landmark in the late 1980s, The Torpedo Building is a contributing feature in the remaining Dutch Harbor NOB and Fort Mears U.S. Army complexes and a sound example of Pacific Rim World War II architecture.

The Torpedo Building was constructed in 1942 under Navy Contract NOy-3570 by Siems-Drake-Puget Sound, a co-venture construction firm based in Seattle, WA with project offices at various Alaskan sites. The building was designed as a part of a cluster of military service buildings sited on a land parcel currently known as Lots 6B and 7 of Unalaska Airport (Appendix, Map B).

The original Naval Air Station master plan was one of three Alaska Navy bases undertaken by the architectural firm of Albert Kahn and Associates of Detroit, Michigan. Prior to his involvement in defense planning, Kahn already was well known and respected for his late modernist planning and efficient industrial plant design, most notably the Ford Motor Company. Kahn's method focused on space-saving techniques that incorporated multiple functions into one building type.

His original plans called for primarily reinforced concrete structures, but due to lack of necessary quantities of local aggregate supplies, his buildings were modified to incorporate steel and wood framing. These design modifications were undertaken and construction documents were drawn and approved by Navy personnel (Denfeld 1987). The Torpedo Building is attributed to be a component of Kahn's original naval base planning for Dutch Harbor Naval Air Station (National Park Service [NPS]/National Historic Landmarks [NHL] website 2003).

The Torpedo Building was operational for a brief time after construction was completed. When Dutch Harbor NOB was decommissioned by 1947, a majority of defense buildings were either left vacant or used as miscellaneous work or storage facilities. The Torpedo Building continued to be used by the Navy as a storage facility until 1959 when it was leased to Alaska Barge and Transport through 1962. As part of the Alaska Native Claims Settlement Act of 1971, the Navy gave up ownership of the Torpedo Building to the Ounalashka Corporation.

In 1980, the building was deeded to ADOT & PF and continued to function as a storage facility until 2001, when an environmental cleanup was undertaken to eliminate accumulated solid waste, petroleum products, and sediment within the building. Testing confirmed the presence of various asbestos-containing materials and lead-based paints (Shannon & Wilson 2001). The Torpedo Building is currently vacant and has endured nearly sixty years of weather deterioration and lack of proper maintenance (Appendix, Photo A-01).

Building Physical Description & Original Use

Drawing No. 134733, Navy Department Bureau of Yards & Docks, dated October 8, 1940, illustrates two separate structures to accommodate the programmatic needs for a bombsight workshop and utility shop (Appendix C, Navy drawings). However, construction documents approved and originally issued on January 10, 1941, confirms the existing Torpedo Building as one structure incorporating a composite program of the earlier bombsight workshop and utility shop concept drawing (Appendix C, Navy drawings).

The Torpedo Building is an industrial military structure consisting of a tripartite plan: a central high-bay open area documented as the Craneway runs along an east-west axis flanked by stem low-bay, partitioned shops/workrooms (Appendix C, current drawings). A tower constructed of heavy timber and steel exists over the southeastern corner of the building and contained a loft space for the packing of parachutes. A small, one-story wood frame addition built subsequent to original construction remains at the southwest corner of the building (Appendix B, Photo A-02). Two other subsequent additions to the south elevation existed during HABS documentation in 1985, but are no longer attached (Appendix C, HABS drawings).

The Torpedo Building was designed and constructed as a steel moment-frame system with concrete stem walls and a concrete footing/slab foundation. The exterior building envelope originally consisted of corrugated asbestos and metal roofing, felt, and Tongue & Groove wood decking, corrugated asbestos and metal siding, felt, and T & G wood decking, steel sash windows, and metal /glass panel doors and frames. Floors throughout the building are concrete slab with a terrazzo topping exclusively in the Toilet Room (Head). Original construction documents note various floor finishes to occur over the concrete slab, but no evidence of these finishes was found. It is assumed that they were not installed during construction. Typical concrete slab details include a central strip drain

along the extent of the Craneway, mechanical and test pits, floor drains, curbs at interior partition conditions, and several cast plinths. Typical interior partitions consisted of metal sash partitions infilled with masonite, metal, and glazed panels. There are several plaster partitions and concrete walls as well. Interior doors were metal and wood interior doors. Interior ceilings are open to steel structure and wood decking above. Lighting consisted of exterior industrial wall-mounted sconces and interior pendant fixtures. Wall-mounted radiators in many of the low-bay workrooms suggest a hydronic heat system, although no evidence of a boiler system remains in the building.

Once operational, Albert Kahn's design served as a multi-functional space for the Navy operation at Dutch Harbor. After torpedoes were assembled nearby at the Torpedo Assembly Complex, they were transported to the Torpedo Building and bombsights were added and adjusted prior to the torpedo's being loaded onto aircraft. Miscellaneous workshops around the Craneway provided much needed space to allow Navy crewmen the ability to work in dry conditions. Perimeter high-bay crane rails located at approx. 20 feet from finished floor level were integral to the building design and were the primary supporting components of an overhead crane system. The Craneway area was programmed for use as a Machine Shop, Electric Shop, Torpedo Workshop, and Ordnance & Armory area.

The building also housed areas for the storage and repair of torpedo bombsights and precision optical devices. Several administrative offices were also located within the building.

SITE
STRUCTURAL / MATERIALS INVESTIGATION
ARCHITECTURAL
ELECTRICAL & MECHANICAL

Site

This building condition assessment does not include analysis or examination of the building site. Please refer to previous reports by Shannon and Wilson (December 1997 and June 2001) and EMCON Alaska (July 1999) regarding site issues.

General Building Description

The Torpedo Building is a single story structure with overall dimensions of 121' – 8" (W-E) x 71'-8" (S-N) from outside to outside of the concrete foundation walls. The floor throughout the building is a concrete slab on grade. The finish floor elevation, the top of the concrete, is defined as 0'-0". The foundation walls are typically 4'-6" to top of wall above finish 1st floor (Appendix B, Photo: S-03). The plan layout of the structure is configured with six bays from west to east from column line to column line of 20'-0" and from south to north by three bays with the south and north bays each equal to 15'-0" and the interior bay equal to 30'-0". Grids from west to east (1 to 7) and south to north (A to D) are associated with the structural bays. The centerline of the columns is typically set 0'-10" in from the outside face of the perimeter foundation walls. The building has three different roof types, each at a different elevation. The three roof types, (1) Parachute Loft – has a central peak, (2) High Central Bay – has a central west to east ridge, (3) Low Side Bays – are shed roofs to the south and north of the High Central Bay, and their associated typical bay configuration with plan dimensions define the framing unique to four areas of the building. Each roof is sloped 5°. (Appendix B, Photos: S-01, 02)

Parachute Loft

The Parachute Loft is in the southeast corner, it has the highest roof with an eave elevation to the top of steel equal to 41'-0" and a central peak elevation equal to 41'-10", top of steel. A slight ridge extends from the central peak to the four corners. The plan dimensions of this area are defined by the typical bay dimensions of 15'-0" south to north, Grid A to B and 20'-0" from west to east, Grid 6 to 7. Interior to the Parachute Loft is a second floor approximately 13'-7" to finish floor 2nd floor from 1st floor finish floor 0'-0".

High Central Bay

The High Central Bay is halfway between the south and north walls and extends the length of the building from west to east. The north and south eave elevations, top of steel, are 26'-6" and the east to west central ridge elevation, top of steel, is equal to 27'-9 1/2" from finish floor. The plan dimensions for this area are 30'-0" from south to north, Grid B to C and 120'-0" from west to east, Grid 1 to 7.

The roof over the eastern most bay, Grid 6 to 7, extends from the north eave, Grid C, up to the central ridge and then continues up until intersecting the north wall of the Parachute Loft where the top of steel elevation is approximately 29'-3", Grid B. There is a step up from this roof south to the Parachute Loft roof and a step down to the west, south side of the High Central Bay roof. The plan dimensions for this roof area, from the north Parachute Loft wall to the ridge are 15'-0" south to north by 20'-0" from west to east.

Low Side Bays

The Low Side Bays are to the north and south of the High Central Bay.

North Low Side Bay

The north Low Side Bay is to the north of the High Central Bay and extends from the west end to the east end of the building. The eave elevation is 14'-1 1/2" top of steel and the elevation top of steel, where intersecting the north wall of the High Central Bay, is 15'-9". The Low Side Bay shed roof steps up to the High Central Bay roof.

The plan dimensions from south to north are 20'-0", Grid 1 to 7 and from west to east 120'-0", Grid C to D.

In the second bay from the east end is a mechanical mezzanine. Plan dimensions are approximately 9'-6" from Grid 6 west and 15'-0" to the north from the south wall at Grid C. Concrete walls enclose the space to the east, south and west, the north end is open. The top of the wood deck is approximately 7'-0" from the slab on grade.

South Low Side Bay

The south Low Side Bay is to the south of the High Central Bay and extends from the west end of the building to the west side of the Parachute Loft. The top of steel eave elevation is 14'-1 1/2" and where intersecting the south wall of the High Central Bay is 15'-9". There is a step up from the Low Side Bay shed roof to the High Central Bay roof and to the east a step up to the Parachute Loft roof. The plan dimensions from south to north are 20'-0", Grid A to B and from west to east 100'-0", Grid 1 to 7.

General Structure Description

(See Appendix D, Structural Plan Sketches for specific members/elements)

The typical building framing is comprised of an orthogonal structural steel load bearing space frame configured to provide gravity and lateral moment resisting frames from the south to the north, and gravity and lateral force resisting braced frames from the west to the east. The building frames are part of the framing for each of the three areas noted above and are symmetrical to the High Central Bay.

The typical roof decking is 3x T & G wood planks. The wood plans are spiked to 3x wood nailers bolted to the top of the W beams, W girders and miscellaneous steel sections.

The framing elements consist of W beams (beams), W girders (girders) and W columns (columns). Other elements are specifically noted relative to their shape.

Parachute Loft

The roof framing forms a slight arch peaking at the center of the space starting from each corner rising 10" between the eave and peak. Beams frame the four hips of the roof and angle struts are placed on each side centered between the corners extending from the side beams to the center. The hip beams and struts are joined at the peak with a central gusset plate. From each eave the wood decking spans to and is supported by the hip beams. (Appendix B, Photo: S-05)

At each roof corner the beams bear on columns. The columns continue down to the elevation of the High Central Bay south side, east end bay framing at 29'-9 1/2". At this elevation beams extend from the High Central Bay south wall, in the west and east walls to the south Parachute Loft wall. Beams are also present in the north wall east to west between the Parachute Loft and High Central Bay roof columns, and at the south wall between the Low Side Bay/Parachute Loft columns. (Appendix B, Photo: S-06)

The columns continue down to the Low Side Bay roof elevation at the High Central Bay south wall/Parachute Loft north wall, and the Parachute Loft south wall. The girders typical to the Low Side Bay roof elevation are present in the west and east walls of the

Parachute Loft walls. The typical beams that are present in the south Low Side Bay roof along the north and south edges continue through the Parachute Loft walls to the eastern most frame.

The columns from the elevation of the Low Side Bay roof continue to grade at each corner of the Parachute Loft.

The wood decking provides a horizontal diaphragm for the Parachute Loft roof. The configuration of the steel roof framing provides additional horizontal lateral strength.

A wood shear wall is present four sides of the Parachute Loft from the roof elevation of 41'-0" to the steel at the high central roof elevation 27' 9 1/2". The walls are constructed with 2x studs and diagonal board sheathing. These walls continue down to the level of the Loft intermediate floor near the elevation of the south Low Side Bay roof.

Lateral Framing

Lateral load resisting brace frames at the north, south and east walls are continuous from the High Central Bay roof, elevation 27'-9 1/2" to the Low Side Bay roof, elevation 15'-9" to the slab on grade. Bracing is also present in the west wall of the Parachute Loft from the elevation of 27'–9 1/2" to the Low Side Bay roof beams that are part of the north to south moment frames. The angle elements bracing in the east and south brace frames, intersect the perimeter wall such that the horizontal flange is embedded in the concrete and the vertical is flush with the inside face of the concrete.

Parachute Loft Floor

Framed to the inside of the Parachute Loft, inside of the typical Low Side Bay beams is a framed wood floor, top of floor elevation approximately 13'-7", slightly below the elevation of the Low Side Bay south roof eave. The floor appears to be an addition not part of the original construction. The floor is generally framed independently of the building columns. The floor may not be independent of the Low Side Bay roof beams and girders. Lumber floor planks laid diagonally from the northeast corner to the southwest corner are supported by wood solid sawn joists at approximately 16"o.c. The joists span from the west to east and bear on wood beams comprised of multiple joists bolted together and spanning south to north. Also bearing on the west and east wood beams is a steel beam set between the joists a few feet to the south side of half the south to north width. The wood beams span from the south wall to the north wall at the west and east sides of the floor and bear onto wood posts each end. The wood posts bear on the slab on grade below. At each post from a few feet below the floor joists is a diagonal wood brace and a knee type brace, from the side of the post to the side of the south to north headers and from the side of the post to the side of west to east doubled edge joists. (Appendix B, Photo: S-011)

<u>High Central Bay</u>

A typical high bay is 30'-0" x 20'-0". The roof deck spans south to north from the eaves to the central ridge and is supported by beams oriented west to east placed at the eaves, halfway between the eaves and the ridge and at the ridge. The roof beams are supported by girders spanning north to south across the 30'-0" bay. The girders slope up from one eave to the ridge and back down to the other eave. The girder is a single element bent/cut sloped and welded. The girders are supported by columns spanning from the slab on

grade to the High Central Bay roof eave as single units un-spliced. Between the top and bottom they also support the Low Side Bay roof girders.

Lateral Framing

The horizontal roof diaphragm is provided by X bracing. Single angle X bracing extends from the west end to the east end of the roof. The angles span diagonally two bays crossing at the center span of the girder between the two bays. There X is repeated 3 times from the west end to the east end. This horizontal X bracing transfers the south to north, west to east lateral forces to the resisting vertical elements. (Appendix B, Photo: S-07)

The lateral south to north force is resisted by the typical moment frames.

The lateral force west to east is resisted by the south and north wall X bracing placed in the furthest west bay and the furthest east bay. The bracing extends from the High Central Bay roof south and north eaves to the Low Side Bay roofs. The east bay, south wall X brace is common to the High Central Bay and the Parachute Loft. (Appendix B, Photos: S-09, 010)

Low Side Bays

A typical Low Side Bay is 20'-0" x 20'-0". The Low Side Bay roofs are framed similar to the High Central Bay roof. The wood roof deck spans south to north from the eave to the intersection of the High Central Bay south and north walls. The decking is supported by beams oriented west to east and placed at the eaves, at the north and south walls of the High Central Bay and halfway between. The roof beams are supported by girders spanning south to north from the eave to the High Central Bay walls. The girders are supported by columns at the eaves and the columns in the High Central Bay south and north walls.

Lateral Framing

Horizontal X bracing is not present in the Low Side Bay roofs. The 3x wood deck provides the horizontal diaphragm transferring the lateral forces south to north and west to east to the vertical load resisting elements typical to both roofs.

North Low Side Bay Roof

At the north Low Side Bay roof the north to south lateral loads are transferred to the north to south moment frames. Additionally, contributing to the lateral resistance are three concrete shear walls, one bay to the west of the most eastern bay extending from the slab on grade to the underside of the roof beams, except at the center where the wall is directly against the wood deck above (See Concrete Walls Below).

The north wall of the High Central Bay X braces stop at the elevation of the north Low Side Bay roof. From this level to grade is a concrete shear wall providing the lateral load resistance west to east.

The north wall does not have a lateral load resisting element from the roof to grade.

Concrete Walls

Below the second and third frame from the east wall are 6" concrete walls, a third wall is halfway between. A fourth 6" concrete wall is placed between these two frames between the south side columns. The concrete walls below the frames extend from the slab on grade, to the bottom of the steel roof girders and beams of the north Low Side Bay. The wall halfway between the frames spans from the slab on grade to the underside of the wood roof deck. (Appendix B, Photos: S-012, 016, 017)

Mechanical Mezzanine

A mechanical mezzanine is framed in the north Low Side Bay in the second bay from the end east wall. This is a partial floor from the south concrete wall to approximately 4' to 5' from the north outside wall and from the east concrete wall to the center west concrete wall. The floor framing uses the 3x wood decking running from the south wall north and is supported by steel channels spanning from the east wall to the west wall. The channels start at the north side of the south concrete wall spaced approximately 4' to 5' o.c. They are imbedded in the concrete wall at each end. The floor deck is attached to 4x wood ledgers bolted to the side of the steel channels. (Appendix B, Photo: S-015)

South Low Side Bay Roof

The High Central Bay south wall X bracing in the east most bay continues from the south Low Side Bay roof to grade. (Appendix B, Photo: S-08) Contributing to the lateral force resistance for the south Low Side Bay roof is the X bracing in the south wall of the Parachute Loft, (see Parachute Loft) present from the elevation of the High Central roof to the slab on grade.

General System and Elements Condition

(See Appendix D for specific conditions)

The structural frame, the primary structural elements, presently has much of its original integrity. The structural frame includes the beams, girders, columns and foundations. The nominal damage to the structural frame requires basic repairs. The secondary elements are also in reasonably good condition. The secondary elements, the lateral bracing in the roofs and walls, and miscellaneous lateral load collector elements require basic repairs and a few elements to be replaced. Protection of the structure today will permit restoration of the structural systems and components in the future.

Primary Structural Framing

Girders, Beams, Columns and Foundation Walls: The condition of the girders, beams and columns, the primary elements, is good. The protective coating of the elements is poor and in some cases nonexistent.

Secondary Structural Framing

Typical Roof Decking: The condition of the wood roof decking including the wood plates between the decking and the steel beams is poor. Due to the excessive rot of the material and corrosion of the retaining fasteners, the decking has in the past and will continue in

the future to fly from the roof, posing a threat to life safety and equipment in the building and beyond the footprint of the building. A perimeter trespass barrier will remove the hazard inside the building, a protective shell or removal of the roof decking will remove the hazard beyond the perimeter of the building. See stabilization recommendations included in the conclusion.

Bracing: The horizontal and vertical bracing, like the primary girders, beams and columns, is generally in good condition. The coating is no longer effective and in some cases nonexistent.

Miscellaneous Framing

Steel angles framing around windows, doors, and walls, including the jambs, sills and heads, are generally corroded beyond repair and require replacement.

Parachute Loft

Primary Structural Framing

The second floor wood framing is in good condition and appears generally undamaged and dry.

Secondary Structural Framing

Wood shear walls on the four sides of the upper loft appear to be in good condition. Much of the framing is hidden from the outside; the inside is exposed to view.

High Central Bay

The high bay entry doors at Grid 1 & 7 are askew and generally in poor condition. Where the support steel columns enter the foundation wall, the concrete to the door side is damaged. The damage to the concrete is from the corroding steel expanding causing the concrete to crack and eventually break off.

Mechanical Mezzanine

Primary Structural Framing

The wood plank floor and the wood ledgers bolted to the steel beams are in poor condition and will require replacement.

Floor at Grade

The concrete slab on grade is generally in good condition, minor spalling and cracking is present. Very little delamination has occurred.

Foundation Footings

The foundation footings are hidden from view. Observation of the elements supported by the foundations implies the footings are performing well. No uneven settlement was observed. The grade surrounding the building does not show signs of settlement or

heave. The foundation walls are in very good condition with limited cracking. The slab on grade has typical cracks from shrinkage and minor settlement, nothing that would indicate the foundations are experiencing problems. Where the columns penetrate the slab on grade the concrete is generally in good condition, there are no signs of the column and slab moving independently.

General Cause of Deterioration

The building has existed in a harsh marine environment for more than 60 years. The building has not been maintained for the last 40 years. Most of the deterioration and damage is from strong winds and the salty marine air. The high winds have loosened and opened the protective shell. Without timely maintenance, resealing the seams, tightening up the fasteners and repairing the initial small areas of damage, the openings permitting the first intrusion of moisture increase in size and allow greater volumes of moisture beyond the protective shell. The initial moisture causing the damage may be wind driven and horizontal, as the damage increases, the opportunities for the moisture to enter the building increase, moisture will now enter with or without the assistance of the wind. The wind has combined with the corrosive marine air to remove larger and larger sections of the protective shell. With the loss of the protective shell, the interior elements now exposed begin to deteriorate at an increased rate resulting in the present condition of the structure and nonstructural elements. The lesser structural elements, elements attaching the siding to the structure, the roof deck to the structure, restraining windows, etc., will, as they have, loose structural integrity. These elements are typically in areas where the moisture is trapped, held to them for long periods of time and being less in mass, eventually fail.

General System and Elements Code Capacity

(See Appendix D for specific capacities)

As noted above, the structural frame is in good condition. The frame generally performs to structural code requirements. Noted here is the general capacity of the framing elements as if they were in original or good condition. However, the element may need to be repaired or replaced as indicated under "General System and Element Condition".

Primary Structural Framing

Girders, Beams, Columns and Foundation Walls: The girders, beams, columns and foundation walls are sufficient to support current code forces resulting from the application of code design loads.

Secondary Structural Framing

Typical Roof Decking: The typical wood decking will support the design loads as code specified. The wood decking typically requires replacement due to its condition. The replacement material, Select Dex, can be applied to provide improved diaphragms supplementing the existing roof bracing.

Bracing: The horizontal and vertical bracing is generally sufficient to resist the code required design forces. At minor effort and expense, improvements can be made if desired. In the case of the bracing it may be easier and cheaper to remove and replace

the bracing elements as opposed to cleaning and recoating. At the same time the braces can be strengthened with minimal additional cost.

Miscellaneous Framing

Steel angles framing around windows, doors, and walls, including the jambs, sills and heads, are sufficient for their intended purpose. However their condition requires they be replaced.

Parachute Loft

Primary Structural Framing

The second floor wood decking, joists, beams and posts are sufficient to support current code required loads.

Secondary Structural Framing

The upper wood shear walls provide sufficient strength to resist forces resulting from the code specified design loads. Minor effort can be made to improve the performance of the shear walls, such as adding fasteners or adding a thin layer of plywood sheathing.

Mechanical Mezzanine

Primary Structural Framing

The wood plank floor, the wood ledgers and steel beams are sufficient to support the code specified design loads, however the wood requires replacement due to its condition.

Exterior Envelope

NORTH ELEVATION
(Appendix B, Photo A-03)

Description & Characteristics of Original Construction

Exterior Wall/Siding
Small sections of corrugated asbestos-coated metal siding over 15# felt and 2 5/8" T & G wood decking at each end of high-bay and low-bay portion of building; tower portion of elevation was covered with corrugated asbestos-coated metal siding; 4.5 feet concrete stem wall from foundation to window sill with asbestos siding over T& G decking above at low-bay portions of building. Original construction drawings specified no paint finish to asbestos-coated metal siding, but did specify cement paint to 4.5 feet concrete stem walls. However, there is no evidence of paint to exterior side of concrete stem walls.

Windows
Metal sash divided lite windows occurred along the extent of the high-bay and low-bay portion of the building, some with operable sashes. Wire glazing remnants were discovered and assumed to be typical throughout the building.

Doors
A pair of metal sash divided lite man doors exited from the Battery Room 105.

Existing Materials Condition & Cause of Deterioration

Siding
All corrugated asbestos-coated metal siding is in poor condition with metal component appearing to be disintegrated, most likely due to weathering and lack of maintenance, leaving asbestos paper only to exterior side of elevation.

Windows
Majority of windows along the extent of the high-bay and low- bay portion of the elevation has been sheathed with wood decking to the exterior to prevent building material debris from detaching itself in severe wind/weather conditions; the metal in all windows is in poor condition due to corrosion; the majority of glazing appears to be missing from windows and doors, possibly due to weathering and/or vandalism.

Doors
Metal sash divided lite doors and frames from the Battery Room 105 are in poor condition due to corrosion of metal; glazing is missing and openings have been covered with masonite.

EAST ELEVATION
(Appendix B, Photo A-04)

Description & Characteristics of Original Construction

Siding
Corrugated asbestos-coated metal siding over 15# felt and 2 5/8" T & G wood decking; concrete stem wall below asbestos siding; tower portion of elevation was covered with asbestos-coated metal siding.

Windows
Metal sash divided lite windows to the east side of the oversize doors at the low-bay portion of the building; tower portion of the elevation had a central section of windows, some with operable sashes, extending from the concrete stem wall to just under roofline.

Doors
Oversize metal and glass bifold entry doors centered in high-bay portion of building; single metal and glass man door to the west side of oversize doors provided exiting from the central area.

Existing Materials Condition & Cause of Deterioration

Siding

All corrugated asbestos-coated metal siding is in poor condition with metal component appearing to be disintegrated, leaving asbestos paper only to exterior side of elevation, most likely due to weathering and lack of maintenance.

Windows
Windows to the south side of central oversize doors have been sheathed with wood decking to the exterior to prevent building material debris from detaching itself in severe wind/weather conditions.

Doors
Oversize metal bifold entry doors are severely corroded and glazing has been replaced with masonite; single door is corroded and glazing has also been replaced with masonite, most likely due to weathering and lack of maintenance.

SOUTH ELEVATION
(Appendix B, Photo A-53)

Description & Characteristics of Original Construction

Siding
Small sections of corrugated asbestos-coated metal siding over 15# felt and 2 5/8" T & G wood decking along extent of high-bay and low-bay portion of building; tower portion of elevation was covered with asbestos-

coated metal siding; 4.5 feet concrete stem wall below windows and/or asbestos siding at low-bay portion of building.

Windows
Metal sash divided lite windows along the extent of the high-bay and low-bay portion of the building, some with operable sashes; tower portion of the elevation had a central section of windows, some with operable sashes, extending from the concrete stem wall to just under roofline.

Doors
Two pairs of metal sash divided lite doors provided exiting from the Parachute Pack Room 12 and Compressor Room 113.

Existing Materials Condition & Cause of Deterioration

Siding
All corrugated asbestos-coated metal siding is in poor condition with metal component appearing to be disintegrated, leaving asbestos paper only to exterior side of elevation, most likely due to weathering and lack of maintenance.

Windows
Majority of windows along the extent of the high-bay and low- bay portion of the elevation has been sheathed with wood decking to the exterior to prevent building material debris from detaching itself in severe wind/weather conditions; the metal in all windows is in poor condition due to corrosion; the majority of glazing appears to be missing from windows, possibly due to weathering and/or vandalism.

Doors
Doors are in poor condition; metal is severely corroded and glazing is missing; openings have been covered with masonite.

WEST ELEVATION
(Appendix B, Photo A-06)

Description & Characteristics of Original Construction

Siding
Corrugated asbestos-coated metal siding over 15# felt and 2 5/8" T & G wood decking; 4.5 feet concrete stem wall below asbestos siding; tower portion of elevation was covered with asbestos-coated metal siding.

Windows
Metal sash divided lite windows to the east side of the oversize doors at the low-bay portion of the building.

Doors
Oversize metal and glass bifold entry doors centered in high-bay portion of building; two-single metal and glass man doors to the west side of the

oversize doors exited from the central area and a single metal and glass door to the east side of the oversize doors.

Existing Materials Condition & Cause of Deterioration

Siding

All corrugated asbestos-coated metal siding is in poor condition with metal component appearing to be disintegrated, leaving asbestos paper only to exterior side of elevation, most likely due to weathering and lack of maintenance. A single story wood frame addition exists over the original eastern single door and metal sash divided lite windows.

Windows
Windows to the west and east sides of central oversize doors have been sheathed with wood decking to the exterior to prevent building material debris from detaching itself in severe wind/weather conditions.

Doors
Oversize metal bifold entry doors are severed corroded and glazing has been replaced with masonite and the western-most single door is missing and has been replaced with a plywood door; the middle single door is in poor condition and glazing is missing, most likely due to weathering, lack of maintenance, and/or vandalism; the eastern-most single door is missing, as is the door to the single story addition.

Interior Finishes

Note: Room numbers and names refer to original construction documentation designations

Room 100-Office
(Appendix B, Photos A-07, A-08)

Description & Characteristics of Original Construction

North Elevation: wood decking and metal sash divided lite windows above 4.5 feet concrete stem wall

East Elevation: full-height plaster wall

South Elevation: metal sash divided lite partition wall

West Elevation: metal sash divided lite windows, single metal and glass door, and wood decking over 4.5 feet concrete stem wall

Floor Finish: applied cement finish with asphalt tile

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: plywood has been nailed over wood decking and metal sash divided lite windows above 4.5 feet concrete stem wall; one bay of window framing remains exposed and glazing is missing; deterioration due to weather exposure and lack of maintenance

East Elevation: full-height plaster wall intact; plaster is cracked, but in fair condition

South Elevation: metal sash divided lite partition and metal panel infills are severely corroded; varying quality of masonite infills are present in partition; some openings are completely open; deterioration due to weather exposure and lack of maintenance

West Elevation: plywood has been nailed over wood decking and metal sash divided lite windows, single metal and glass door decking over 4.5 feet concrete stem wall; deterioration due to weather exposure and lack of maintenance

Floor Finish: exposed concrete slab; no evidence of additional floor finishes

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 101-Office
(Appendix B, Photo A-09)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite partition wall

East Elevation: painted metal sash divided lite partition wall and door

South Elevation: painted metal sash divided lite partition wall

West Elevation: painted wood decking and metal sash divided lite windows above 4.5 feet painted concrete stem wall, metal sash divided lite windows, single metal sash divided lite door, and painted wood decking over 4.5 feet painted concrete stem wall

Floor Finish: applied cement finish with asphalt tile

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite partition and metal panel infills are severely corroded; varying quality of masonite infills are present in partition in place of gazing; some openings are completely open;

paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: metal sash divided lite partition and metal panel infills are severely corroded; varying quality of masonite infills are present in partition in place of gazing; some openings are completely open; metal door is severely corroded; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

South Elevation: metal sash divided lite partition and metal panel infills are severely corroded; varying quality of masonite infills are present in partition; some openings are completely open; paint to all is severely peeled deterioration due to weather exposure and lack of maintenance

West Elevation: plywood has been nailed over wood decking and metal sash divided lite windows above 4.5 feet concrete stem wall; one bay of window framing remains exposed and glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

Floor Finish: exposed concrete slab; no evidence of additional floor finishes

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 102-Passage
(Appendix B, Photo A-10)

Description & Characteristics of Original Construction

North Elevation: painted interior metal sash divided lite door with metal sash transom

East Elevation: painted full-height plaster wall

South Elevation: painted metal sash divided lite partition wall; screen door with metal louver transom overhead

West Elevation: painted metal sash divided lite partition wall and door

Floor Finish: construction docs specify applied cement finish with asphalt tile

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: interior metal sash divided lite door with metal sash transom is severely corroded; glazing is missing in transom openings; paint

to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: full-height plaster wall intact; plaster is cracked, but is in fair condition

South Elevation: metal sash divided lite partitions and metal panel infill are severely corroded; varying quality of masonite infill is present in partition; some openings are completely open; screen door is missing; metal louver transom overhead is severely corroded; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance.

West Elevation: metal sash divided lite partition and metal panel infills are severely corroded; varying quality of masonite infill is present in partition in place of glazing; some openings are completely open; metal door is severely corroded; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

Floor Finish: exposed concrete slab; no evidence of additional floor finishes

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 103-Toilet
(Appendix B, Photo A-11)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall

East Elevation: painted full-height plaster wall

South Elevation: painted full-height plaster wall, painted metal panel door

West Elevation: painted full-height plaster wall

Floor Finish: construction documents call for ground finish to concrete

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite windows above 4.5 feet concrete stem wall are severely corroded; majority of glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: full-height plaster wall intact; plaster cracked, in fair condition

South Elevation: full-height plaster wall intact; plaster cracked, in fair condition; metal panel door is corroded, but intact

West Elevation: full-height plaster wall intact; plaster cracked, in fair condition

Floor Finish: terrazzo topping to concrete slab, fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 104-Tool & Storage
(Appendix B, Photo A-12, A-13)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall

East Elevation: painted full-height plaster wall

South Elevation: painted metal sash divided lite partition wall and dutch door

West Elevation: painted full-height plaster wall

Floor Finish: concrete slab with cement hardener; concrete sump pit in NW corner

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite windows above 4.5 feet concrete stem wall are severely corroded; majority of glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: full-height plaster wall intact; plaster cracked, in fair condition

South Elevation: metal sash partition and metal panel infill are severely corroded; varying quality of masonite infill is present in partition in place of glazing; some openings are completely open; metal dutch door is severely corroded; paint to all is severely corroded; deterioration due to weather exposure and lack of maintenance

West Elevation: full-height plaster wall intact; plaster cracked, in fair condition

Floor Finish: concrete slab in fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 105-Battery Room

(Appendix B, Photo A-14)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall; one pair of centrally located metal sash divided lite doors

East Elevation: painted full-height plaster wall

South Elevation: painted full-height plaster wall, one pair of central painted metal sash divided lite doors

West Elevation: painted full-height plaster wall

Floor Finish: monolithic concrete finish with mastic

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite windows above 4.5 feet concrete stem wall are severely corroded; majority of glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: full-height plaster wall intact; plaster cracked, in fair condition

South Elevation: full-height plaster wall intact; plaster cracked, in fair condition; metal panel door is corroded, but intact

West Elevation: full-height plaster wall intact; plaster cracked, in fair condition

Floor Finish: concrete in fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 106-Torpedo Rack

(Appendix B, Photo A-15, A16)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall

East Elevation: painted full-height concrete wall

South Elevation: open to Craneway 110

West Elevation: painted full-height plaster wall

Floor Finish: cement hardener over concrete slab

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite windows above 4.5 feet concrete stem wall are severely corroded; majority of glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: refer to structural notes

South Elevation: full-height plaster wall intact; plaster cracked, in fair condition; metal panel door is corroded, but intact

West Elevation: full-height plaster wall intact; plaster cracked, in fair condition

Floor Finish: concrete slab in fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 107-Ordnance Storage
(Appendix B, Photo A-17)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall

East Elevation: painted full-height concrete wall

South Elevation: painted full-height concrete wall; one pair of metal panel door with louvers at bottom

West Elevation: painted full-height concrete wall

Floor Finish: cement hardener over concrete slab

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall are severely corroded; majority of glazing is missing; deterioration due to weather exposure and lack of maintenance

East Elevation: wall in fair condition

South Elevation: wall in fair condition; doors are missing

West Elevation: wall in fair condition

Floor Finish: concrete slab in fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 108-Bombsight Storage
(Appendix B, Photo A-18)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall

East Elevation: painted full-height concrete wall; single metal vault door

South Elevation: painted full-height concrete wall

West Elevation: painted full-height concrete wall

Floor Finish: cement hardener over concrete slab

Ceiling Finish: metal covered fan platform above first floor level; painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite windows above 4.5 feet concrete stem wall are severely corroded; majority of glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: wall is in fair condition; door is missing

South Elevation: wall is in fair condition

West Elevation: wall is in fair condition

Floor Finish: concrete slab in fair condition

Ceiling Finish: loft platform intact; painted exposed wood roof decking; peeling paint due to exposure

Room 109-Bombsight Workshop
(Appendix B, Photo A-19)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite windows and wood decking above 4.5 feet concrete stem wall

East Elevation: painted metal sash divided lite windows and wood decking above 4.5 feet concrete stem wall

South Elevation: painted metal sash divided lite partition wall; single metal sash divided lite door

West Elevation: painted full-height concrete wall; single metal vault door

Floor Finish: cement hardener over concrete slab

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: interior masonite has been nailed over wood decking and windows above 4.5 feet concrete stem wall; masonite is in poor condition due to corrosion from exposed metal structure; majority of glazing appears to be missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: interior masonite has been nailed over wood decking and metal sash divided lite partition windows above 4.5 feet concrete stem wall; masonite is in poor condition due to corrosion from exposed metal structure; majority of glazing appears to be missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

South Elevation: metal sash divided lite partition and metal panel infill is severely corroded; varying quality of masonite infill is present in partition; some openings are completely open; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

West Elevation: concrete finish is in fair condition, refer to structural notes for concrete; vault door is missing

Floor Finish: concrete slab in fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 110-Craneway
(Appendix B, Photo A-20)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite partition wall; full-height painted concrete wall; several painted single and double metal sash divided lite doors, refer to individual room elevation of Rooms 101-109 for information on these doors

East Elevation: painted oversize metal and glass bifold entry doors centered in high-bay portion of building; painted single metal and glass door to the east side of oversize doors provided exiting from the central area.

South Elevation: painted metal sash divided lite partition wall; painted single metal sash divided lite door

West Elevation: painted oversize metal and glass bifold entry doors centered in high-bay portion of building; painted single metal and glass door to the west side of oversize doors provided exiting from the central area; painted metal sash divided lite windows and wood decking above 4.5 feet concrete stem wall in low-bay portion

Floor Finish: cement hardener over concrete slab

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: interior masonite has been infilled to metal sash divided lite partitions; refer to structural for concrete wall; masonite is in poor condition due to corrosion from exposed metal structure; majority of glazing appears to be missing/infilled with masonite; deterioration due to weather exposure and lack of maintenance

East Elevation: Oversize metal bifold entry doors are severely corroded and glazing has been replaced with masonite; single door is corroded and glazing has also been replaced with masonite, most likely due to weathering and lack of maintenance.

South Elevation: metal sash divided lite partition and metal panel infill is severely corroded; varying quality of masonite infill is present in partition; some openings are completely open; deterioration due to weather exposure and lack of maintenance

West Elevation: Oversize metal bifold entry doors are severely corroded and glazing has been replaced with masonite; single door is corroded and glazing has also been replaced with masonite, most likely due to weathering and lack of maintenance.

Floor Finish: concrete slab in fair condition

Ceiling Finish: large sections of wood decking are missing due to weathering, leaving interior exposed to weather; paint is severely peeled

Room 111-Loft
(Appendix B, Photo A-21, A-22)

Description & Characteristics

North Elevation: painted wood decking over wood framing

East Elevation: painted wood decking over exposed wood framing; central section of elevation has metal sash divided lite windows, some with operable sashes, extending from the concrete stem wall below to just under roofline

South Elevation: painted wood decking over exposed wood framing; central section of elevation has metal sash divided lite windows, some with operable sashes, extending from the concrete stem wall below to just under roofline

West Elevation: painted wood decking over exposed wood framing; central section of elevation has metal sash divided lite windows, some with operable sashes, extending from the concrete stem wall below to just under roofline

Floor Finish: painted wood decking over wood framing

Ceiling Finish: painted exposed wood decking and wood framing

Existing Condition & Cause of Deterioration

North Elevation: wood decking over exposed wood framing has considerable damage due to weather exposure and lack of maintenance; paint is peeled

East Elevation: wood decking over exposed wood framing has considerable water damage; central section of elevation with metal sash divided lite windows has been crossed-braced with wood decking from the interior; majority of glazing appears to be missing; majority of window sashes appear to be severely corroded; all due to weather exposure and lack of maintenance

South Elevation: wood decking over exposed wood framing has considerable water damage; central section of elevation with metal sash divided lite windows has been crossed-braced with wood decking from the interior; majority of glazing appears to be missing; majority of window sashes appear to be severely corroded; all due to weather exposure and lack of maintenance; paint to all is peeled

West Elevation: wood decking over exposed wood framing has considerable water damage due to weather exposure and lack of maintenance; paint to all is peeled

Floor Finish: wood decking and framing has water damage; paint is peeled

Ceiling Finish: exposed wood decking and framing has a fair amount of water damage; paint is peeled

Room 112-Parachute Pack
(Appendix B, Photo A-23)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite partition wall; one pair of painted metal sash divided lite doors

East Elevation: see East Elevation, Loft 111

South Elevation: painted wood decking over exposed wood framing; central section of elevation has metal sash divided lite windows, some with operable sashes, extending from the concrete stem wall below to just under roofline; metal sash divided lite windows and wood decking above 4.5 feet concrete wall; pair of metal and glass doors

West Elevation: painted metal sash divided lite partition wall

Floor Finish: applied cement finish with asphalt tile

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite partition wall is severely corroded; glass has been replaced with masonite or is missing; one pair of painted metal sash divided lite doors are missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: see East Elevation, Loft 111

South Elevation: metal sash divided lite windows are severely corroded; majority of glazing is missing; pair of doors are severely corroded; paint to

all is severely peeled; deterioration due to weather exposure and lack of maintenance

West Elevation: metal sash divided lite partition wall is severely corroded; glass has been replaced with masonite or is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

Floor Finish: exposed concrete slab; no evidence of additional floor finishes

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Room 113-Compressor Room
(Appendix B, Photo A-24)

Description & Characteristics of Original Construction

North Elevation: painted metal sash divided lite partition wall; one pair of painted metal sash divided lite doors

East Elevation: painted metal sash divided lite partition wall

South Elevation: painted metal sash divided lite windows above 4.5 feet painted concrete stem wall; pair of painted metal and glass doors

West Elevation: painted metal sash divided lite partition wall

Floor Finish: cement hardener over concrete slab

Ceiling Finish: painted exposed wood roof decking

Existing Condition & Cause of Deterioration

North Elevation: metal sash divided lite partition wall is severely corroded; glass has been replaced with masonite or is missing; one pair of metal sash divided lite doors are missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

East Elevation: metal sash divided lite windows are severely corroded; majority of glazing is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

South Elevation: metal sash divided lite windows are severely corroded; majority of glazing is missing; pair of doors is in poor condition and severely corroded; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

West Elevation: metal sash divided lite partition wall is severely corroded; glass has been replaced with wallboard or is missing; paint to all is severely peeled; deterioration due to weather exposure and lack of maintenance

Floor Finish: concrete finish is in fair condition

Ceiling Finish: painted exposed wood roof decking; peeling paint due to exposure

Electrical System

Description & Characteristics of Original Systems Design

Incomplete construction documentation as provided hindered verification of original electrical systems design within the building. Research in the field indicates that the Torpedo Building was operational prior to completion of the Powerhouse, so electricity was generated from a warship, the SS Northwest, which was docked nearby. Once the Powerhouse was operational, electrical power was generated from this station to the Torpedo Building.

Existing Materials Condition & Cause of Deterioration

Evidence of electrical power remains as electrical switch boxes, severely corroded wall-mounted outlets, pendant light fixtures, and electric conduit running the extent of the building. Exterior light fixtures remain. It is assumed that at some point in the life cycle of the building, power was disconnected due to lack of maintenance and corrosion and exposure to the elements.

Mechanical System

Description & Characteristics of Original Systems Design

Incomplete construction documentation as provided hindered verification of original systems design within the building. Floor plan information per Navy documentation dated 1942 (Appendix C, Navy drawings) indicates a heater and sump pit to be constructed in Room 104, Tool & Storage. It is assumed that a boiler system piped hot water through a wall-hung radiator system around the perimeter rooms of the building.

Existing Materials Condition & Cause of Deterioration

There is no current evidence of a boiler unit within the heater pit, but a good majority of piping and radiators are still hanging within the rooms of the building. Piping is wrapped in asbestos insulation, which would need to be removed. As with other steel components within the building, piping and radiators have severe amounts of corrosion due to elemental exposure.

CONCLUSION

CONCLUSION

CONCLUSION

Conclusion

Our charge in this study was the assessment of the structural and physical condition of the building. Generally, the concrete floor slab, concrete stem walls, and concrete interior partition walls are sound. The condition of the concrete footings is unknown but believed to be adequate as there is little evidence of differential settlement or cracking in the concrete slabs or stem walls. The frame of steel columns and beams contain surface rust but are generally deemed adequate. The building has not been used for many years, but its primary structural components are in viable condition.

While the substantial foundation and steel structural system is reasonably sound, all other building material components are not sound. All substructure, roofing, walls, windows, doors, frames, partitions and finishes have deteriorated beyond reuse. The exterior skin of the building is extremely compromised and creates continuous flying debris during high winds, causing potential life safety hazards to people and surrounding objects, as well as hazardous litter on the adjacent airport runway.

A June 2001 environmental clean up removed a variety of solid waste and hazardous sediment materials found within the building, but did not abate existing hazardous building materials containing asbestos and lead. The site immediately surrounding the building is cluttered with miscellaneous debris. These conditions must be dealt with prior to any demolition or preservation.

If preservation of the building is an alternative, all structural system components and building materials will require stabilization/protection prior to restoration. Without stabilization/protection, the eventual cost of restoration may outweigh the benefits of preservation. The structural frame may become unsuitable for future restoration thereby requiring replacement in kind of individual structural elements or the complete structural system.

Two general stabilization/protection options are:

1. Replace the building shell with interim materials that provide protection for the structure. Use less expensive materials than the actual restoration materials, such as galvanized sheet metal panels, roof and walls.

2. A less costly and less effective option is to remove much of the existing shell materials from the surface of the structure thereby minimizing the opportunity for the corrosive elements to be trapped against the structure. The steel will be directly exposed to the corrosive elements, not as desirable as protection from the elements but far better than the current situation. Being exposed to the elements allows the steel to be rinsed during the regular heavy rains and winds common to Dutch Harbor.

The options noted are general and not intended to provide an actual design for stabilization. The stabilization effort required will vary depending on the preservation goals for the building.

CONCLUSION

Limitations

This report was prepared specifically for the use of the Contracting Agency. The assessment of the subject building is based on limited historical and field research, materials sampling, and testing. Review of the original construction documents was limited to the partial set provided, as the set provided by the Contracting Agency was incomplete. HABS drawings were found to contain nominal inaccuracies and should not be considered record drawings unless proper corrections are made to the documentation.

These field assessment and materials testing results should not be interpreted as final or conclusive. This report provides, based on the limits of investigation, our evaluation regarding the structural integrity and viability of the building in its current state.

BIBLIOGRAPHY

BIBLIOGRAPHY

BIBLIOGRAPHY

Cook, Linda, World War II in the Aleutians: Alternatives for Preservation and Interpretation of Historic Resources at Dutch Harbor Naval Operating Base and Fort Mears, U.S. Army National Historic Landmark, U.S. Department of Interior, National Park Service, Alaska Regional Office, Anchorage, Alaska, 1992.

Ibid, "The Landscape of a Landmark: National Historic Landmark Preservation in the Aleutian Islands", Alaska at War, 1941-1945, The Forgotten War Remembered, Papers from the Alaska at War Symposium, Anchorage, Alaska, November 11-13, 1993, edited by Fern Chandonnet, Alaska at War Committee, Anchorage, Alaska,1995

Denfeld, D. Colt, The Defense of Dutch Harbor, Alaska From Military Construction to Base Cleanup, U.S. Army Corps of Engineers, Alaska District, December 1987

EMCON Alaska, Inc., Final Environmental Assessment Report, Lease Lots 6A, 6B, and 7, Unalaska Airport, Dutch Harbor, Alaska, July 1999

Faulkner, Sandra McDermott, Robert L. S. Spude, Naval Operating Base, Dutch Harbor and Fort Mears: Historic American Buildings Survey Recording Project Report, National Park Service, Alaska Region, Anchorage, Alaska, 1987

Faulkner, Sandra, Architectural Data Form 10-920, HABS No. AK-1-UNAK-2-C, July 7, 1986

Gross, Nancy, City of Unalaska, Unalaska Historic Preservation Plan, 1994-1995

National Park Service, National Historic Landmarks Program, Official Website, www.nps.gov, accessed June 10,2003

Shannon & Wilson, Inc., Cleanup and Sampling Activities, Torpedo Building, Unalaska Airport, Dutch Harbor, Alaska, June 2001

Ibid, Pre-Demolition Building Material Assessment, Torpedo Building, Unalaska Airport, Dutch Harbor, Alaska, December 1997

APPENDICES

APPENDIX A – Site Maps/Plans
APPENDIX B – Referenced Photos
APPENDIX C – Architectural Drawings
APPENDIX D – Structural Current Conditions Documentation
APPENDIX E– Structural Evaluation Criteria

APPENDIX A

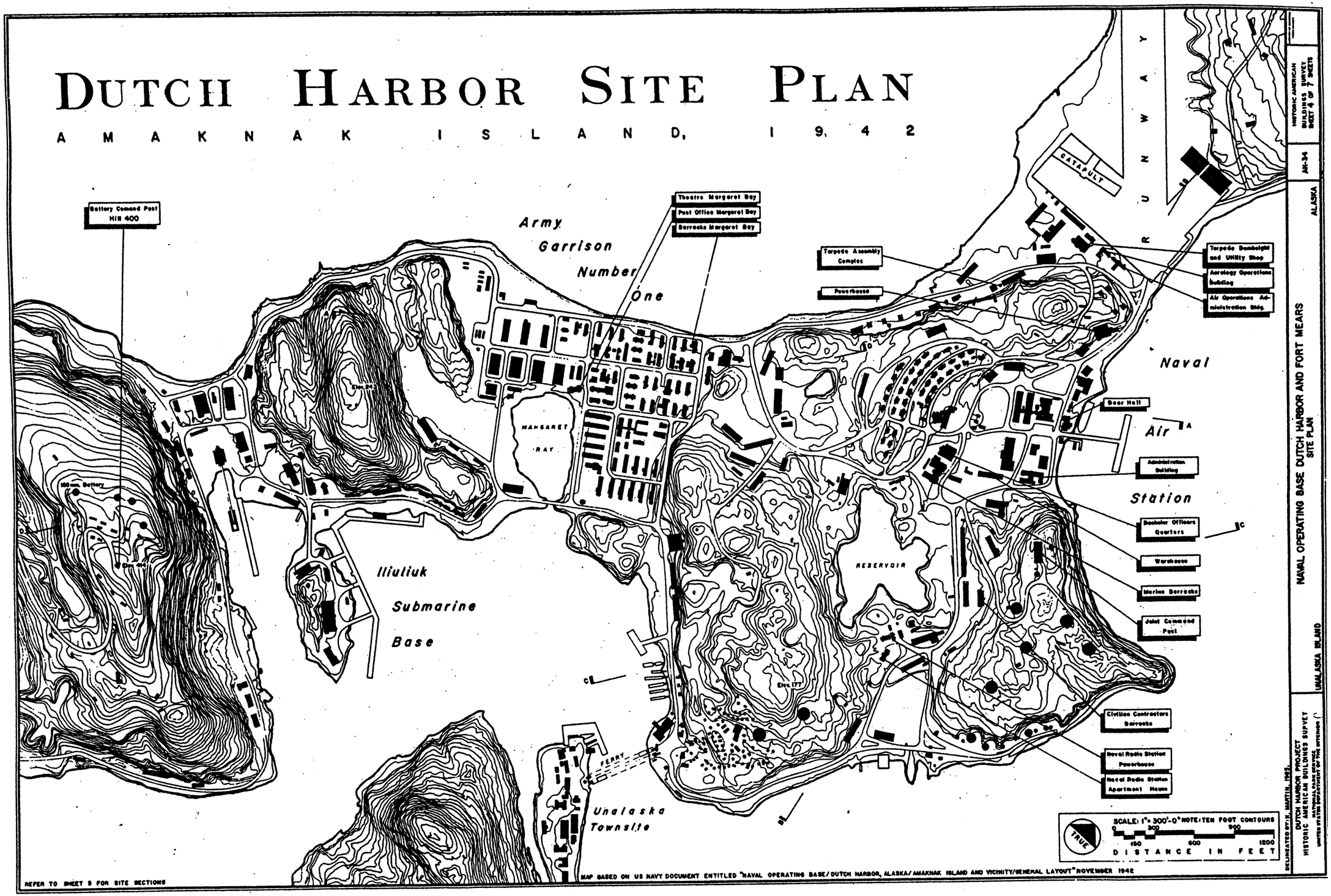
SITE MAPS / PLANS

SITE MAPS / PLANS

MAP A

DUTCH HARBOR SITE PLAN

A M A K N A K I S L A N D, 1 9 4 2



REFER TO SHEET 5 FOR SITE SECTIONS

MAP BASED ON US NAVY DOCUMENT ENTITLED "NAVAL OPERATING BASE/DUTCH HARBOR, ALASKA/AMAKNAK ISLAND AND VICINITY/GENERAL LAYOUT" NOVEMBER 1942

DELINEATED BY H. MARTIN, 1992.

DUTCH HARBOR PROJECT
HISTORIC AMERICAN BUILDINGS SURVEY
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
SITE PLAN

UNALASKA ISLAND

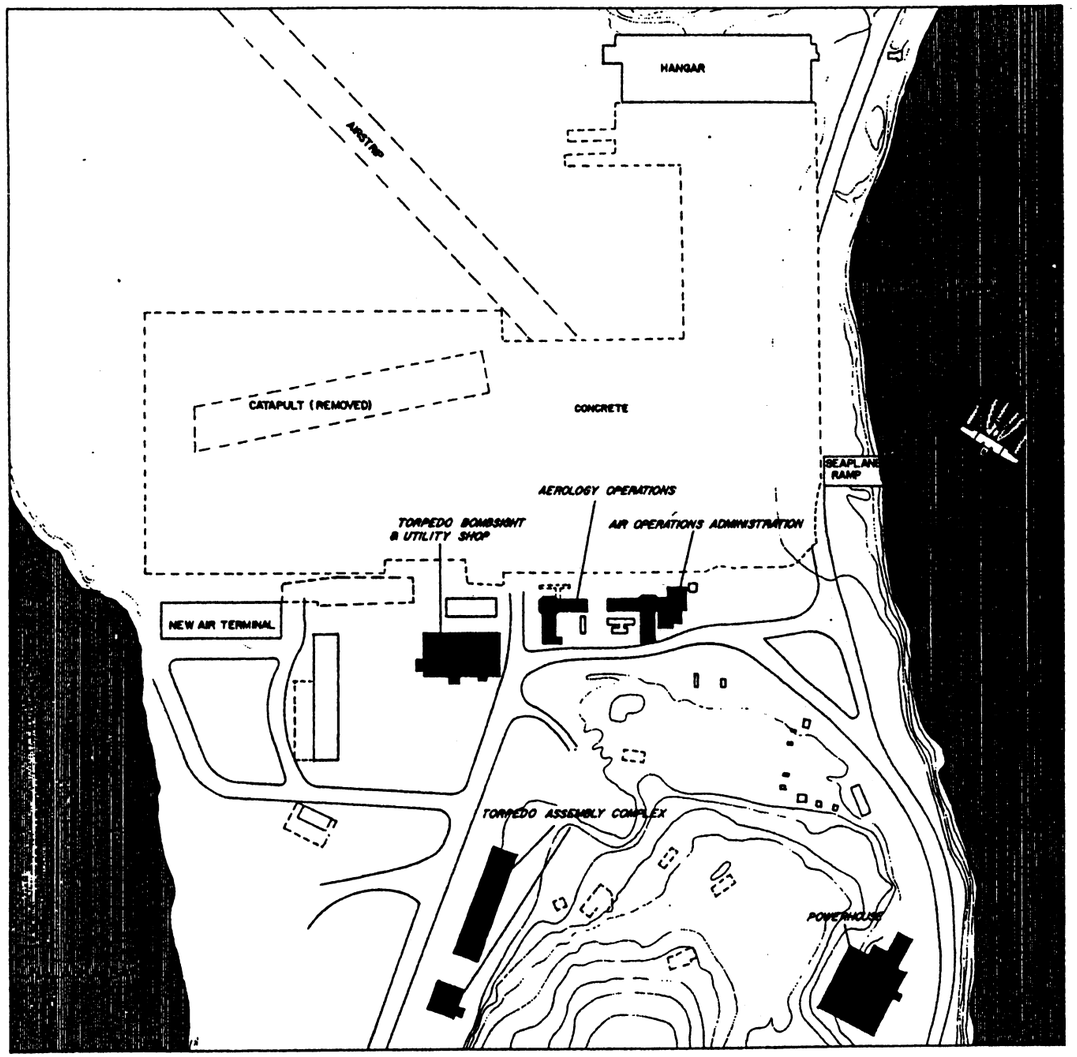
ALASKA

AK-34

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 4 OF 7 SHEETS

MAP B

NAVAL AIR STATION



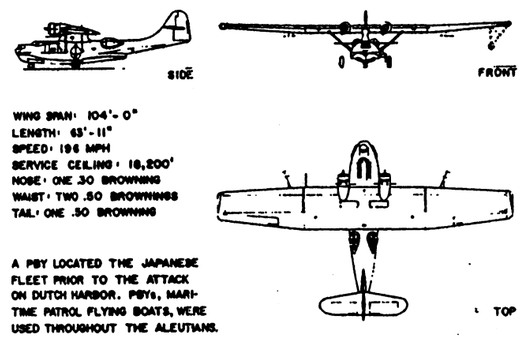
NAVAL AIR STATION SITE PLAN

SCALE: 1" = 100'-0"

0 100 200 300 600 FEET

0 30 60 90 180 METERS

PBY, THE CATALINA



WING SPAN: 104'-0"
LENGTH: 63'-11"
SPEED: 196 MPH
SERVICE CEILING: 18,200'
NOSE: ONE .30 BROWNING
WAIST: TWO .50 BROWNINGS
TAIL: ONE .50 BROWNING

A PBY LOCATED THE JAPANESE FLEET PRIOR TO THE ATTACK ON DUTCH HARBOR. PBYs, MARITIME PATROL FLYING BOATS, WERE USED THROUGHOUT THE ALEUTIANS.

Source; Combat Aircraft of WW II
Bookthrift Inc. 1979
Author; Bill Gunston

0 10 20 30 40 80 FEET

0 5 10 15 METERS

A NAVAL AIR STATION WAS ESTABLISHED AT DUTCH HARBOR IN 1941. BECAUSE OF TERRAIN UNSUITABLE FOR A FULL-SCALE AIRFIELD, THE STATION INITIALLY SERVED ONLY SEAPLANES AND CATALINA FLYING BOATS (PBYS). TO ACCOMMODATE LAND-BASED PLANES THE NAVY CONSTRUCTED A SMALL LANDING STRIP EQUIPPED WITH CATAPULT AND ARRESTING GEAR, SIMILAR TO THAT OF AN AIRCRAFT CARRIER. A SHORT (4,365 FEET) RUNWAY WAS SUBSEQUENTLY CARVED OUT OF ROCK AT THE FOOT OF MOUNT BALLYHOO FOR FIGHTER AIRCRAFT. THE NAVAL AIR STATION INCLUDED A DOUBLE HANGAR, AEROLOGY AND ADMINISTRATION BUILDINGS, AND A COMPLEX OF STRUCTURES FOR ASSEMBLING AND STORING AVIATION SUPPLIES AND TORPEDOS. THE STATION FORMED A PART OF THE NAVAL OPERATING BASE IN 1942, AND WAS REDUCED TO A NAVAL AIR FACILITY IN 1944. SINCE 1947, THE AIRFIELD AND RELATED BUILDINGS HAVE SERVED AS THE DUTCH HARBOR COMMERCIAL AIRPORT.

HISTORIC AMERICAN BUILDINGS SURVEY sheet 6 of 7 sheets

SURVEY NO. AK-34

ALASKA

NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
NAVAL AIR STATION SITE PLAN

UNALASKA ISLAND

DUTCH HARBOR PROJECT

drawn by: BRIAN D. BARTHOLOMEW, DAVE SHOW, 1985

BASIS AND LOCATION OF STRUCTURE

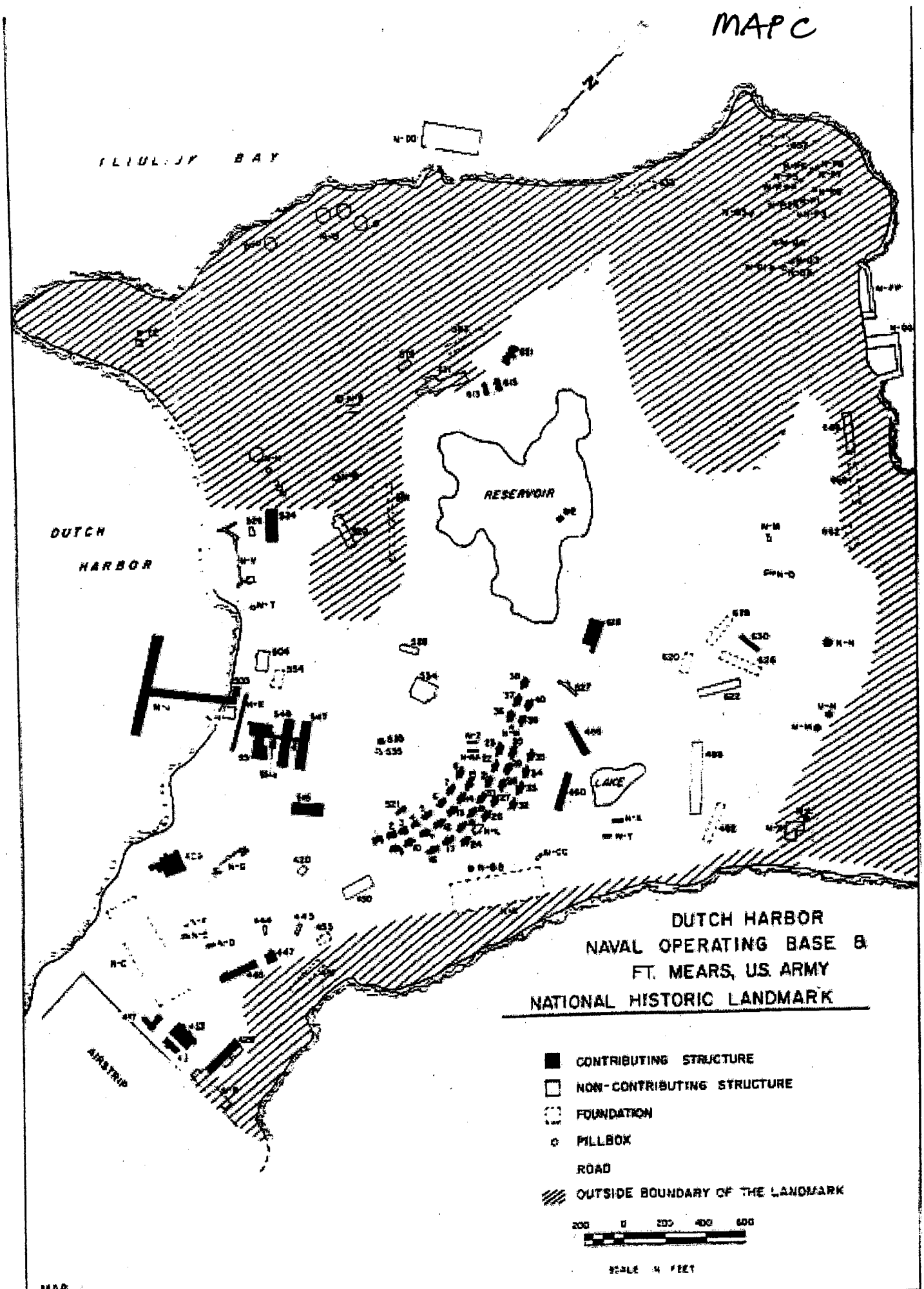
NATIONAL PARK SERVICE

UNITED STATES DEPARTMENT OF THE INTERIOR

HISTORIC AMERICAN BUILDINGS SURVEY - NATIONAL PARK SERVICE - NAME OF DELINEATOR, DATE OF THE DRAWING

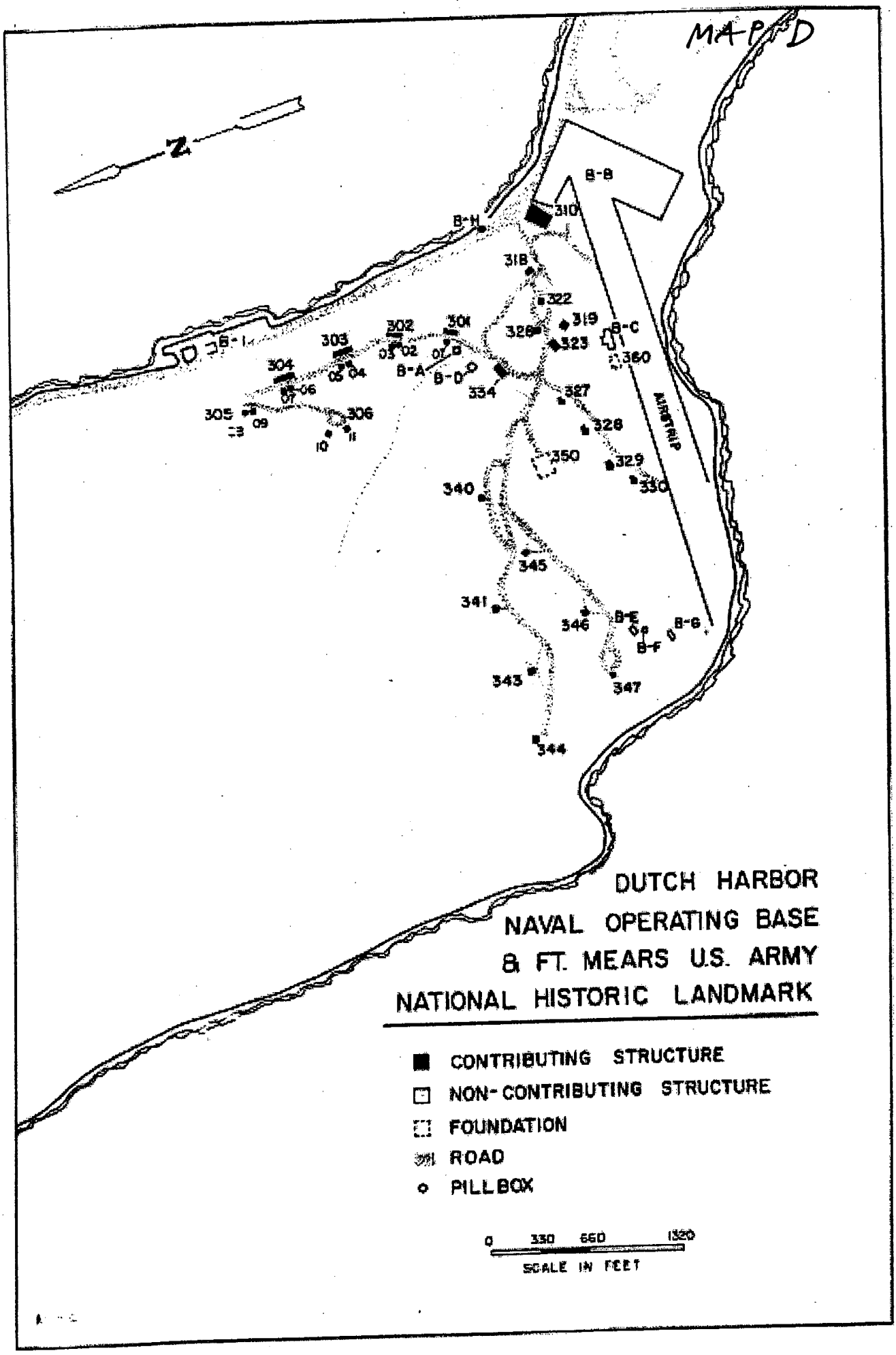
IF REPRODUCED PLEASE CREDIT

MAP C



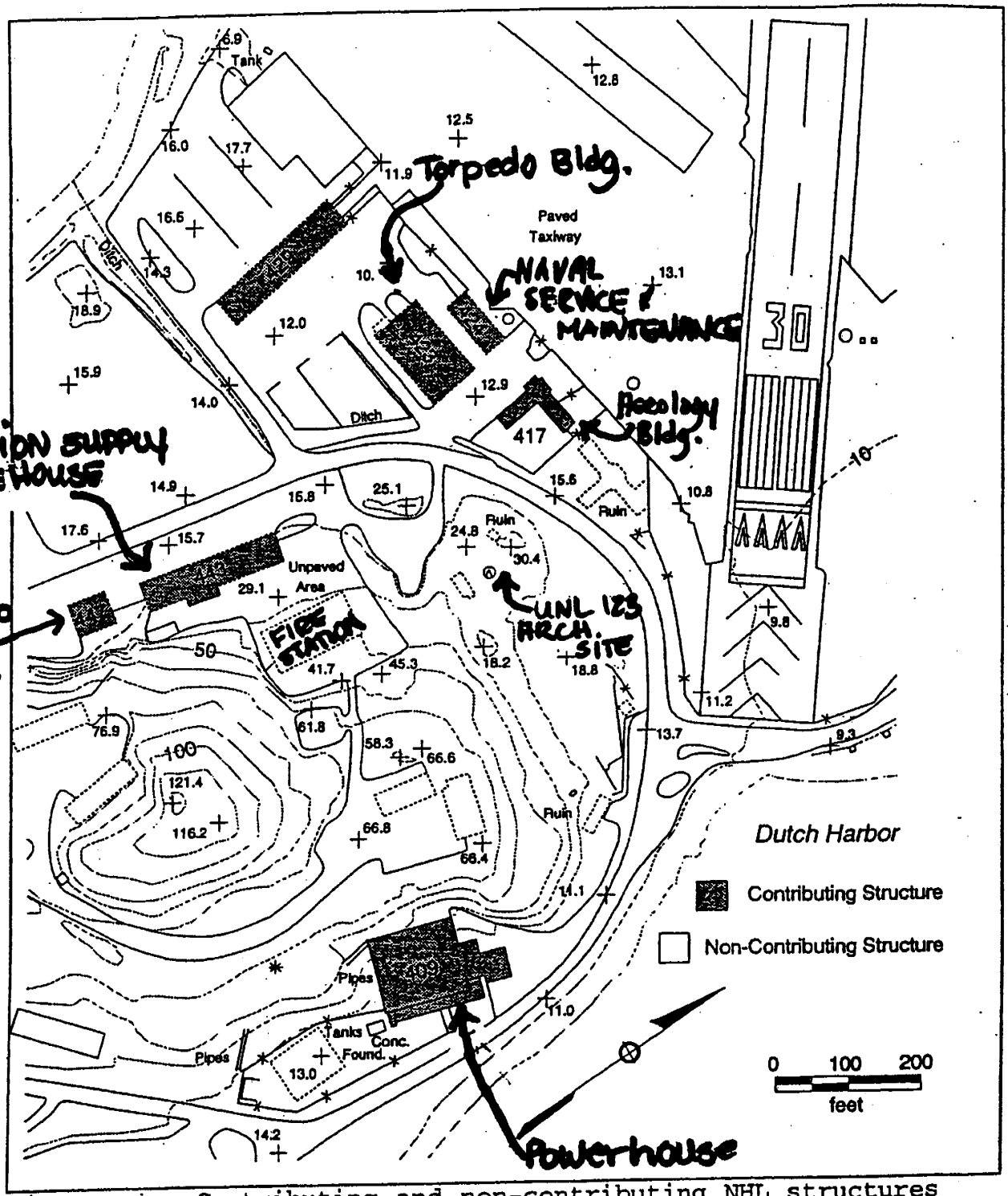
MAP

MAP COURTESY NPS - NHL BOUNDARY REVIEW, 1989



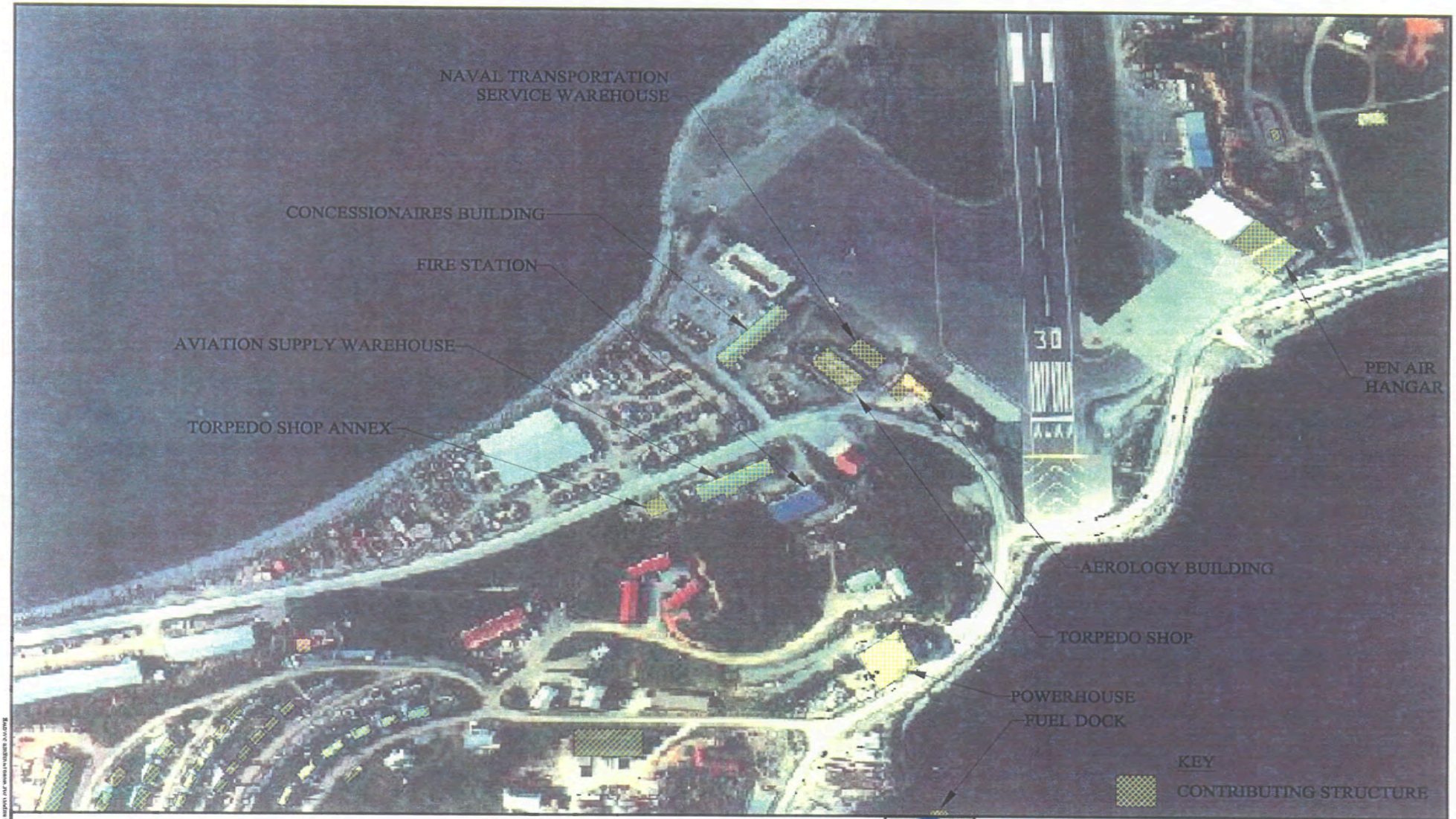
MAP COURTESY NPS - NHL BOUNDARY REVIEW, 1989

MAP E



MAP COURTESY NPS - NHL BOUNDARY REVIEW, 1989

Contributing and non-contributing NHL structures along the southern margin of the airport.



GRAPHIC SCALE

100' 0 50' 100' 200' 400'

NORTH

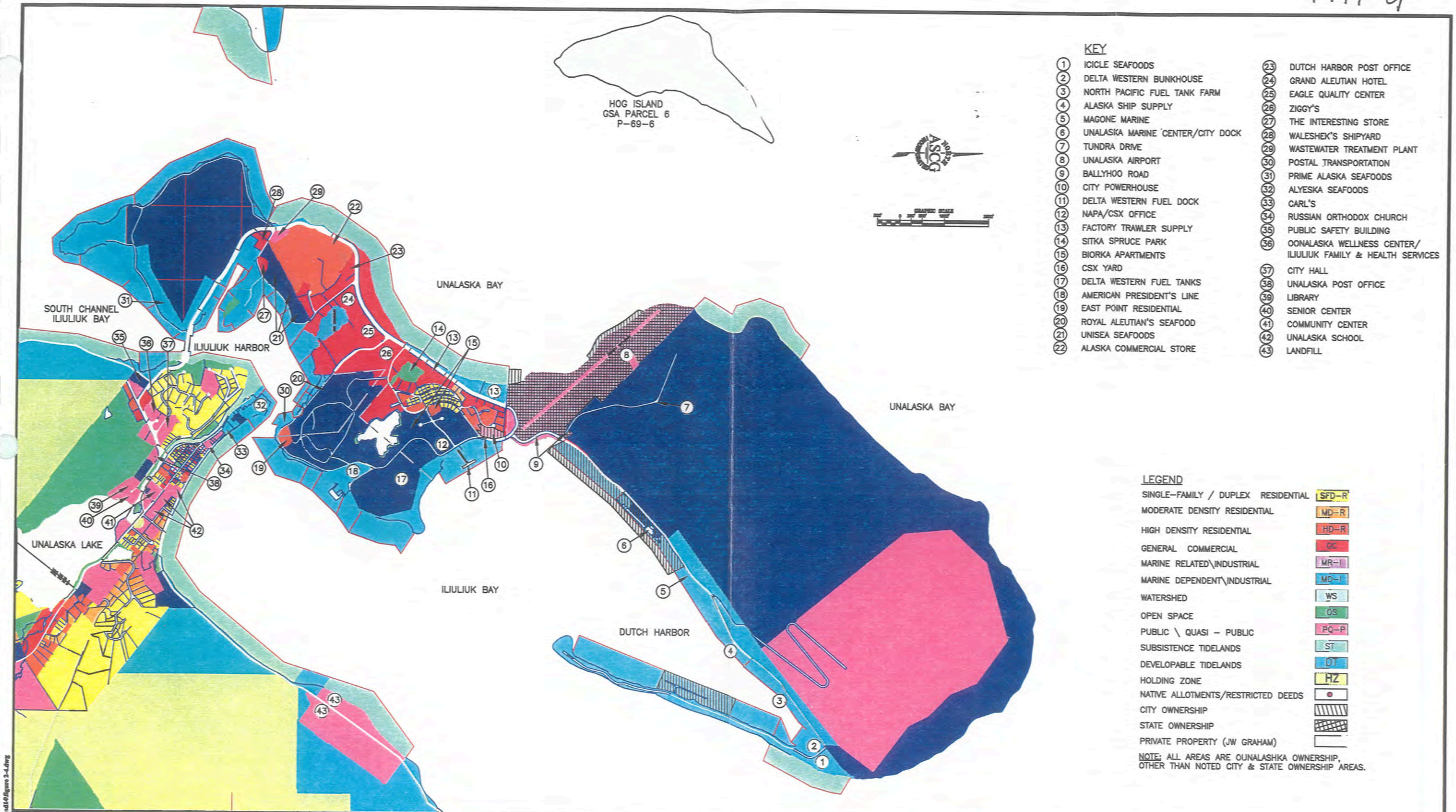
NATIONAL HISTORIC LANDMARK CONTRIBUTING STRUCTURES

Figure 5.0

Oct. 2003

MAP F

MAP G



KEY

1. ICICLE SEAFOODS
2. DELTA WESTERN BUNKHOUSE
3. NORTH PACIFIC FUEL TANK FARM
4. ALASKA SHIP SUPPLY
5. MAGONE MARINE
6. UNALASKA MARINE CENTER/CITY DOCK
7. TUNDRA DRIVE
8. UNALASKA AIRPORT
9. BALLYHOO ROAD
10. CITY POWERHOUSE
11. DELTA WESTERN FUEL DOCK
12. NAPA/CSX OFFICE
13. FACTORY TRAWLER SUPPLY
14. SITKA SPRUCE PARK
15. BIORKA APARTMENTS
16. CSX YARD
17. DELTA WESTERN FUEL TANKS
18. AMERICAN PRESIDENT'S LINE
19. EAST POINT RESIDENTIAL
20. ROYAL ALEUTIAN'S SEAFOOD
21. UNISEA SEAFOODS
22. ALASKA COMMERCIAL STORE
23. DUTCH HARBOR POST OFFICE
24. GRAND ALEUTIAN HOTEL
25. EAGLE QUALITY CENTER
26. ZIGGY'S
27. THE INTERESTING STORE
28. WALESHEK'S SHIPYARD
29. WASTEWATER TREATMENT PLANT
30. POSTAL TRANSPORTATION
31. PRIME ALASKA SEAFOODS
32. ALYESKA SEAFOODS
33. CARL'S
34. RUSSIAN ORTHODOX CHURCH
35. PUBLIC SAFETY BUILDING
36. OONALASKA WELLNESS CENTER/ ILIULIUK FAMILY & HEALTH SERVICES
37. CITY HALL
38. UNALASKA POST OFFICE
39. LIBRARY
40. SENIOR CENTER
41. COMMUNITY CENTER
42. UNALASKA SCHOOL
43. LANDFILL

LEGEND

SINGLE-FAMILY / DUPLEX RESIDENTIAL	SFD-R
MODERATE DENSITY RESIDENTIAL	MD-R
HIGH DENSITY RESIDENTIAL	HD-R
GENERAL COMMERCIAL	GC
MARINE RELATED\INDUSTRIAL	MR-I
MARINE DEPENDENT\INDUSTRIAL	MD-I
WATERSHED	WS
OPEN SPACE	OS
PUBLIC \ QUASI - PUBLIC	PQ-P
SUBSISTENCE TIDELANDS	ST
DEVELOPABLE TIDELANDS	DT
HOLDING ZONE	HZ
NATIVE ALLOTMENTS/RESTRICTED DEEDS	
CITY OWNERSHIP	
STATE OWNERSHIP	
PRIVATE PROPERTY (JW GRAHAM)	

NOTE: ALL AREAS ARE OUNALASHKA OWNERSHIP, OTHER THAN NOTED CITY & STATE OWNERSHIP AREAS.

Source: City of Unalaska, Alaska
Official zoning streets and highway map
February 27, 1996, revised 1999

ASCG INCORPORATED
ENGINEERS • ARCHITECTS • SURVEYORS • INSPECTION SERVICES

TRANSPORTATION & PUBLIC FACILITIES • STATE OF ALASKA

Unalaska Airport Issues
Land Status Map
Community of Unalaska

Figure 2.4

Nov. 2001

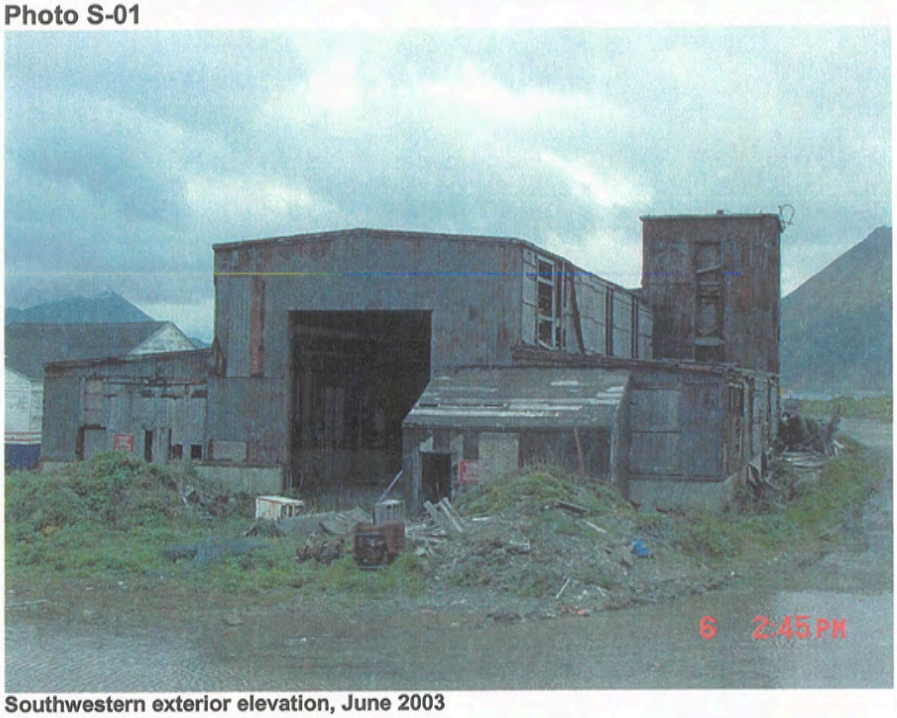
J:\11196236 Unk airpo
ed14\figure 2-4.dwg

APPENDIX B

REFERENCED PHOTOS

APPENDIX B

Photo S-01



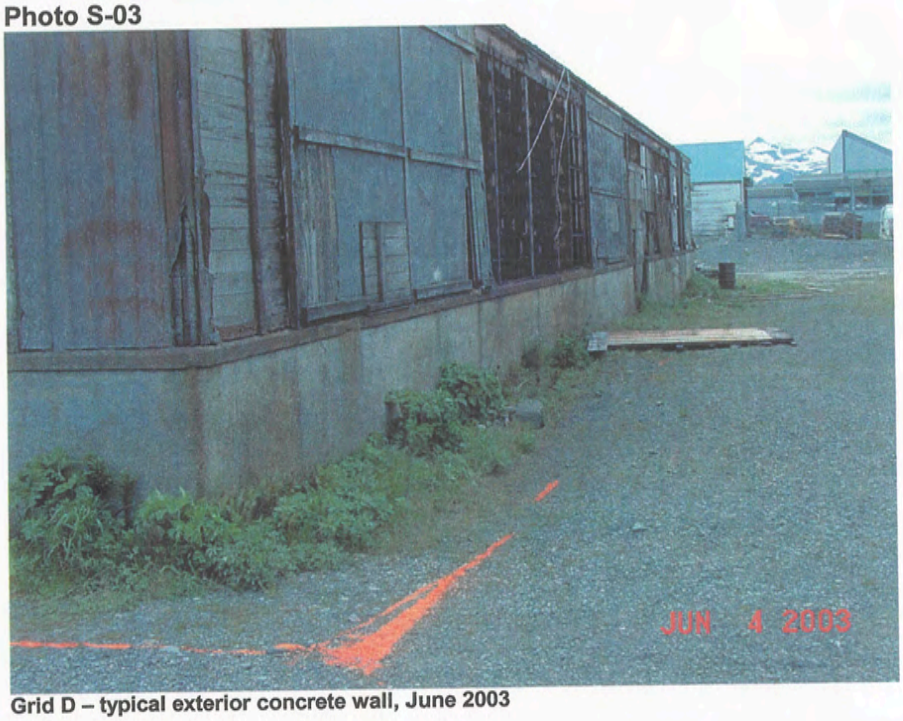
Southwestern exterior elevation, June 2003

Photo S-02

Northeast exterior elevation, June 2003

APPENDIX B

Photo S-03

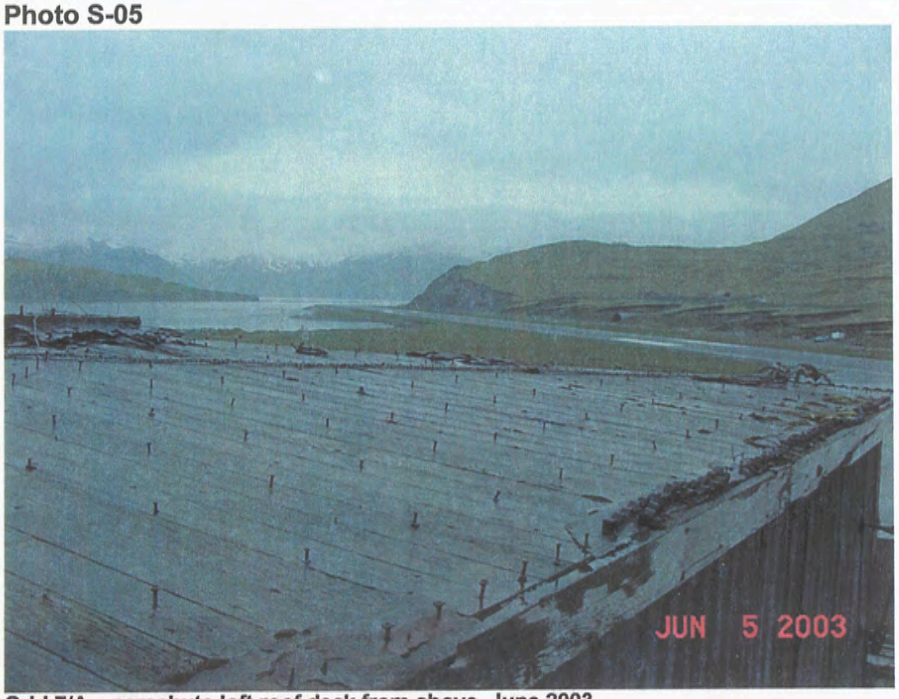


Grid D – typical exterior concrete wall, June 2003

Photo S-04

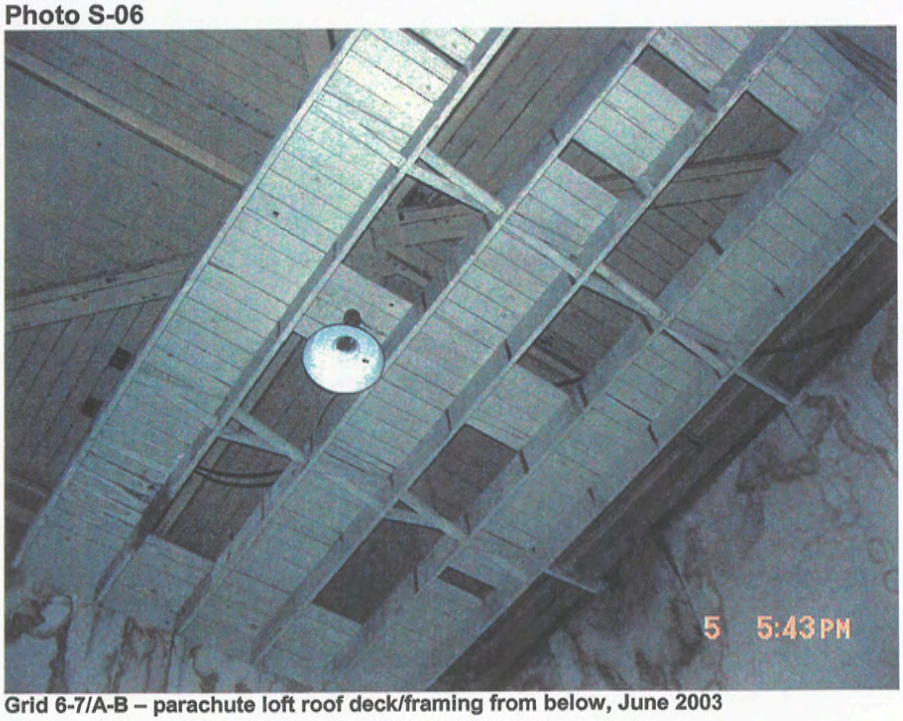
Grid 1/C – exterior concrete wall, damaged corner , June 2003

Photo S-05



Grid 7/A – parachute loft roof deck from above, June 2003

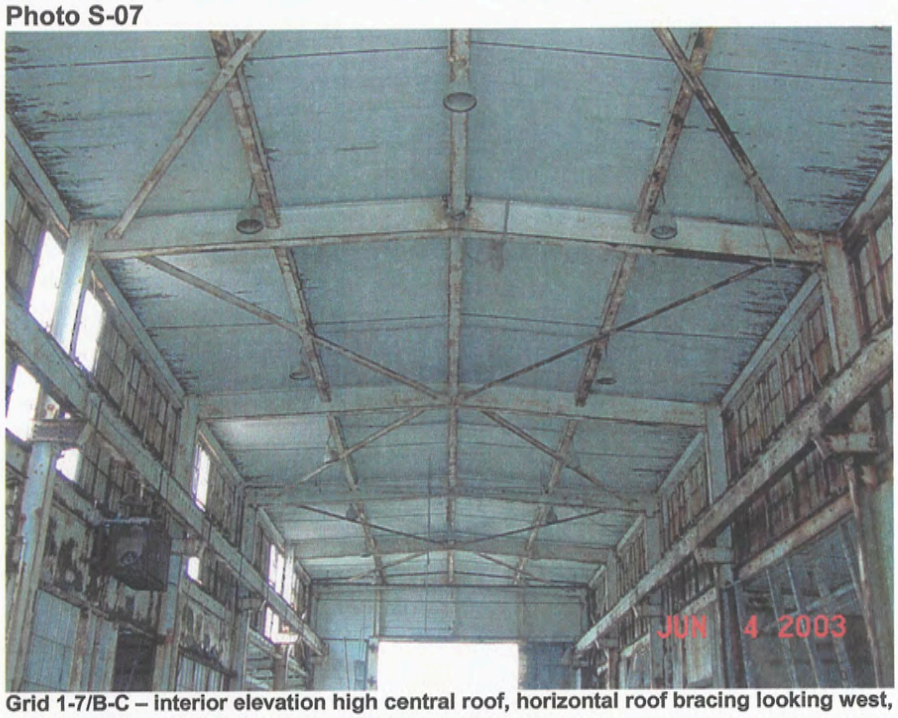
Photo S-06



Grid 6-7/A-B – parachute loft roof deck/framing from below, June 2003

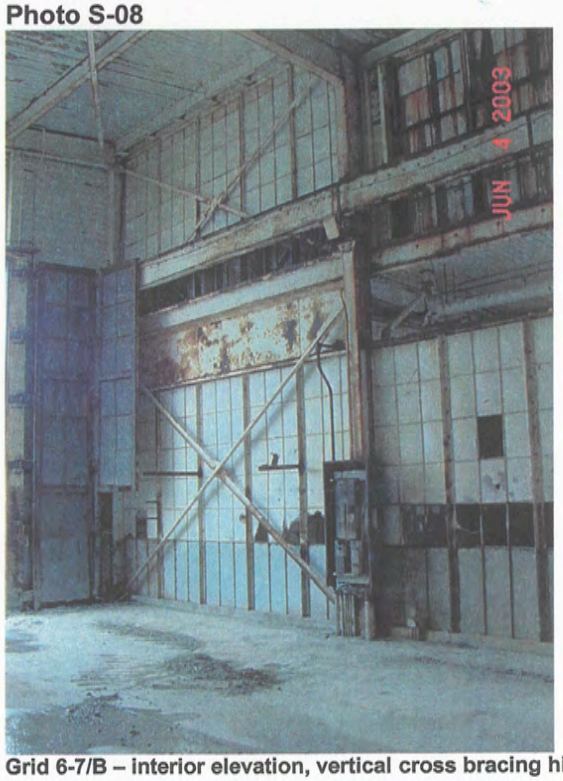
APPENDIX B

Photo S-07



Grid 1-7/B-C – interior elevation high central roof, horizontal roof bracing looking west, June 2003

Photo S-08

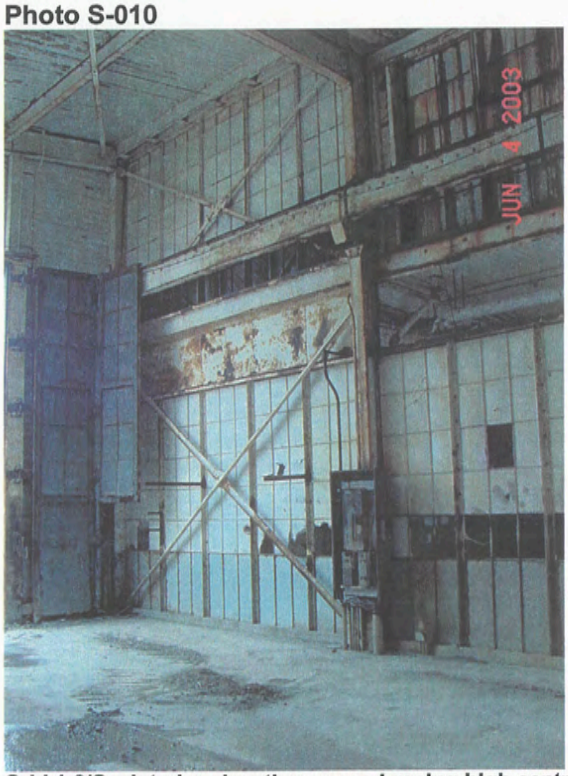


Grid 6-7/B – interior elevation, vertical cross bracing high central roof to SOG , June 2003

Photo S-09

Grid 1-2/B – interior elevation, cross bracing high central roof to low side shed roof, June 2003

Photo S-010



Grid 1-2/C – interior elevation, cross bracing high central roof to low side shed roof, June 2003

APPENDIX B

Photo S-011

Grid 7/A-B – interior elevation, vertical cross bracing parachute loft below intermediate floor, June 2003

Photo S-012

Grid 6/C – interior elevation, south side of concrete shear wall, June 2003

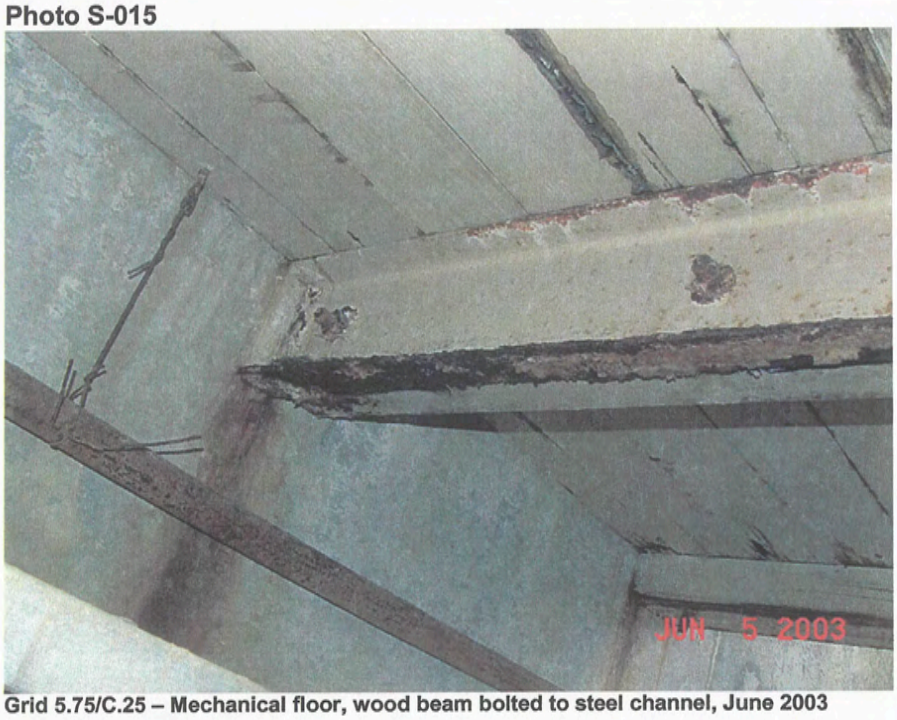
Photo S-013

Grid 7/C – Northeast corner of central H roof, June 2003

Photo S-014

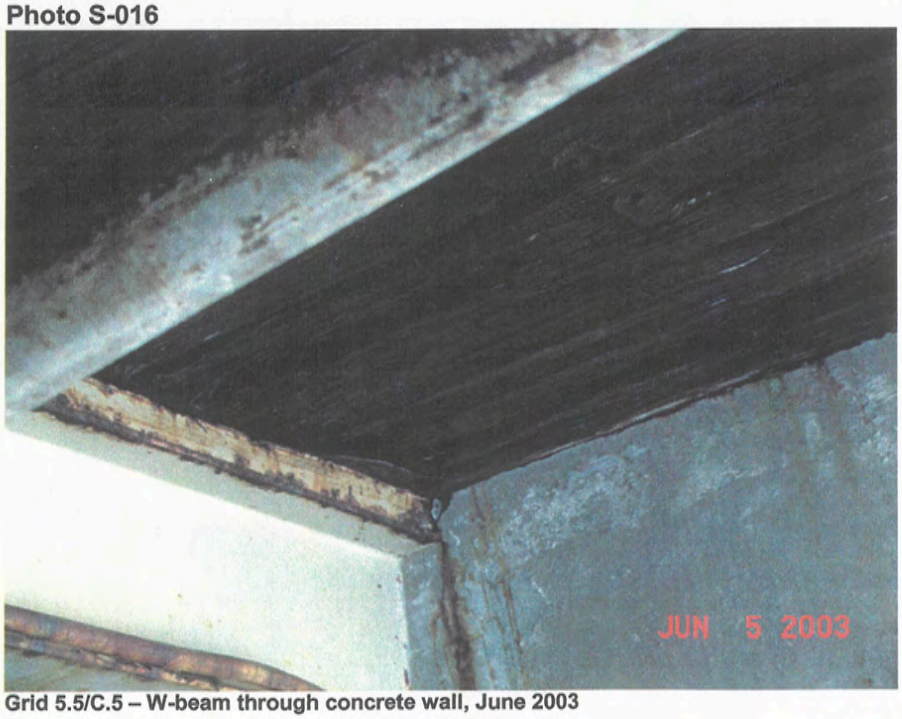
Grid 7/C – top of east girder, misc. steel between girder and roof deck, June 2003

Photo S-015



Grid 5.75/C.25 – Mechanical floor, wood beam bolted to steel channel, June 2003

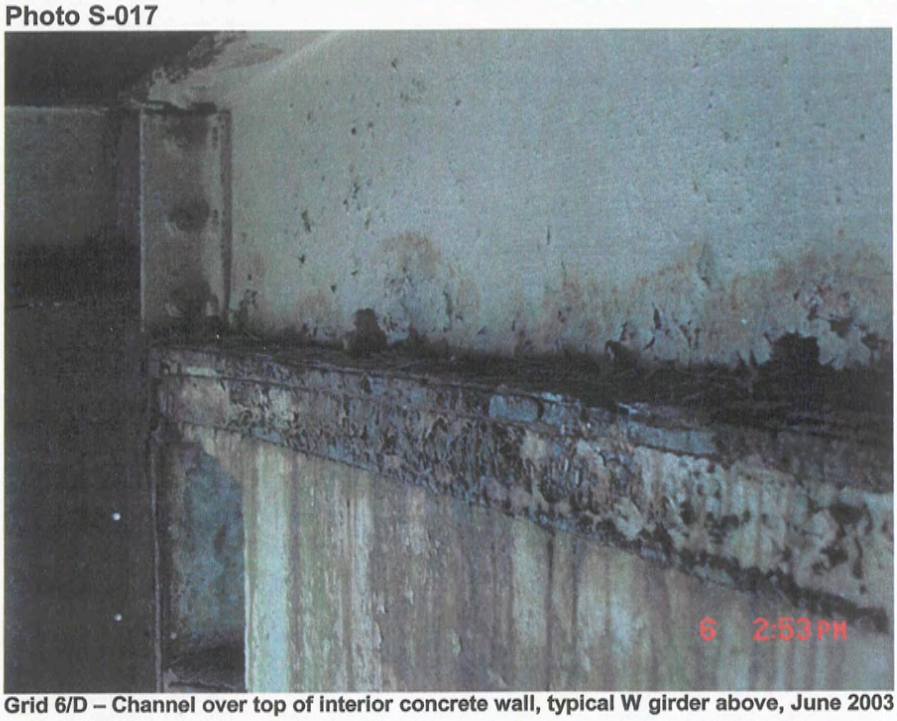
Photo S-016



Grid 5.5/C.5 – W-beam through concrete wall, June 2003

APPENDIX B

Photo S-017

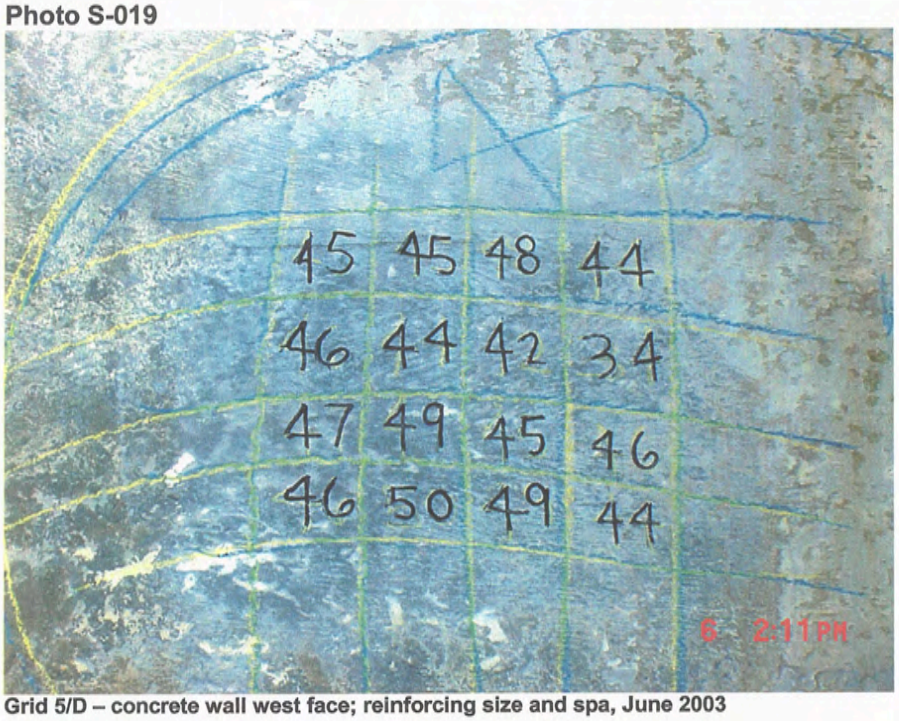


Grid 6/D – Channel over top of interior concrete wall, typical W girder above, June 2003

Photo S-018

Grid 2.5/D – pit, hole through outside wall below outside grade, patched, June 2003

Photo S-019



Grid 5/D – concrete wall west face; reinforcing size and spa, June 2003

Photo S-020

Slab on grade, reinforcing size and space, June 2003

Photo S-021

Grid 2/C-D – slab on grade, toilet room, June 2003

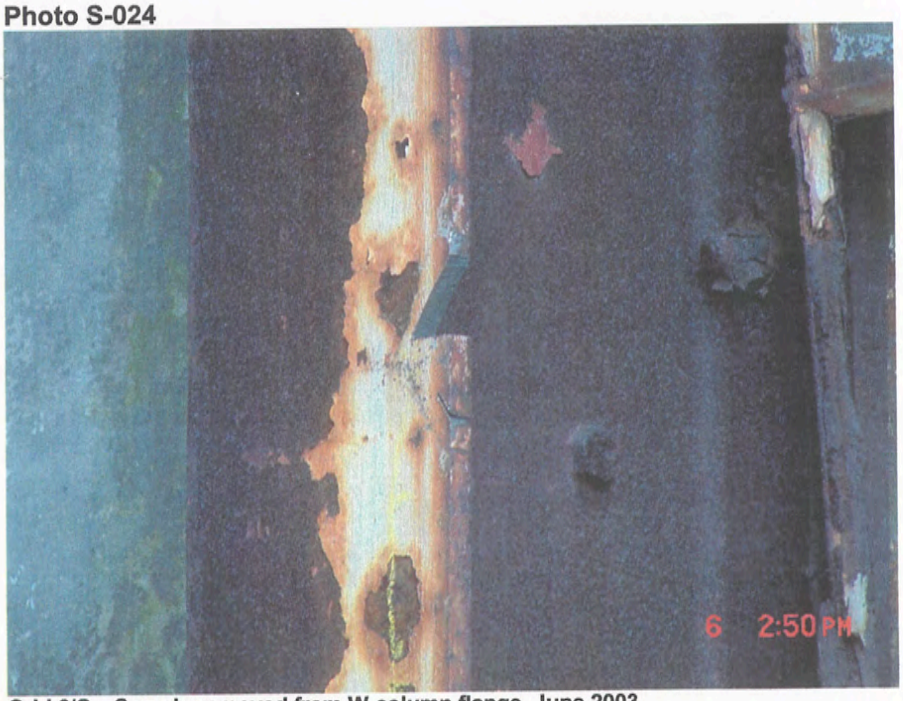
Photo S-022

Grid 3-4/C-D –east floor drain, delam/grade away from bottom of slab on grade, June 2003

Photo S-023

Grid 7/C – Curved sample removed from beam, bottom flange, June 2003

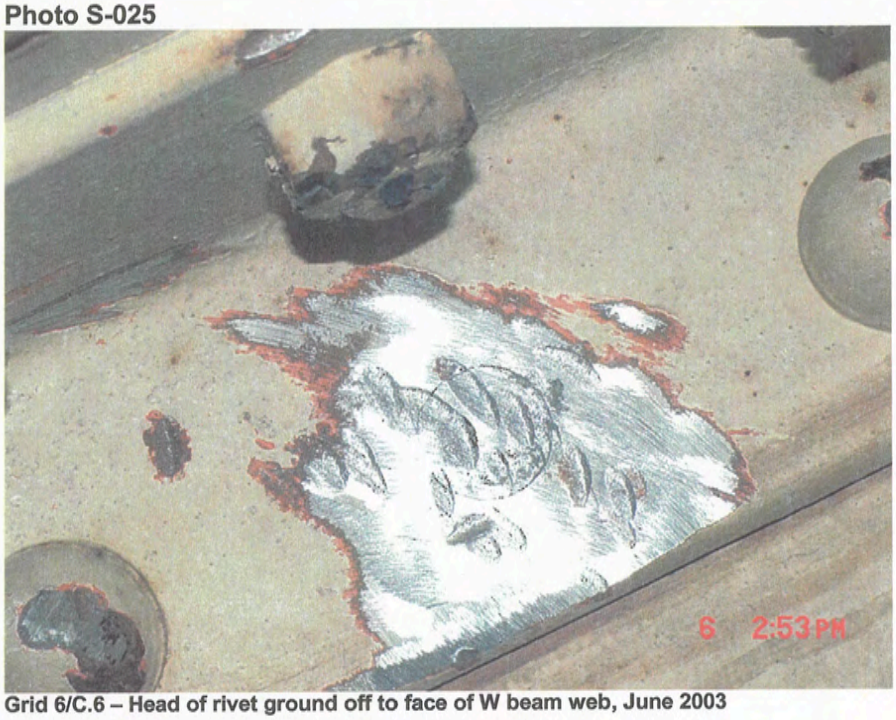
Photo S-024



Grid 6/C – Sample removed from W column flange, June 2003

APPENDIX B

Photo S-025



Grid 6/C.6 – Head of rivet ground off to face of W beam web, June 2003

Photo S-026

Grid 7/A.5 – Steel angle, jamb north side of parachute loft, east windows, June 2003

APPENDIX

Photo A-01

Southwestern corner of building, June 2003

Photo A-02

Wood-frame addition to south elevation, June 2003

APPENDIX

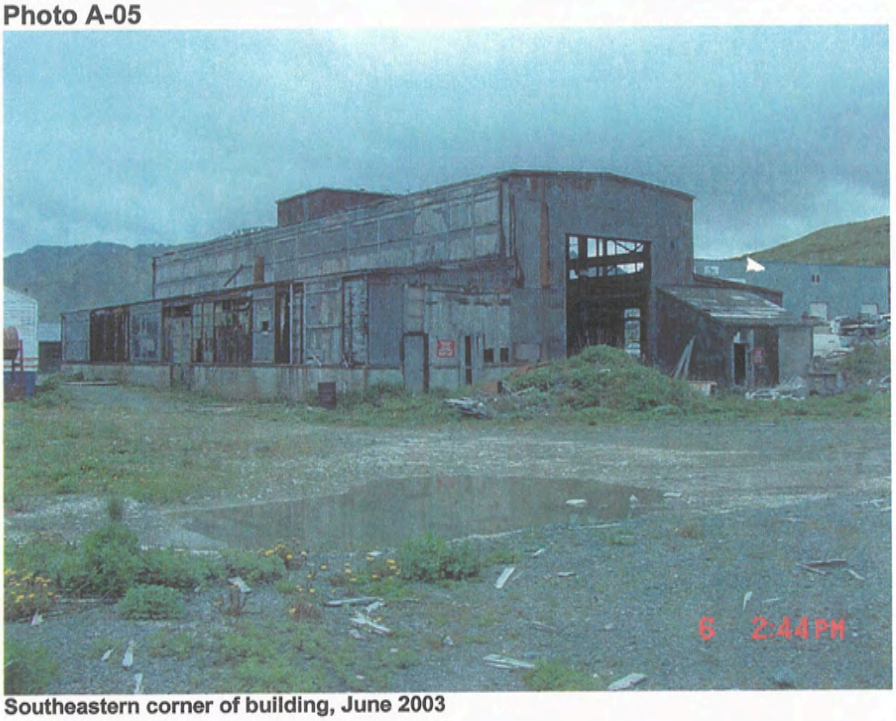
Photo A-03

Northeastern corner of building, June 2003

Photo A-04

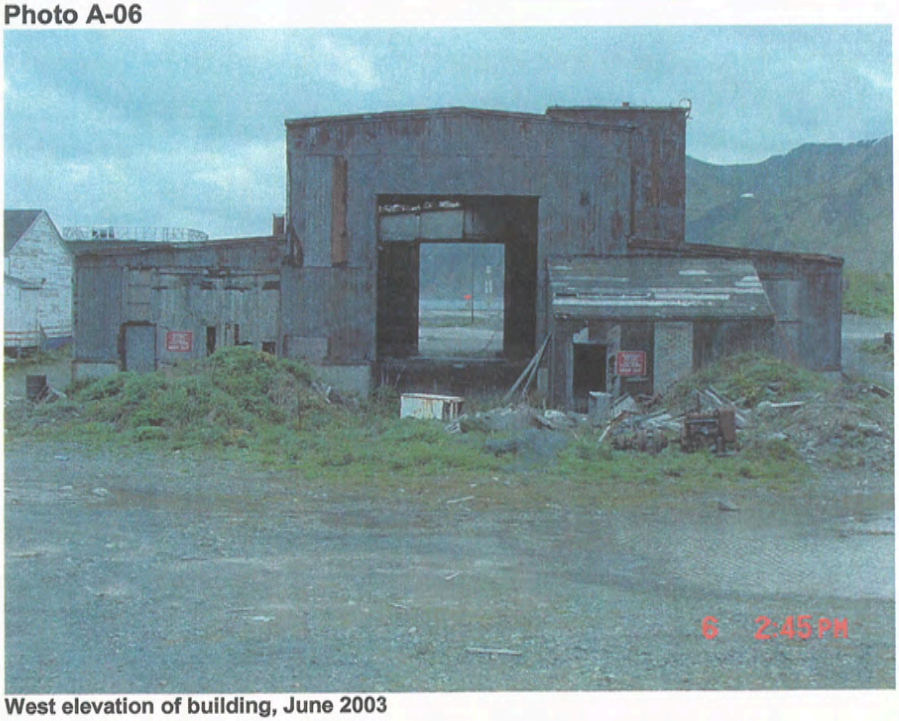
East elevation of building, June 2003

Photo A-05



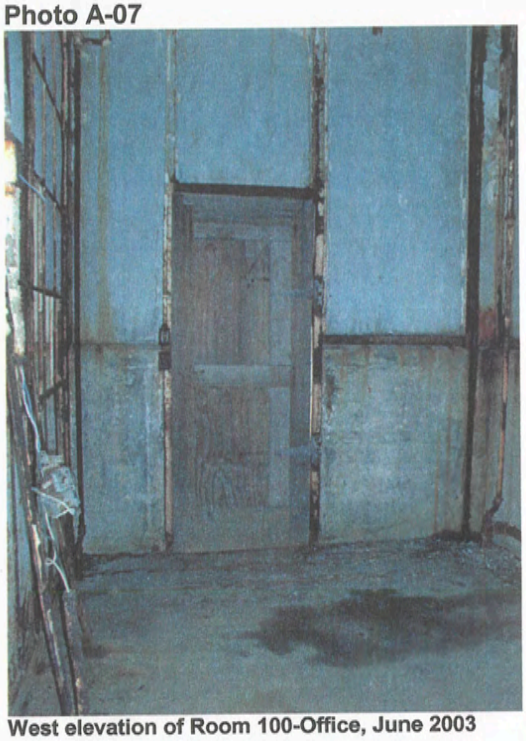
Southeastern corner of building, June 2003

Photo A-06



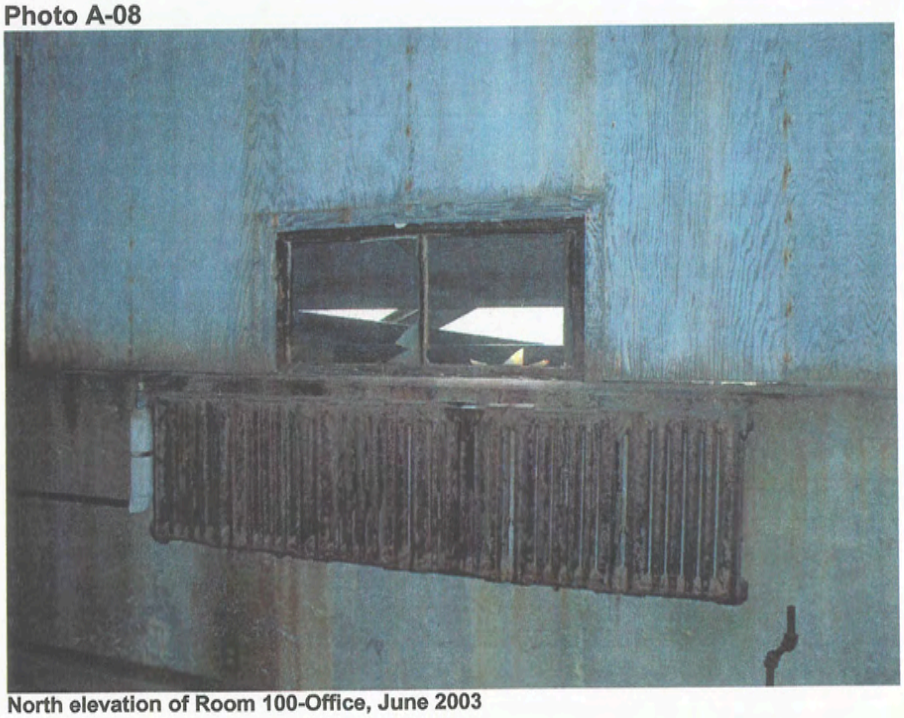
West elevation of building, June 2003

Photo A-07



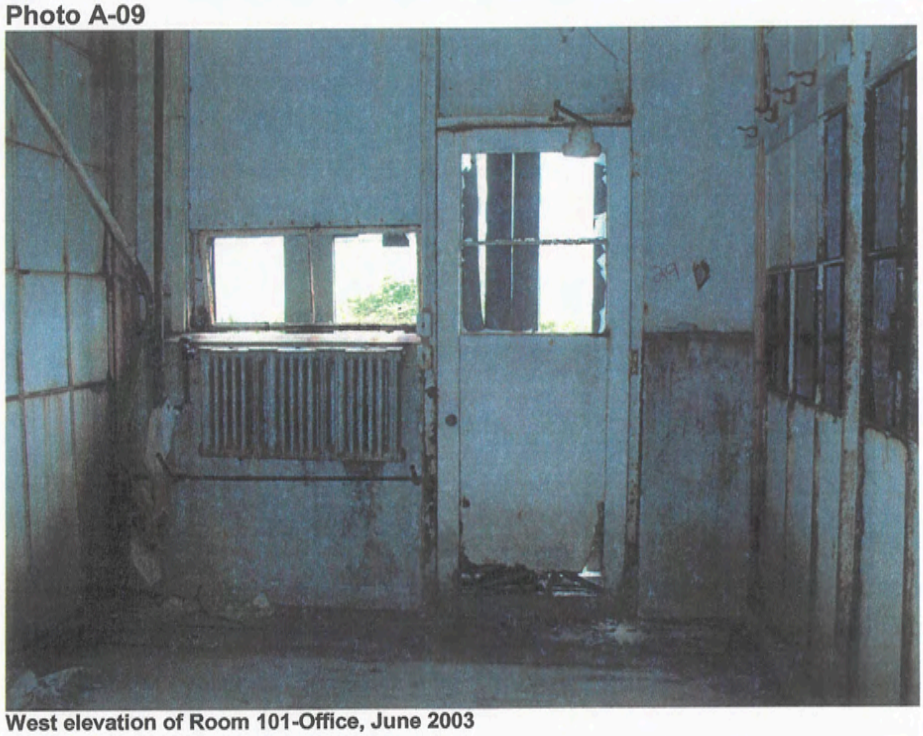
West elevation of Room 100-Office, June 2003

Photo A-08



North elevation of Room 100-Office, June 2003

Photo A-09



West elevation of Room 101-Office, June 2003

Photo A-10

North elevation of Room 102-Passage, June 2003

Photo A-11

South elevation of Room 103-Toilet, June 2003

Photo A-12

Southwest corner of Room 104-Tool & Storage, June 2003

APPENDIX

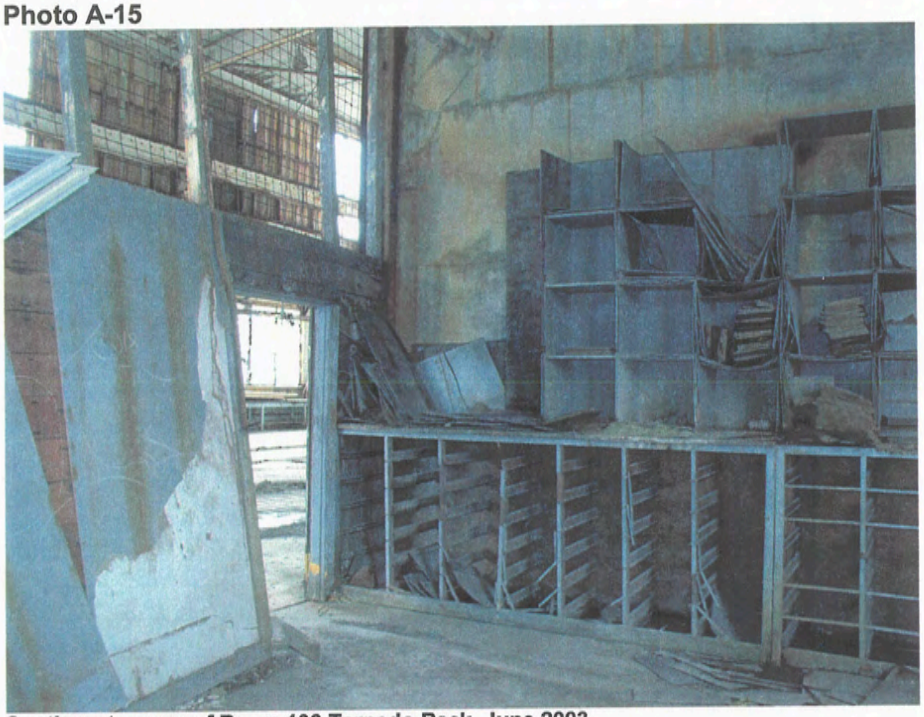
Photo A-13

Boiler Pit, Northwest corner of Room 104-Tool & Storage, June 2003

Photo A-14

Northwest corner of Room 105-Battery Room, June 2003

Photo A-15

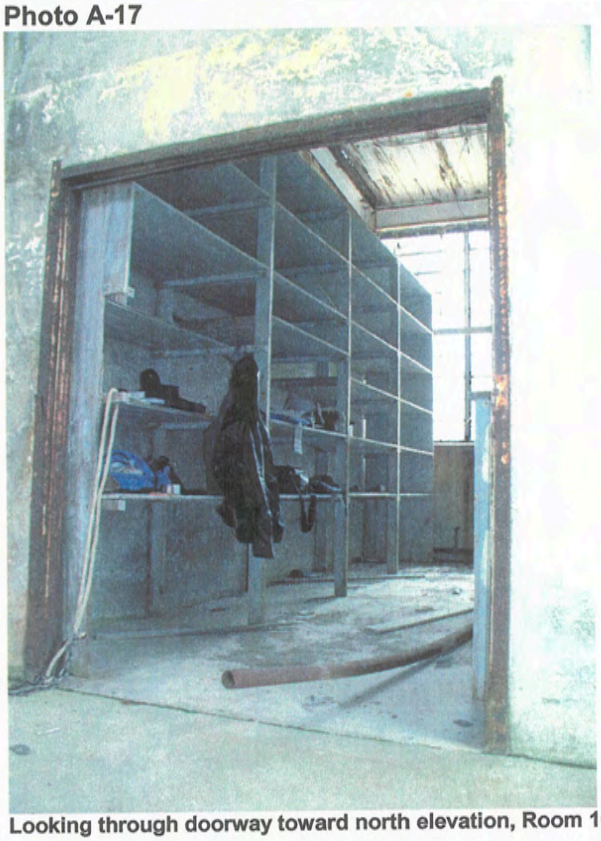


Southwest corner of Room 106-Torpedo Rack, June 2003

Photo A-16

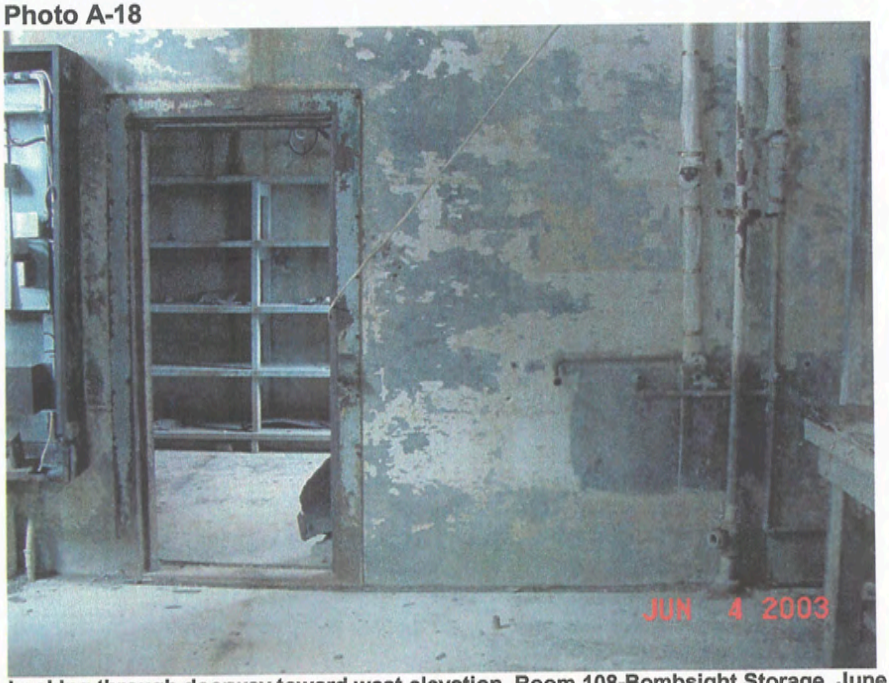
North elevation detail, looking through metal sash window frames to exterior wood decking of Room 106-Torpedo Rack, June 2003

Photo A-17



Looking through doorway toward north elevation, Room 107-Ordnance Storage, June 2003

Photo A-18



Looking through doorway toward west elevation, Room 108-Bombsight Storage, June 2003

Photo A-19

Northwest corner, Room 109-Bombsight Workshop, June 2003

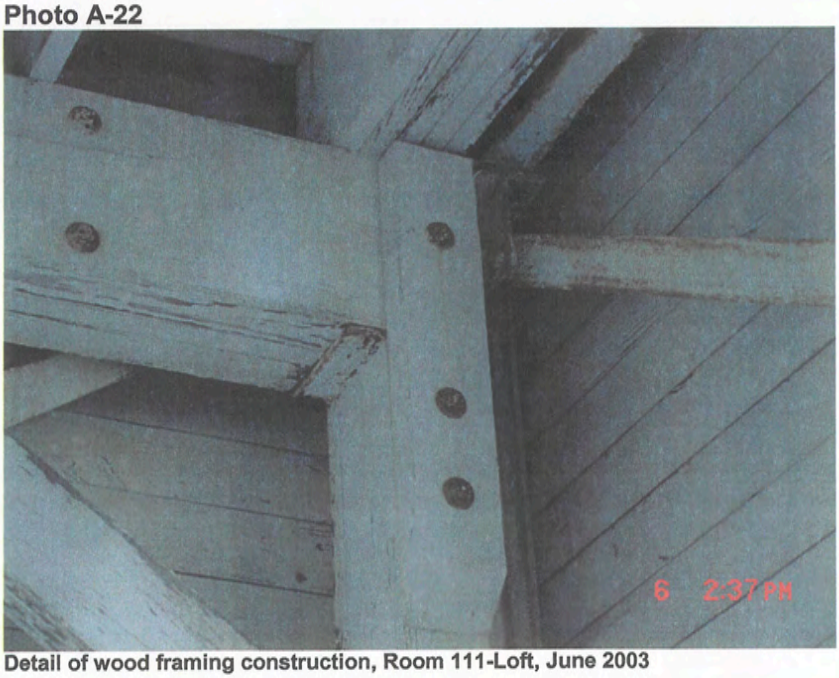
Photo A-20

Looking east, Room 110-Craneway, June 2003

Photo A-21

Southeastern corner at stair to Room 111-Loft, June 2003

Photo A-22



Detail of wood framing construction, Room 111-Loft, June 2003

Photo A-23

Southeastern corner, Room 112-Parachute Pack, June 2003

Photo A-24

Southwestern corner, Room 113-Compressor Room, June 2003

APPENDIX C

ARCHITECTURAL DRAWINGS

TRIM LINE

MISSING DOORS

BB

OFFICE

OFFICE

PASSAGE

MOP SINK

TOILET HEAD

URINALS

BOILER PIT

TOOL + STORAGE

SHELVING

GYRO ROOM BATTERY ROOM

SHELVING

SHELVING

RACK TORPEDO STORAGE

SHELVING

ORDNANCE STORAGE

FAN LOFT ABOVE

BOMBSIGHT STORAGE

BOMBSIGHT WORKSHOP

70'-0" VERIFIED

80'-0"

AA

CONCRETE FILLED TRENCH

CRANE RAIL OVERHEAD

NOT ORIGINAL CONSTRUCTION

NO DOOR OPENING SHOWN; INCORRECT

CRANEWAY

TRENCH

TRENCH

MACHINE SHOP

ELECTRIC SHOP

TORPEDO WORKSHOP.

ORDNANCE + ARMORY.

AA

SECTION CUT INDICATED IS INCORRECT.

CRANE RAIL OVERHEAD

OVERHEAD HOISTWAY

CONCRETE PLINTHS

COMPRESSOR ROOM

TRENCH

PACK PARACHUTE RACK

HYDRAULIC TEST PIT

EXIST SINK

WATER TANK

CONCRETE PLINTHS

NOT ORIGINAL CONSTRUCTION

ADDITIONS NO LONGER EXISTING

120'-0"

BB

20'-0"

BB

PARACHUTE LOFT

SCALE: 3/16" = 1'-0"

FLOOR PLAN

SCALE: 3/16" = 1'-0"

FEET 0 1 2 3 4 5 10

METERS 0 1 2 3 4

TRUE

NOTE:

- JUNE 2003 AMENDMENTS ECI/HMER, INC.

MATERIALS:

ROOF: CORRUGATED METAL

WALLS: CORRUGATED METAL OVER RIGID STEEL FRAME

FLOOR & FOUNDATION: CONCRETE

NAME AND LOCATION OF STRUCTURE

TORPEDO BOMBSIGHT AND UTILITY SHOP

DUTCH HARBOR AND FORT MEARS

NAVAL OPERATING BASE

DUTCH HARBOR

UNALASKA ISLAND

ALASKA

SURVEY NO. AK-34C

HISTORIC AMERICAN BUILDINGS SURVEY

SHEET 1 OF 4 SHEETS

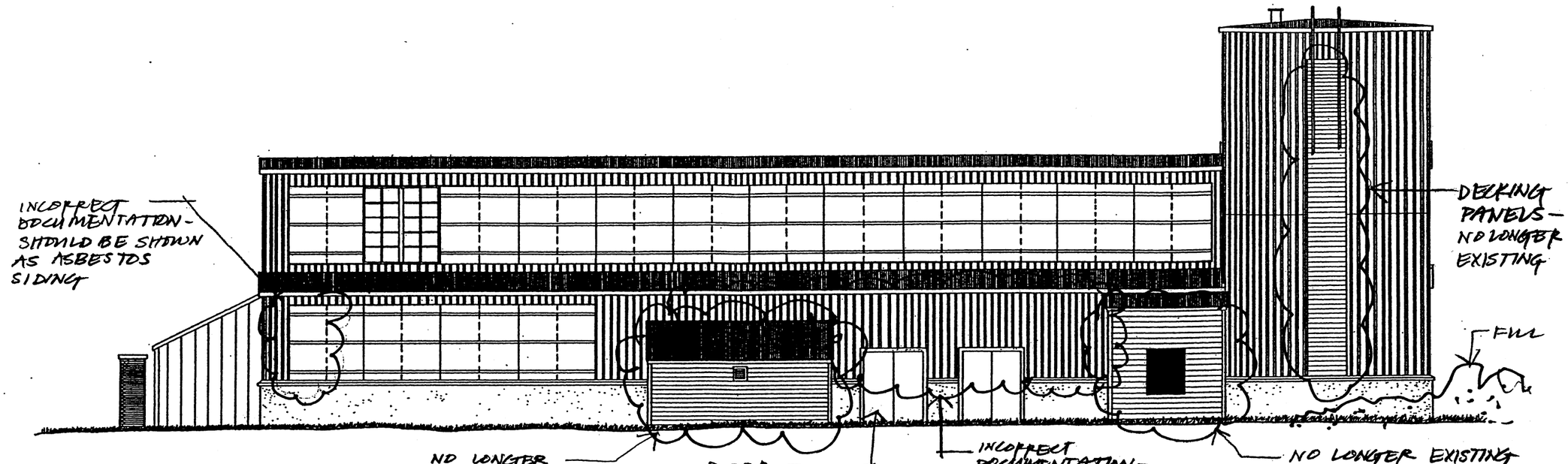
DRAWN BY: ALFONSO A. NARVAEZ, DAVE SNOW, 1985

DUTCH HARBOR PROJECT

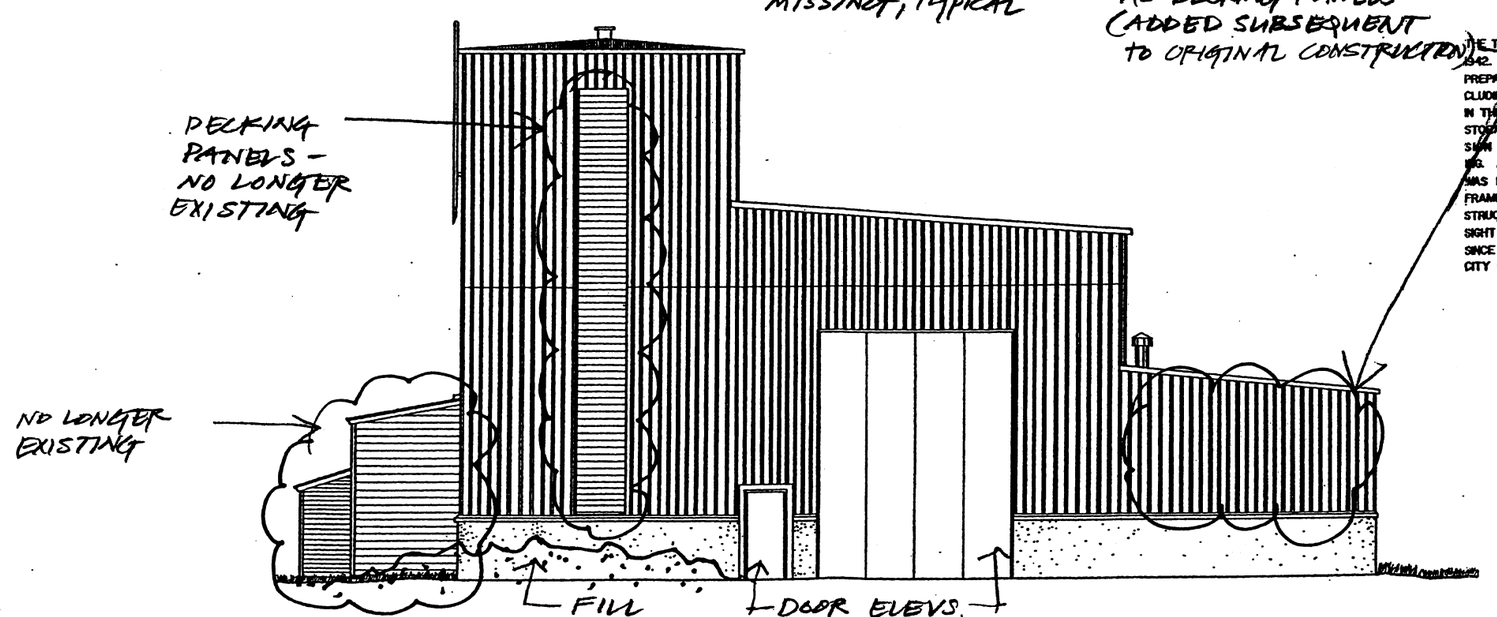
NATIONAL PARK SERVICE

UNITED STATES DEPARTMENT OF THE INTERIOR

TRIM LINE



SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



EAST ELEVATION
SCALE: 3/16" = 1'-0"

THE TORPEDO BOMBSIGHT & UTILITY SHOP WAS BUILT IN 1942. THE STEEL FRAME STRUCTURE WAS EQUIPPED TO PREPARE TORPEDOES FOR LOADING ONTO AIRCRAFT, INCLUDING A TRAVELLING OVERHEAD CRANE IN THE STRUCTURE'S CENTRAL SPACE. REPAIR AND STORAGE OF TORPEDO BOMBSIGHTS, PORTABLE PRECISION OPTICAL DEVICES, ALSO OCCURRED IN THE BUILDING. A LOFT FOR FOLDING & PACKING PARACHUTES WAS LOCATED IN THE TOWER. TWO SMALL ONE STORY FRAME ADDITIONS BUILT BEFORE 1946 STAND ON THE STRUCTURE'S SOUTH ELEVATION. THE TORPEDO BOMBSIGHT & UTILITY SHOP, DETERIORATED CONSIDERABLY SINCE 1947, IS CURRENTLY USED FOR STORAGE BY THE CITY OF UNALASKA.

FEET 0 1 2 3 4 5 10
METERS 0 1 2 3 4

NOTE:
JUNE 2003
AMENDMENTS
ECI/HMER, INC.

NAME AND LOCATION OF STRUCTURE
TORPEDO BOMBSIGHT AND UTILITY SHOP
NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
UNALASKA ISLAND ALASKA

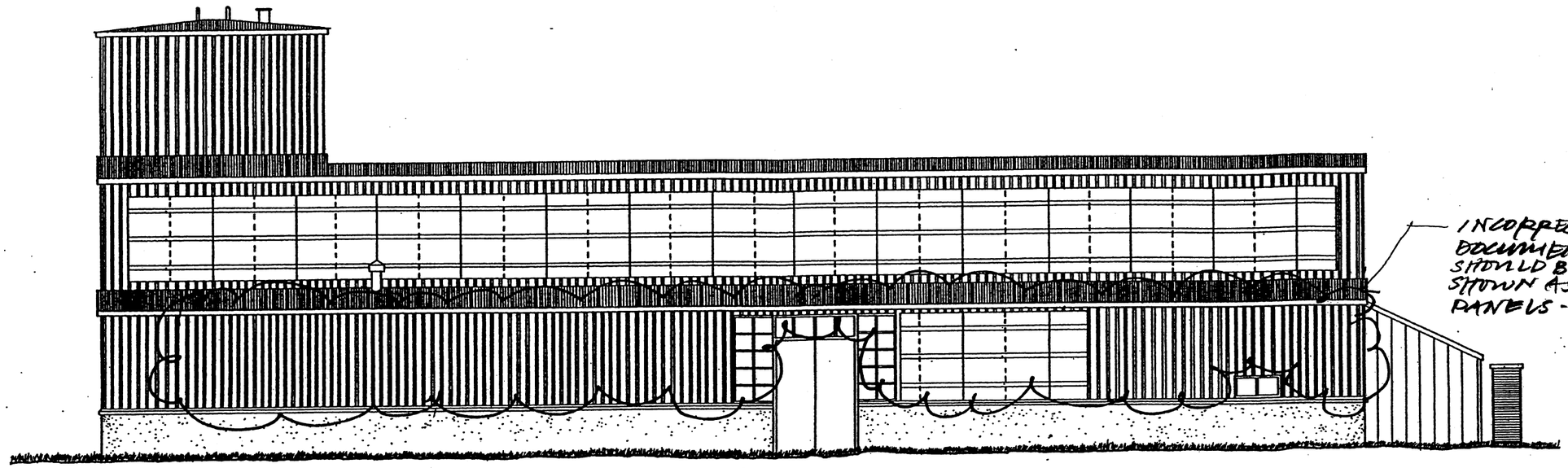
SURVEY NO. AK-340

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 2 OF 4 SHEETS

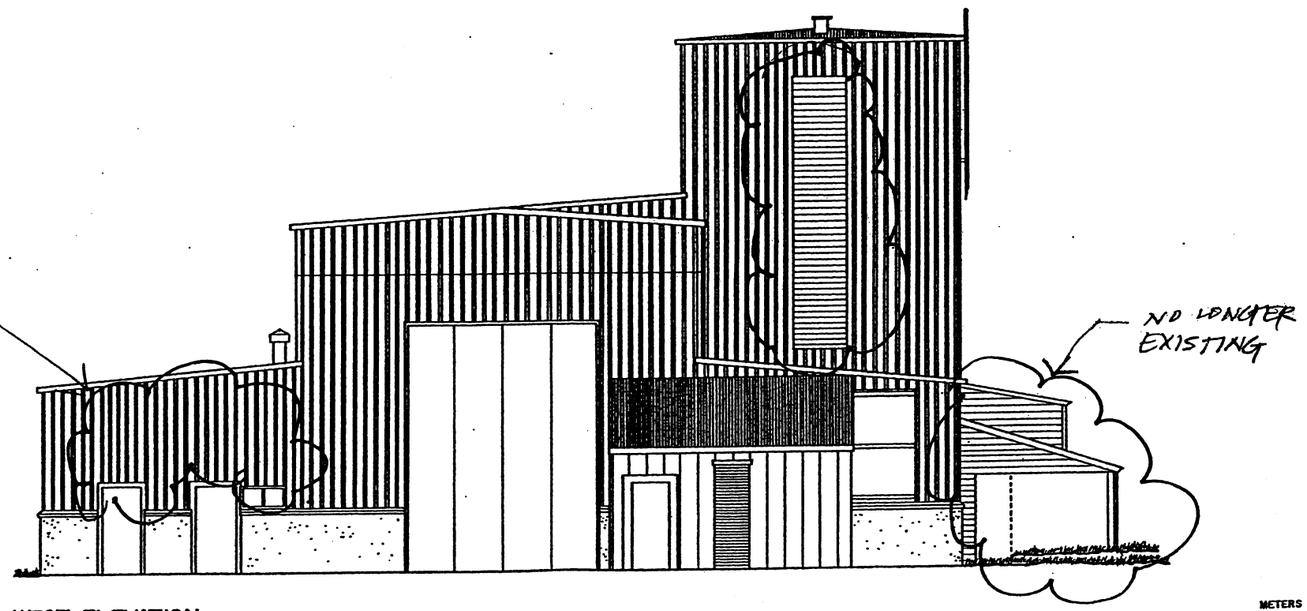
DRAWN BY: ALFONSO A. NARVAEZ, DAVE SNOW, 1985.

DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

TRIM LINE



NORTH ELEVATION
SCALE: 3/16" = 1'-0"



WEST ELEVATION
SCALE: 3/16" = 1'-0"

FEET 0 1 2 3 4 5 10
METERS 0 1 2 3 4

NOTE:
JUNE 2003
AMENDMENTS
EDI/HYER, INC

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 3 OF 4 SHEETS

SURVEY NO. AK-34C

ALASKA

TORPEDO BOMBSIGHT AND UTILITY SHOP
UNALASKA ISLAND

NAME AND LOCATION OF STRUCTURE

NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS

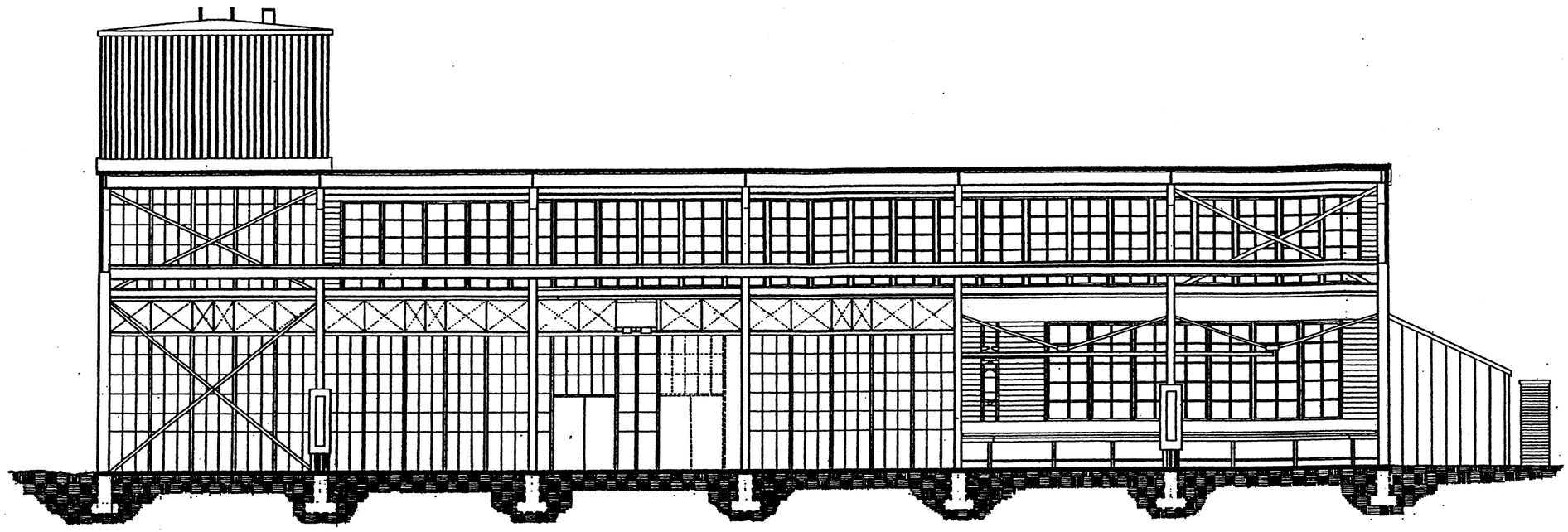
DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

DRAWN BY: ALFONSO A. NARVAEZ, DAVE SNOW, 1985

1ST REPRODUCIBLE, PLEASE CREDIT: HISTORIC AMERICAN BUILDING SURVEY, NATIONAL PARK SERVICE

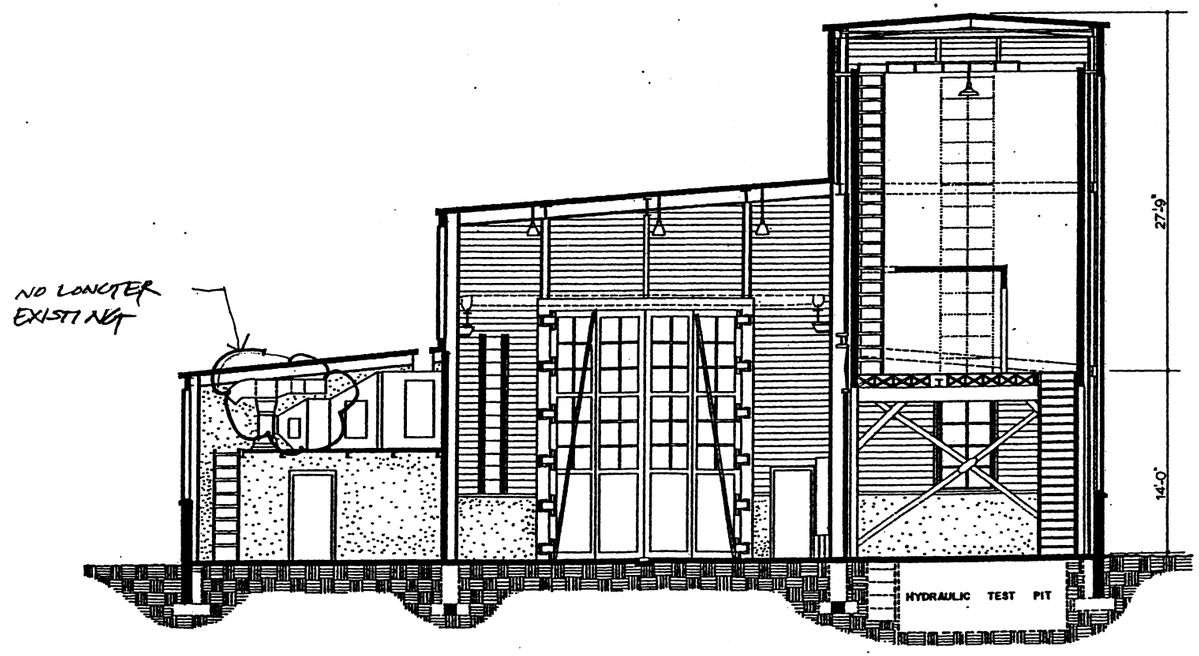
DATE OF DRAWING

TRIM LINE



SECTION A-A
SCALE: 3/16"=1'-0"

NOTE: FOOTING DIMENSIONS WERE OBTAINED FROM THE ORIGINAL CONSTRUCTION DOCUMENTS.



SECTION B-B
SCALE: 3/16" = 1'-0"

NOTE!
JUNE 2003
AMENDMENTS
EC1/HMER, INC.

NAME AND LOCATION OF STRUCTURE
TORPEDO BOMBSIGHT AND UTILITY SHOP
NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
UNALASKA ISLAND
ALASKA

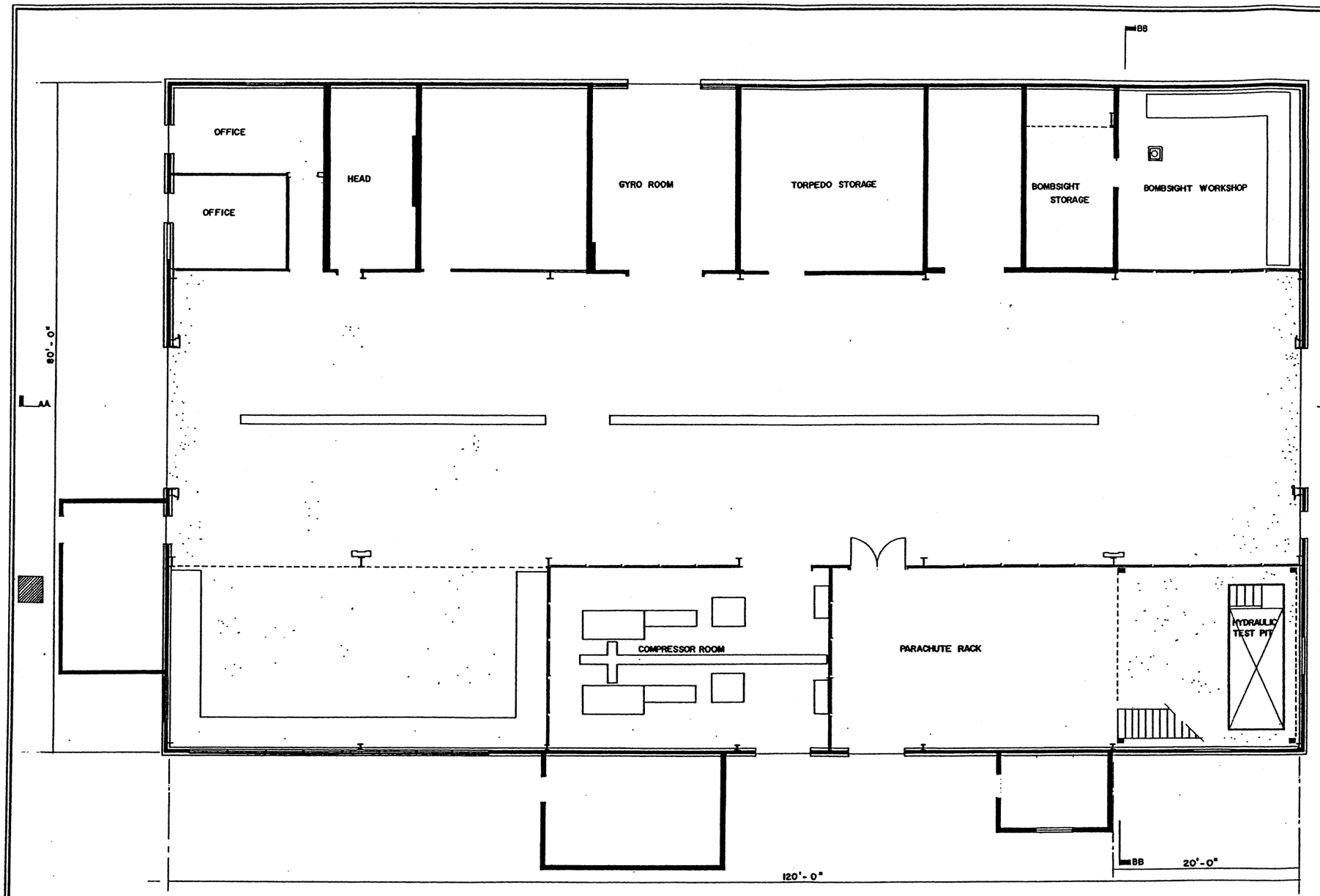
SURVEY NO. AK-34C

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 4 OF 4 SHEETS

DRAWN BY ALFONSO A. NARVAEZ, DAVE SNOW, 1985

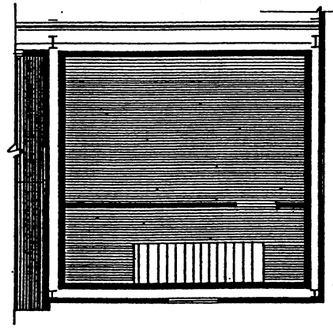
DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

TRIM LINE



FLOOR PLAN
SCALE: 3/16" = 1'-0"

MATERIALS:
ROOF: CORRUGATED METAL
WALLS: CORRUGATED METAL OVER RIGID STEEL FRAME
FLOOR & FOUNDATION: CONCRETE



BB

PARACHUTE LOFT
SCALE: 3/16" = 1'-0"

FEET 0 1 2 3 4 5 10
METERS 0 1 2 3 4

TRUE

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 1 OF 4 SHEETS

SURVEY NO. AK-34C

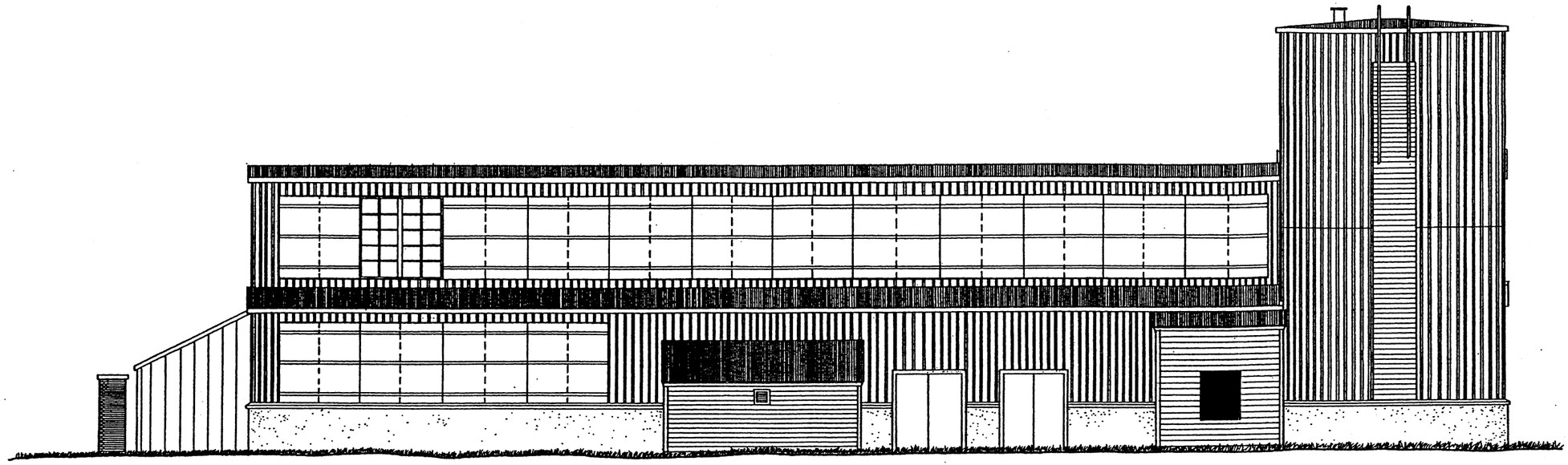
ALASKA

NAME AND LOCATION OF STRUCTURE
TORPEDO BOMBSIGHT AND UTILITY SHOP
NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
UNALASKA ISLAND

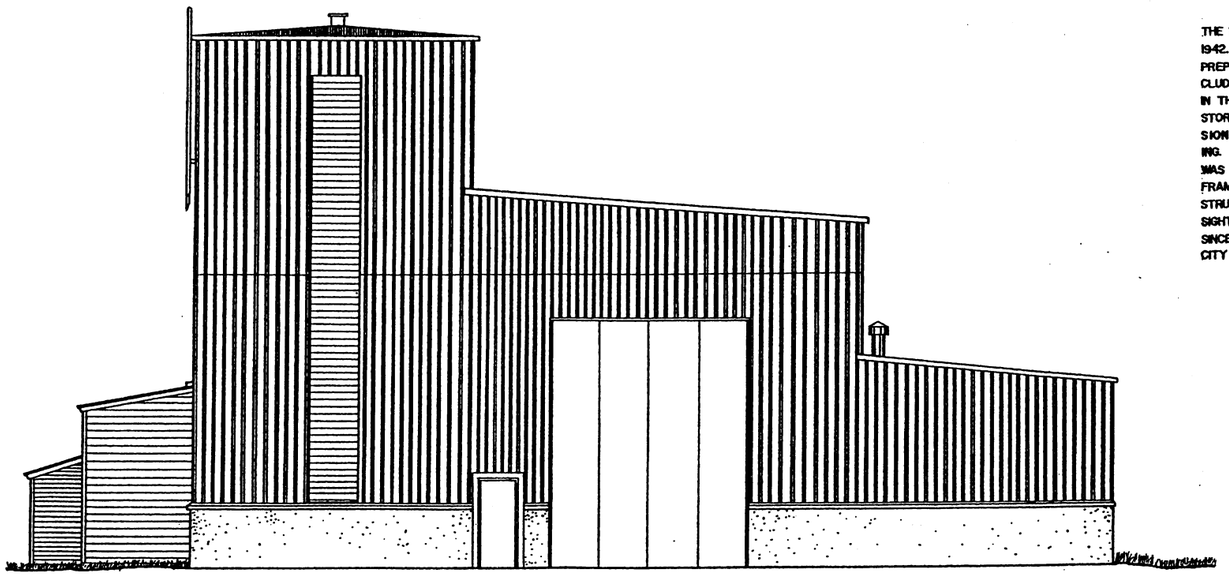
DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

DRAWN BY: ALFONSO A. NARVAEZ, DAVE SNOW, 1988

TRIM LINE



SOUTH ELEVATION
SCALE: 3/16" = 1'-0"



EAST ELEVATION
SCALE: 3/16" = 1'-0"

THE TORPEDO BOMBSIGHT & UTILITY SHOP WAS BUILT IN 1942. THE STEEL FRAME STRUCTURE WAS EQUIPPED TO PREPARE TORPEDOES FOR LOADING ONTO AIRCRAFT, INCLUDING A TRAVELLING OVERHEAD CRANE IN THE STRUCTURE'S CENTRAL SPACE. REPAIR AND STORAGE OF TORPEDO BOMBSIGHTS, PORTABLE PRECISION OPTICAL DEVICES, ALSO OCCURRED IN THE BUILDING. A LOFT FOR FOLDING & PACKING PARACHUTES WAS LOCATED IN THE TOWER. TWO SMALL ONE STORY FRAME ADDITIONS BUILT BEFORE 1946 STAND ON THE STRUCTURE'S SOUTH ELEVATION. THE TORPEDO BOMBSIGHT & UTILITY SHOP, DETERIORATED CONSIDERABLY SINCE 1947, IS CURRENTLY USED FOR STORAGE BY THE CITY OF UNALASKA.

DRAWN BY: ALFONSO A. NARVAEZ, DAVE SHOW, 1985.

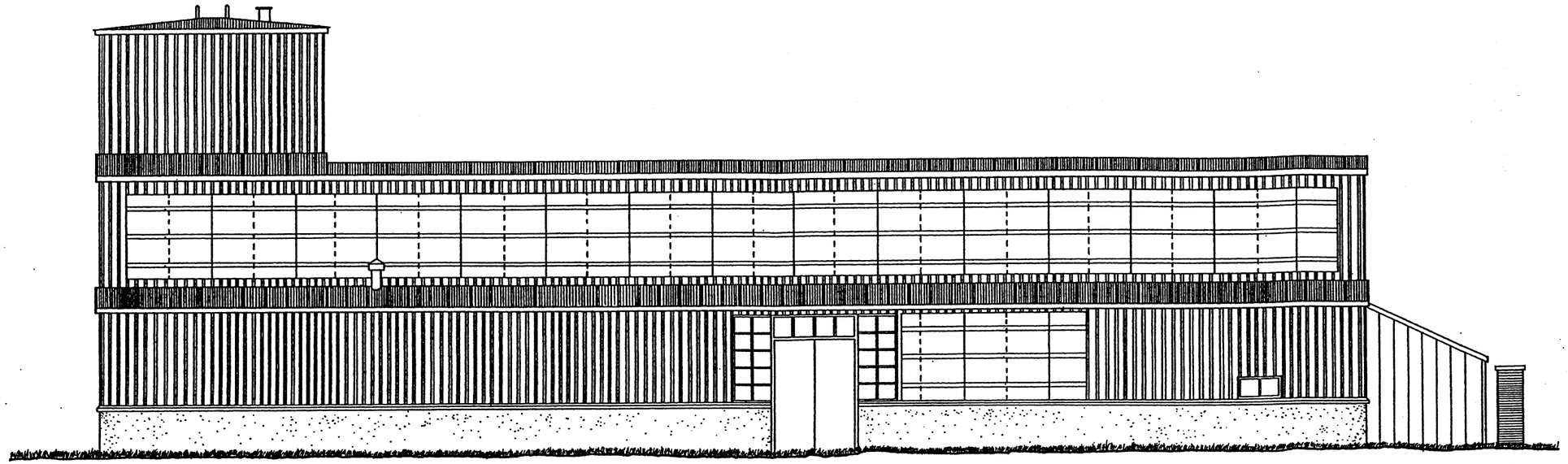
NAME AND LOCATION OF STRUCTURE
TORPEDO BOMBSIGHT AND UTILITY SHOP
NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
UNALASKA ISLAND
ALASKA

SURVEY NO. AK-34C

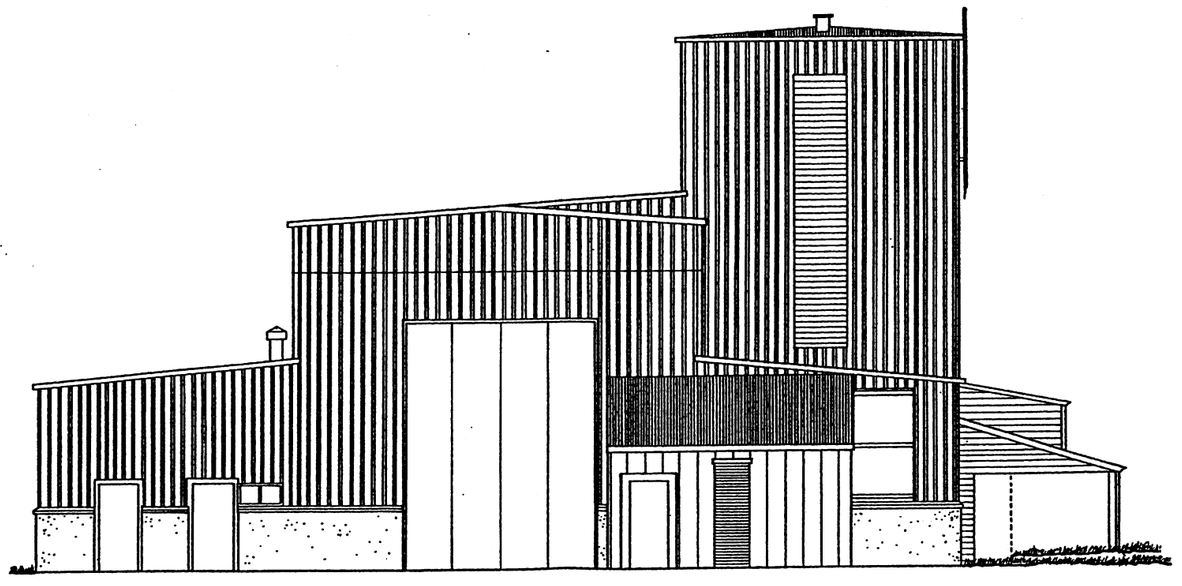
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 2 OF 4 SHEETS

DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

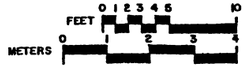
TRIM LINE



NORTH ELEVATION
SCALE: 3/16" = 1'-0"



WEST ELEVATION
SCALE: 3/16" = 1'-0"



HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 3 OF 4 SHEETS

SURVEY NO. AK-34C

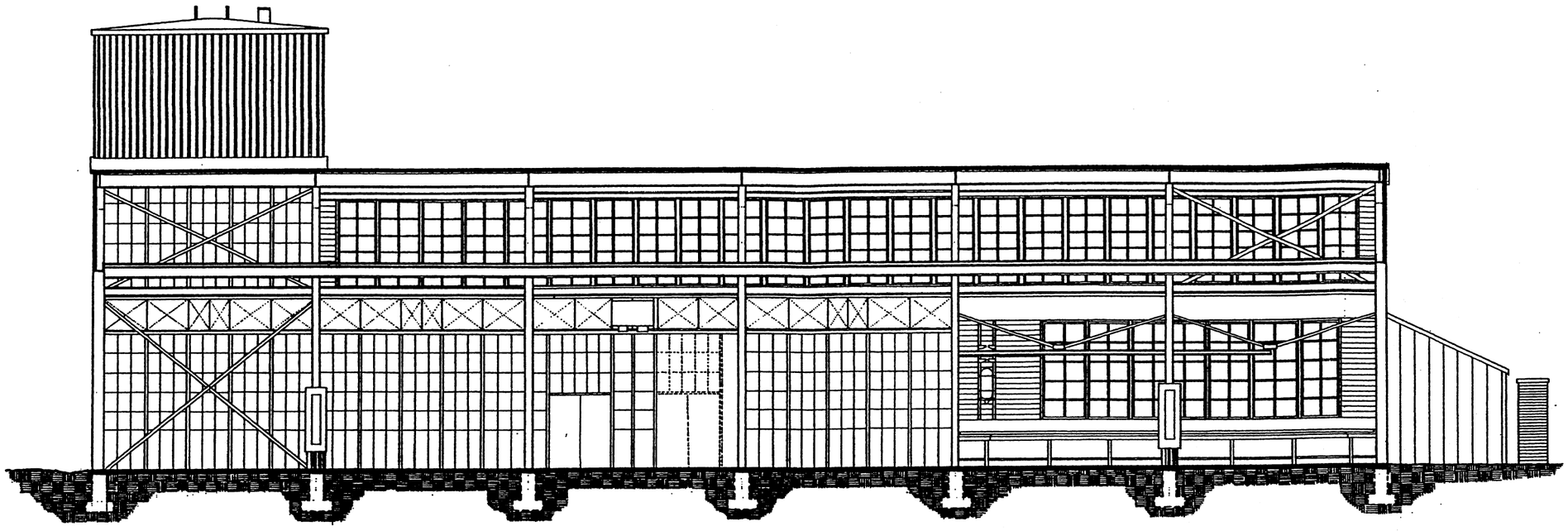
ALASKA

NAME AND LOCATION OF STRUCTURE
TORPEDO BOMBSIGHT AND UTILITY SHOP
UNALASKA ISLAND
NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS

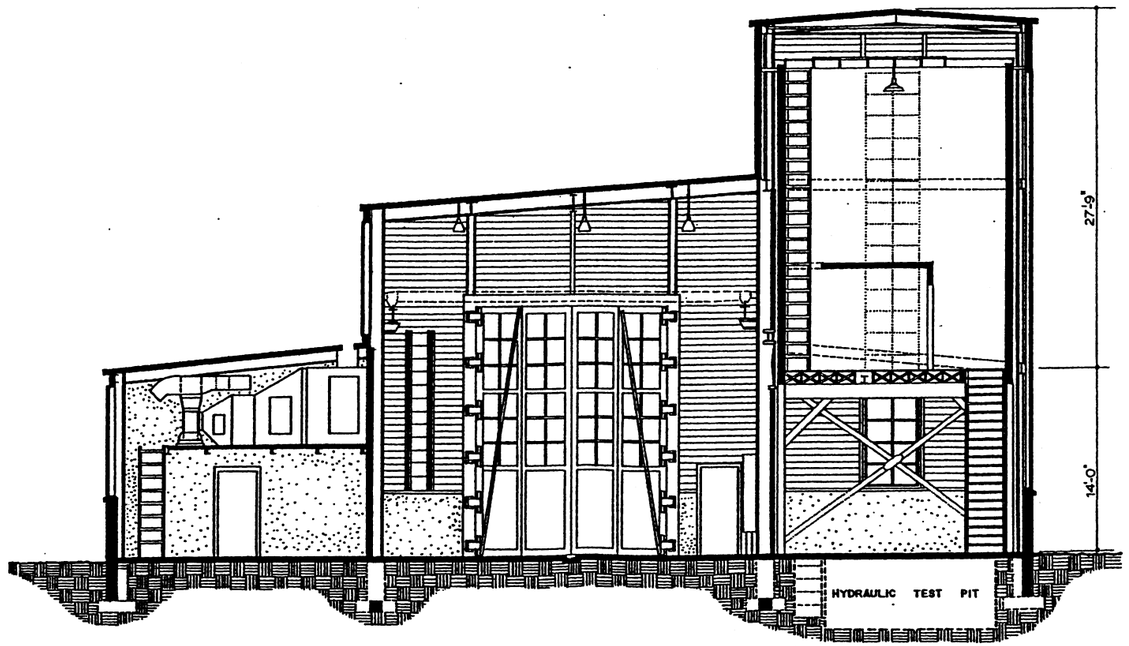
DRAWN BY ALFONSO A. NARVAEZ, DAVE SNOW, 1985

DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

TRIM LINE



SECTION A-A
SCALE: 3/16" = 1'-0"



SECTION B-B
SCALE: 3/16" = 1'-0"

NOTE: FOOTING DIMENSIONS WERE OBTAINED FROM THE ORIGINAL CONSTRUCTION DOCUMENTS.

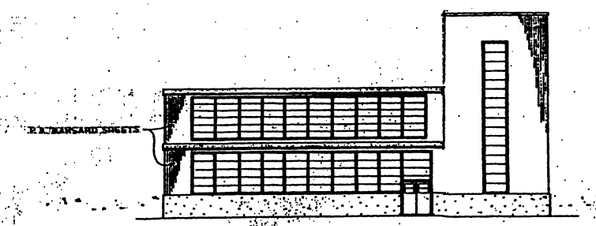
NAME AND LOCATION OF STRUCTURE
TORPEDO BOMBSIGHT AND UTILITY SHOP
NAVAL OPERATING BASE DUTCH HARBOR AND FORT MEARS
UNALASKA ISLAND ALASKA

SURVEY NO. AK-34C

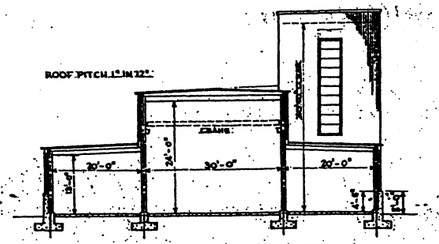
HISTORIC AMERICAN BUILDINGS SURVEY
SHEET 4 OF 4 SHEETS

DRAWN BY: ALFONSO A. NARVAEZ, DAVE SNOW, 1985

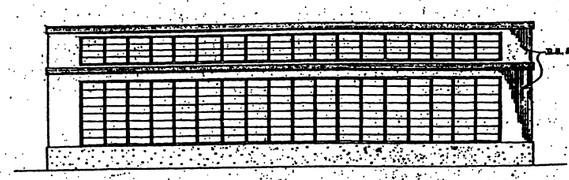
DUTCH HARBOR PROJECT
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR



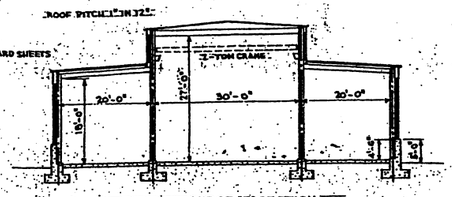
SIDE ELEVATION



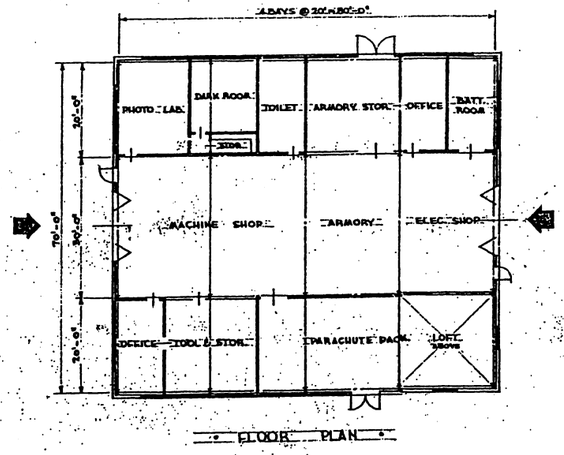
TRANSVERSE SECTION



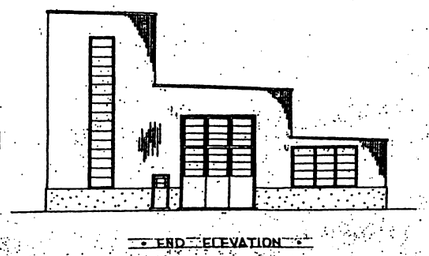
SIDE ELEVATION



TRANSVERSE SECTION

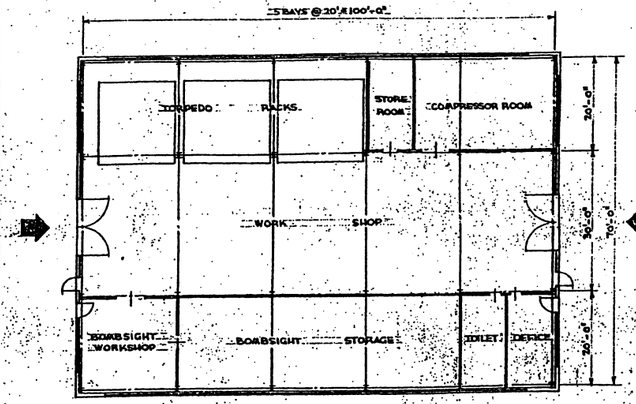


FLOOR PLAN

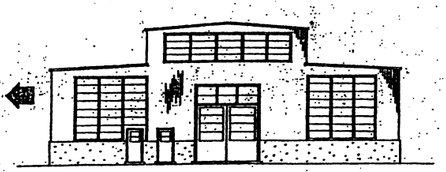


END ELEVATION

UTILITY SHOP
CUBAGE 154 000 CU. FT.



FLOOR PLAN



END ELEVATION

TORPEDO & BOMBSIGHT WORKSHOP & STORAGE
CUBAGE 194 000 CU. FT.

Scale 1/16"=1'-0"

DEC 8, 1940.

NAVY DEPARTMENT — BUREAU OF YARDS & DOCKS

U. S. NAVAL AIR STATION
UNALASKA • ALASKA

UTILITY SHOP
TORPEDO & BOMBSIGHT WORKSHOP & STORAGE

APPROVED 1940.

CHIEF OF BUREAU

Y & D DRAWING NO.
134733

29

FOUNDATION PLAN.

SCALE

NOTE: See details of footings, Reinforcement, etc. on Structural Drawings

COMPRESSOR FOUNDATION

NOTE: Set Compressor foundation before pouring floor. Shaft Openings must be verified by erect. before proceeding with work.

TEST STAND FOUNDATION
DORDSIGHT WORKSHOP

DETAIL HEATER PIT

PLAN AT TOILETS

PLAN AT MULLION BETWEEN COL. D3 & D4

MULLION BETWEEN DORDSIGHT STORAGE & ORDNANCE STORAGE

PLAN AT MULLION BETWEEN COL. D1 & D2

NOTE: All work shown Hatched to be furnished by Dock Contractor

FLOOR PLAN.

SCALE

OFFICE
OFFICE
TOILET
TOOL & STORAGE
DAYLEY ROOM
TORPEDO RACK
ORDNANCE STORAGE
DORDSIGHT WORKSHOP
CRANEWAY
MACHINE SHOP
ELECTRIC SHOP
TORPEDO WORKSHOP
ORDNANCE & ARMORY
ELEVATION 111'6"
COMPRESSOR ROOM
PARACHUTE RACE
LOFT

ABBREVIATIONS

MATERIALS KEY

Concrete
Wood
Cork
Plaster on Metal Lath
Asphalt Tile
Metal
Earth
Mastic
Steel & Plaster Partition
Corrugated R.M.
P.R. Mansard Sheets

PLOT PLAN

376, 339

5	2	1944	Rack				
5	0	1944	D.H. Inc.				
4	9	1944	Lockers				
4	1	1944	Dep. RYD				
3	7	1944	Arch.				
3	2	1944	Rack				
3	1	1944	Lockers				
	2	1944	Desks				
	0	1944	Benches				
	9	1944	A.R. Pl.				
	8	1944	Bulkhead				

DATE	REVISIONS	BY	APP'D
12-8-44	15	Rel. W. Sect. Partition Pl. #3	C.V.C.	[illegible]
10-6-44	4	Removed Photographic partition	C.V.C.	[illegible]
8-8-44	3	Changed Sect. dim.	E.M.	[illegible]
6-8-44	13	Re-orient plan	E.C.S.	[illegible]
5-2-44	12	Revised No. 8 det. & 3rd plan 2	E.C.	[illegible]
4-28-44	11	Added complete Sect. Pl. #3	V.C.S.	[illegible]
1-28-44	10	Revised plan & Sect.	D.H.	[illegible]

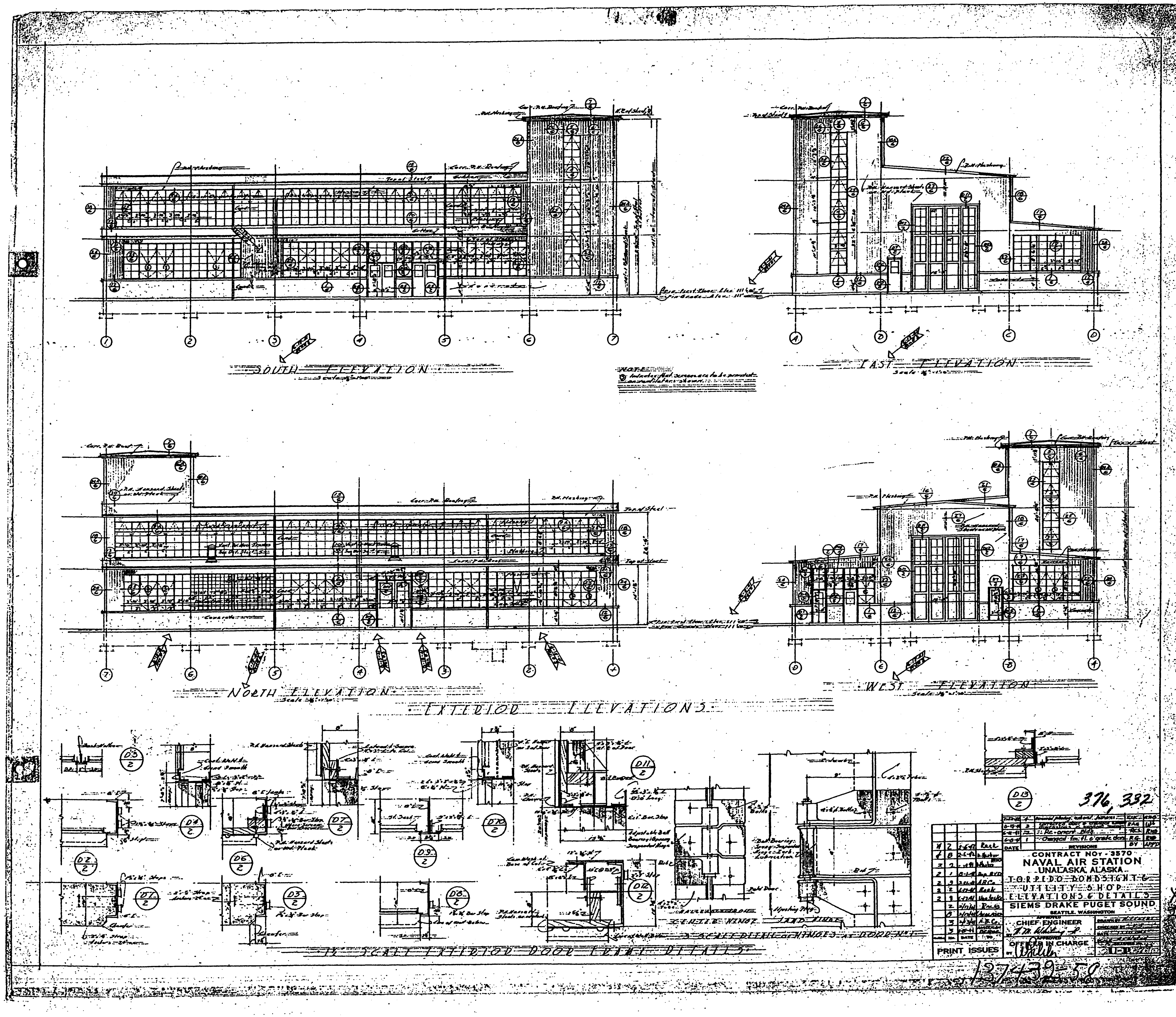
CONTRACT NOy-3570
NAVAL AIR STATION
UNALASKA, ALASKA
TORPEDO DORDSIGHT
OVERHAUL SHOP
FOUNDATION & FIRST FLOOR
SIEMS DRAKE PUGET SOUND
SEATTLE, WASHINGTON

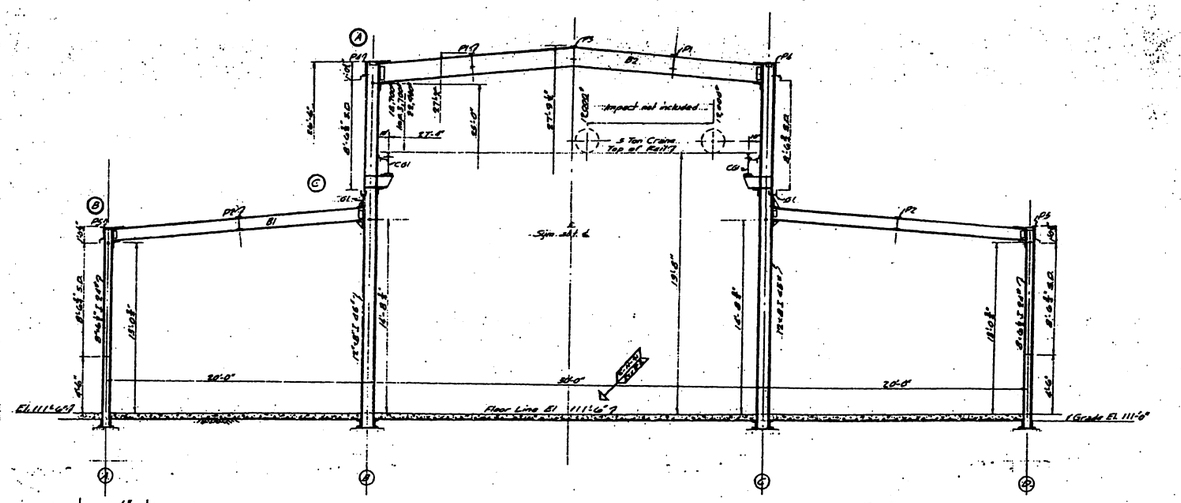
CHIEF ENGINEER
OFFICER IN CHARGE

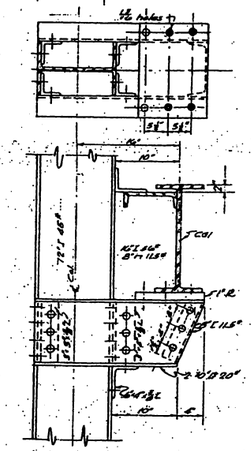
PRINT ISSUES

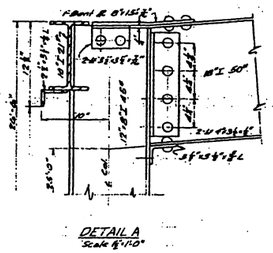
1374-32-59

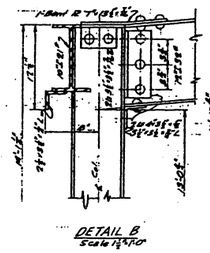
X
39

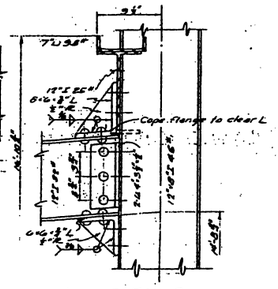

SOUTH ELEVATION
EAST ELEVATION
NORTH ELEVATION
WEST ELEVATION
EXTERIOR ELEVATIONS
EXTERIOR DOOR FRAME DETAILS
CENTER HINGE
HAND HINGE
D1 2
D2 2
D3 2
D4 2
D5 2
D6 2
D7 2
D8 2
D9 2
D10 2
D11 2
D12 2
D13 2
376,332
REVISIONS
DATE
BY
APP'D
PRINT ISSUES
NO.
DATE
TO
CONTRACT NOy-3570
NAVAL AIR STATION
UNALASKA, ALASKA
TORPEDO BOMBSIGHT & UTILITY SHOP
ELEVATIONS & DETAILS
SIEMS DRAKE PUGET SOUND
SEATTLE, WASHINGTON
APPROVED
CHIEF ENGINEER
APPROVED
OFFICER IN CHARGE
137432-58

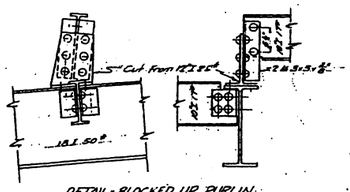


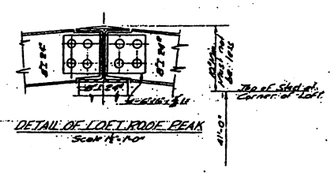


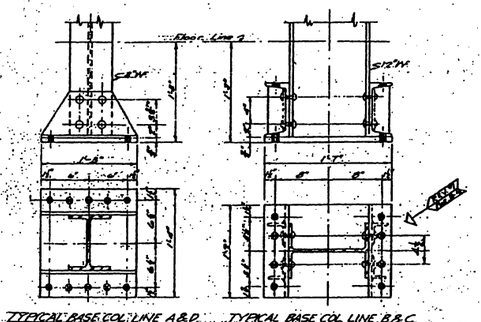


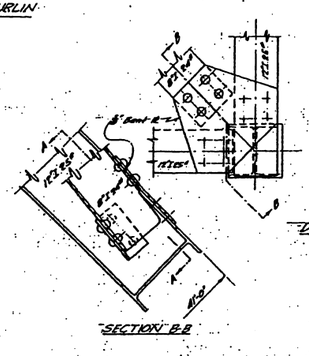


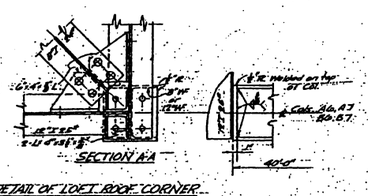












376 324

					Fr A.D. changed from 10'6" to 11'6" BOT.
					Base A. Elev. to Th. Cols.
				DATE	REVISIONS

CONTRACT NO. - 3570.
NAVAL AIR STATION
UNALASKA, ALASKA
TORPEDO, BOMBSIGHT & UTILITY SHOP
CROSS SECT. & STEEL DETAILS.
SIEMS DRAKE PUGET SOUND
SEATTLE, WASHINGTON

1	1	6-1-42	Dup. RTD.			
0	2	4-7-42	Rev'd.			
0	1	1-7-42	Duplicate			
A	6	4/41	J.L.			
A	2	1-1-41	Revised			
A	A	10-1-40	Issued for Bids			
A	3	9-24-40	A.E. Co.			
	2	9-6-40	1st Issue			
	No.	DATE	BY			

PRINT ISSUES

CHIEF ENGINEER
OFFICER IN CHARGE

1374-33-3

ROOF PLAN

Scale 1/8"=1'-0"

LOFT ROOF PLAN

Scale 1/8"=1'-0"

DOOR FRAME FOR ORDINARY STORAGE

NOTE: All steel members fabricated shop to be furnished by steel contractor

CROSS SECTION 1-1

Scale 1/8"=1'-0"

DETAIL OF SLIDING DOOR AT PHOTOGRAPHIC STORAGE ROOM

Scale 1/8"=1'-0"

376,330

NO.	DATE	REVISIONS	BY
2	7	7-5-41	Revs.
3	6	6-6-41	Windows
2	1	4-5-41	Rip Rap
2	2	7-21-41	ARP Co.
2	3	6-12-41	Revis.
2	4	6-9-41	Revisions
	2	3/1/41	Pipes
	A	3/19/41	Revisions
	3	2/26/41	A.B.Co.
	4	1-25-41	Ind. Shop
	No.	DATE	BY

PRINT ISSUES

CONTRACT NOy - 3570

NAVAL AIR STATION

UNALASKA, ALASKA

TORPEDO, BOMB SIGHT & UTILITY SHOP

SECTION & ROOF PLAN

SIEMS DRAKE PUGET SOUND

SEATTLE, WASHINGTON

APPROVED: CHIEF ENGINEER

APPROVED: OFFICER IN CHARGE

DRAWN BY: A.F.Peters

CHECKED BY: W.F.

DATE: 11-10-39

SCALE: 1/8" = 1'-0"

DRAWING NO. 1-P-2

1374-32-56

FINISH SCHEDULE

Room No.	Room Name	Floors: Material	Floors: Cove Base	Walls	Ceiling: Cement Plaster	Ceiling: Suspension	Base	Trim & Doors: Casing	Trim & Doors: Wainscot
100	Office	VT	AT	Cement plaster on 1st floor	Cement plaster		V.T.		
101	Office	"	"	Cement plaster on 1st floor	"		"		
102	Passage	"	"	Cement plaster on 1st floor	"		"		
103	Toilet Room	Qt.		2L. Cem. Plaster	"		Qt.		
104	Tool & Storage Room	Cem.		2L. Cem. Plaster	"		Cem.		
105	Battery Room	Conc. Floor	Mastic	2L. Cem. Plaster	"		Mastic		
106	Torpedo Park Space	Cem.		2L. Cem. Plaster	"		Cem.		
107	Ordnance Storage Room	"		Exp. Conc.	—		"		
108	Bandsystl. Storage Room	"		—	Metal Lath		"		
109	Bandsystl. Workshop	"		Cement plaster on 1st floor	Wood		"		
110	Craneway	"		Cement plaster on 1st floor	"		"		
111	Pyrotechnic Lab.	C.T.	A.T.	Cement plaster on 1st floor	"		A.T.		
112	Parachute Pack Room	Cem.	"	"	"		"		
113	Compressor Room	Cem.	"	"	"		"		
114	Storeroom	Cement	A.T.	Exp. Conc.	—	Metal	"	Wood	
115	Developing Room								
116	Developing Room								
117	Darkroom								
118	Lavatory								

PAINTING & COLOR SCHEDULE

Room No.	Walls: Exposed	Walls: Above	Ceiling	Cove & Base	Trim & Doors	Sash & Frames	Hardware	Radiators	Pipes	Concrete	Floors: Material	Floors: Cove Base	Floors: Walls	Floors: Ceiling	Remarks
100	Two Pearl Grey Coats	Two Pearl Grey Coats	As Above	Two Pearl Grey Coats	Two Pearl Grey Coats	Two Pearl Grey Coats									
101	Two Pearl Grey Coats	Two Pearl Grey Coats	As Above	Two Pearl Grey Coats	Two Pearl Grey Coats	Two Pearl Grey Coats									
102	Two Pearl Grey Coats	Two Pearl Grey Coats	As Above	Two Pearl Grey Coats	Two Pearl Grey Coats	Two Pearl Grey Coats									
103	"	"	"	"	"	"									
104	"	"	"	"	"	"									
105	"	"	"	"	"	"									
106	"	"	"	"	"	"									
107	"	"	"	"	"	"									
108	"	"	"	"	"	"									
109	Two Pearl Grey Coats	Two Pearl Grey Coats	As Above	Two Pearl Grey Coats	Two Pearl Grey Coats	Two Pearl Grey Coats									
110	Two Dark Grey Coats	Two Dark Grey Coats	"	"	"	"									
111	"	"	"	"	"	"									
112	Two Pearl Grey Coats	Two Pearl Grey Coats	As Above	Two Pearl Grey Coats	Two Pearl Grey Coats	Two Pearl Grey Coats									
113	"	"	"	"	"	"									
114	"	"	"	"	"	"									
115															
116															
117															
118															

DOOR SCHEDULE

Mark	Type	Material	Size or Opening	Thickness	Frame	Remarks
1	Standard	Hot. Rolled	2'-6" x 7'-0"	1 3/4"	Rolled	Det. Sheet No. T.B.7
2	Sliding Door	Hot. Rolled	3'-6" x 7'-0"	1 3/4"	"	Det. Sheet No. T.B.7
3	Sliding Door	"	3'-6" x 7'-0"	"	"	Detail Sheet No. T.B.7
4	"	"	2'-6" x 6'-8"	"	"	"
5	Sliding Doorway	—	3'-0" x 7'-0"	—	Metal	"
6	Dutch Door	"	3'-6" x 7'-0"	1 3/4"	"	Det. Sheet No. T.B.7
7	Sliding Door	"	3'-6" x 7'-0"	"	"	Det. Sheet No. T.B.7
8	—	Hot. Rolled Channels	2'-6" x 7'-0"	—	—	Bonderite Treatment
9	Sliding Door	Hot. Rolled	7'-0" x 11'-10"	—	—	See Section
10	Sliding Doorway	Hot. Rolled Channels & Bar	6'-0" x 7'-0"	—	—	
11	Sliding Doorway	Sheet Metal	3'-0" x 7'-0"	—	—	Bonderite Treatment
12	—	—	3'-6" x 7'-0"	—	—	Det. Sheet No. T.B.7 Typical Detail Elsewhere
13	Sliding Doorway	—	3'-6" x 7'-0"	—	—	"
14	Sliding Vault Door	Metal	3'-0" x 7'-0"	—	Metal	Bonderite Treatment See Detail Sheet No. T.B.7 for Vault Door Frame & Detail

GENERAL NOTES

Doors and Hardware for Shell units to be used as manufactured by the Osborn Paint Mfg. Co. of Seattle, Wash. Number of coats of paint and Color only are not to type of paint.

All wood Baseboards to receive stain and varnish.

All Contractors Plans and Items Standard Commercial Practice Unless otherwise noted as specified.

Toilet Room No. 103 to be Tile Wall Units 20"x20" as specified.

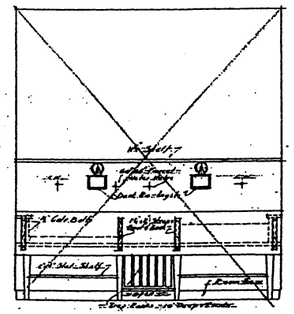
All Hardware for Steel Doors on this Project will be furnished with the same template as Project Specifications under Div. 12 specified Hardware.

Provide Screen Doors where specified for all doors scheduled. Also on Plans.

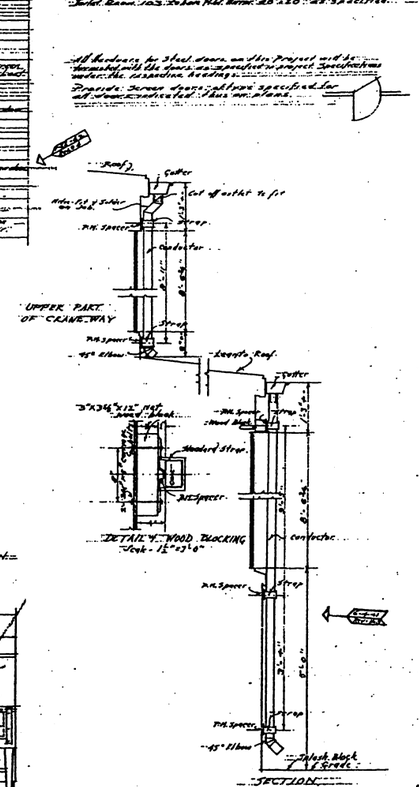
ABBREVIATIONS

A.T.	Asphalt Tile	Mfr.	Manufacturer
Bd.	Board	Mtl.	Material
Carp.	Carpenter	Pt. or Pntd.	Painted
Cem.	Cement	Qt. or Qtn.	Quarry Tile
Cft.	Cement Finished	Rm.	Room
Cp.	Cement Paint (Applied)	Rub.	Rubber
Cr. Mem.	Cement Paint (Emulsified)	Sht.	Sheet
Conc.	Concrete	T.	Tile
Cpt.	Carpet	Terr.	Terrazzo
Dr.	Drawer	Vit.	Vitrolite
Dn.	Linoleum	V.T.	Vinyl Asbestos Tile
Ex.	Exposed	W.C.	Water Closet
Fin.	Finish	W.	Wood
Gl.	Glass	Wscot.	Wainscot
Grd.	Grade		

STAIRS IN DEVELOPING & PHOTOGRAPHIC ROOMS



DETAIL OF CONDUCTOR PIPES



DETAIL "A" WOOD BLOCKING
Scale - 1½"=1'-0"

DETAIL OF CONDUCTOR PIPES
Cut location of conductor pipes from plans.
Scale - 3/4"=1'0"

See Detail Sheet No. 1800-113 for details of Gutters, Conductors & Straps.

376 327

No.	Date	Revisions	By
4	12-26-42	Misc.	
4	8-24-42	Misc.	
3	1	6-4-41	Rev. R.P.D.
3	3	5-21-41	Unleak
3	2	4-17-41	Roofs
2	3-10-41	Revised	
1	2-19-41	Unleak	
3	1-31-41	As Built	
3	1-15-41	Drawn	

CONTRACT NOY-3570
NAVAL AIR STATION
UNALASKA, ALASKA
TORPEDO BOMB SIGHT &
UTILITY SHOP
SCHEDULES & DETAILS
SIEMS DRAKE PUGET SOUND
SEATTLE, WASHINGTON

CHIEF ENGINEER
By W. M. Wilson

OFFICER IN CHARGE
By Wilson

PRINT ISSUES

Drawn by W. E. Lyon
Checked by W. E. Lyon
Date Oct. 1941
Scale As Noted
Drawing No. 1800-7

1374-39-53

APPENDIX D

STRUCTURAL CURRENT CONDITIONS DOCUMENTATION

STRUCTURAL CURRENT CONDITIONS DOCUMENTATION

APPENDIX D

Structural Current Conditions Documentation, TNH, Inc., June 2003

INDEX

APPENDIX D

STRUCTURAL CURRENT CONDITIONS DOCUMENTATION

STRUCTURAL CURRENT CONDITIONS DOCUMENTATION

APPENDIX D

Structural Current Conditions Documentation, TNH, Inc., June 2003

INDEX

MATERIAL CONDITION RATING

The evaluation of the existing material condition utilized basic tools, visual observation and past experiences evaluating similar conditions and elements. Each element was viewed from all sides accessible. The evaluation is reasonably accurate – not precise.

Wood Materials Ratings

- Damp (D)
  - The existing wood materials, at a minimum, are 100% damp – roughly 19% +/ MC
  - Moisture – Surface
  - Condition – Sound
- Wet (W)
  - Moisture – Through the Material Depth
  - Condition – Minor Damage
- Saturated (S)
  - Moisture – Through the Material Depth
  - Condition – Heavily Dry Rotted

Determinations of material condition were made by visual observations and by probing a small percentage of the material with a pick. A moisture meter was available – not used due to the condition being relatively apparent

Concrete Materials Ratings

- Hard - Sound (H - S)
- Soft - Firm (S – F)
- Soft – Crumbly (S – C)

1) Determinations were made by visual observations combined with hammering the concrete surface with a framing-type hammer When hammering the material the lower the pitch the softer the material. The less rebound the softer the material
2) Delamination Chain Drag - DCD, Chain dragged across the SOG to locate area of delamination between the conc. & reinforcing
3) Calibrated Rebound Hammer – CRH, Material tested to determine approximate strength of concrete
4) Cover Meter – CML, Locates reinforcing, approximates size, determines spacing, concrete cover over the reinforcing

Steel Materials Rating

- Light Mill Scale – LMS, Surface corrosion, no obvious depth of penetration
- Medium Mill Scale – MMS, Thin individual separated layer of material, original material measures .025 less than specified thickness
- Heavy Mill Scale – HMS, Multiple layers of material, original material measures .025 - .1 less than specified thickness
- Loss of Continuity – LC, Multiple layers of material, no continuity between layers, minimal integrity, remaining steel is soft
- Sample Coupon – CS, Section of steel removed, tested for; chemical content, tensile strength, elongation, hardness, yield strength
- Calipers – C, Measure thickness of material after wire brush cleaning

ELEMENT & LIFE SAFETY SCHEDULE

- The typical layout of existing framing was noted to provide sufficient information to make preliminary capacity determinations.
- Life Safety – LS, 1 None, 2-4 minimal, 5-6 Warrants Attention, 7-10 Critical/Dangerous

Wood Elements:

	Mark:	Element Size (w x d)	Life Safety	Comments
Sheathing				
Typical Roof Decking	WD1	3x6 Straight Horiz. Plane	10	See below *
* 1) The condition of the decking is a life safety issue outside the footprint of the building during a wind storm – Lacking a positive connection to the frame the decking becomes flying debris dangerous to individuals and equipment. 2) The condition of the decking is also a life safety issue within the footprint of the building – lacking a perimeter trespass barrier individuals within the building may be hit by falling debris as the roofing continues to rot and fall.				
Parachute Loft 2nd Floor Deck	WD2	2x Diagonal Horiz. Plane	1	
Mechanical Mezzanine Flr Deck	WD3	3x Straight Horiz. Plane	7	Dangerous similar to Typical Roof Deck * 2) person in the building if the floor collapses may be hurt
Typical Exterior Wall	WD4	2x Straight Vert. Plane	1	
Parachute Loft Interior Walls	WD5	1x Diagonal Vert. Plane	2	
Floor Joists				
Parachute Loft – 2nd Floor	WJ1	2 x 12 Nominal	3	
Plates				
Typical Plates, Top of Wall, Sills	WPL	4 x 6 Nominal	10	Dangerous Similar to Typical Roof Deck * 1), 2)
Beams/Ledgers				
Mechanical Mezzanine	WL1	4 x 8 Nominal	7	Dangerous Similar to Typical Roof Deck * 2) person in the building if the floor collapses may be hurt
Parachute Loft – 2nd Floor	WB1	6 x 12 Nominal Multiple 2x12s	3	
Posts				
Parachute Loft – 2nd Floor	WP1	6 x 6 Nominal	3	

ELEMENT & LIFE SAFETY SCHEDULE

- The typical layout of existing framing was noted to provide sufficient information to make preliminary capacity determinations.
- Life Safety – LS, 1 None, 2-4 minimal, 5-6 Warrants Attention, 7-10 Critical/Dangerous

Wood Elements:

	Mark:	Element Size (w x d)	Life Safety	Comments
Studs				
Parachute Loft	WS1	2 x 4 Nominal	2	
Stairs – Parachute Loft			7	Access to the stairs creates a hazard. No access would be better than the current access that restricts but does not stop a person from climbing up into the loft.

ELEMENT & LIFE SAFETY SCHEDULE

- The typical layout of existing framing was noted to provide sufficient information to make preliminary capacity determinations.
- Life Safety – LS, 1 None, 2-4 minimal, 5-6 Warrants Attention, 7-10 Critical/Dangerous

Concrete Elements:

	Mark:	Element Size (w x d)	Reinf. Size/Spa	Life Safety	Comments
Floor Slab, f'c 5000 psi		Depth Uncertain			
Typical Slab on Grade	SOG	6" +/	#4-6 @ 16" O.C.	1	
Walls, f'c varies 4500 – 7000 psi			Center 1/3d		
North Low Side Bay – Interior f'c 5000 psi	CW1	6"	Vert. # 5 @ 12" O.C. Horiz. # 5 @ 12" O.C.	2	
Typical Perimeter Wall – Exterior f'c 5000 psi	CW2	10"	Vert. #7 – 9 @ 12" O.C. Horiz. #5 @ 12" O.C.	1	
Footings		Footings Were Not Exposed			
	FT1	(Continuous)		2	
	FT2	(Spread)		2	

ELEMENT & LIFE SAFETY SCHEDULE

- The typical layout of existing framing was noted to provide sufficient information to make preliminary capacity determinations.
- Life Safety – LS, 1 None, 2-4 minimal, 5-6 Warrants Attention, 7-10 Critical/Dangerous

Steel Elements:

	Mark:	Element Size (w x d)	Life Safety	Comments
Mark ⇒ (P1...) Labels From Original Drawings, Steel FY = 30 ksi, Fu = 56 ksi				
Beams				
	B1 (P1)	10 I 17	2	See * 1) Beams Below
	B2 (P2)	12 I 25	2	See * 1) Beams Below
	B3 (P3)	10 I 17	2	See * 1) Beams Below
	B4 (P4)	10 I 21	2	See * 1) Beams Below
	B5 (P5)	10 I 21	2	See * 1) Beams Below
* 1) The steel framing elements do not pose a hazard as flying debris. The steel framing elements do pose a hazard to persons that might enter the premises and climb around on the structure; they may become cut by a corrosive piece of steel or fall from the framing.				
Girders				
	G1 (B1)	12 I 25	2	See * 1) Beams Above
	G2 (B2)	18 I 50	2	See * 1) Beams Above
Columns				
	C1	12 x 8 I 45	2	See * 1) Beams Above
	C2	8 x 6.5 I 24	2	See * 1) Beams Above
Braces				
	BR1	L 3 1/2 x 2 1/2 x 1/4	2	See * 1) Beams Above
Miscellaneous				
	L1	Angle	9	See Wood Elements above, WD1, * 1), 2), the miscellaneous anchor the wood elements that may come loose, etc.
	C1	C8 x 11.5	2	See * 1) Beams Above
	C2	C10 x 20	2	See * 1) Beams Above
	CB1	16 I 36	2	See * 1) Beams Above Crain Rail

APPENDIX D

ELEMENT & LIFE SAFETY SCHEDULE

- The typical layout of existing framing was noted to provide sufficient information to make preliminary capacity determinations.
- Life Safety – LS, 1 None, 2-4 minimal, 5-6 Warrants Attention, 7-10 Critical/Dangerous

Steel Elements:

Mark: Element Size (w x d)	Life Safety	Comments
Mark ⇒ (P1…) Labels From Original Drawings, Steel FY = 30 ksi, Fu = 56 ksi		
High Central Bay Doors	8	Access to the building permits persons the opportunity to try to move them. Elements of the door frame may come loose as well as the frame itself due to neglect, corrosion or rot
Low Side Bay Dbl Doors	7	Similar to High Central Bay Doors Above
Interior and Exterior Windows, Window Heads, Sills, Mullions Miscellaneous Treatments	8	Similar to the wood decking WD1, *1), 2), except the prevalence of the elements and the surface rust to rusted through causes a hazard to anyone around the perimeter or inside the building during a wind storm, seismic event or simply from falling debris

ELEMENT CONDITION SCHEDULE

Element: See Element Schedule for definitions.
Condition: See Material Condition Rating.
Recommendations: Recommendations are relative to replacement/repair of the element and specified as a approximate percentage
* Roof sheathing is typically laid straight, perpendicular to the rafters, 3x boards.

Wood Elements:

	Mark:	Element Size (w x d)	Spacing	Comments	Recommendations
Sheathing					
Typical Roof Decking	WD1	3x6 Straight Horiz. Plane		Dry Rot, Damaged and Missing	Replace 100%
Parachute Loft 2nd Floor Deck	WD2	2x Diagonal Horiz. Plane		Good Condition	Replace 10%
Mechanical Mezzanine Flr Deck	WD3	3x Straight Horiz. Plane		Dry Rot, Damaged	Replace 100%
Typical Exterior Wall	WD4	2x Straight Vert. Plane		Dry Rot, Damaged and Missing	Replace 100%
Parachute Loft Interior Walls	WD5	1x Diagonal Vert. Plane		Good Condition	Replace 10%
Floor Joists					
Parachute Loft 2nd Floor	WJ1	2 x 12 Nominal	16"	Good Condition	Replace 10%
Plates					
Typical Plates, Top of Wall, Sills	WPL	4 x 6 Nominal	Cont	Dry Rot, Damaged, Missing	Replace 100%
Beams/Ledgers					
Mechanical Mezzanine	WL1	4 x 8 Nominal		Dry Rot, Damaged	Replace 100%
Parachute Loft 2nd Floor	WB1	6 x 12 Nominal		Good Condition Multiple 2x12s	Replace 10%
Posts					
Parachute Loft 2nd Floor	WP1	6 x 6 Nominal		Good Condition, Base at Concrete Likely Dry Rot	Replace and Reinforce 2 ft of Base 100%
Studs					
Parachute Loft	WS1	2 x 4 Nominal	16"	Good Condition	Replace 10%

ELEMENT CONDITION SCHEDULE

Element: See Element Schedule for definitions.
Condition: See Material Condition Rating.
Recommendations: Recommendations are relative to replacement/repair of the element and specified as a approximate percentage

* Typically grade or a slab on grade hides the footings. Consideration to the surrounding conditions, moisture present, condition of soils and or slab on grade, condition of the foundation wall including the moisture present and soundness provide the basis for condition noted

Concrete Elements:

	Mark:	Element Size (w x d)	Reinf. Size/Spa	Comments	Recommendations
Floor Slab		Depth Uncertain		f'c 5000 psi	
Typical Slab on Grade	SOG	6" +/	#4-6 @ 16" O.C.	Depth/Reinf. no record, measurement of depth of conc. element is not a function of cover meter.	Replace 25% (Appendix B, Photos: S-020, 021, 022)
Walls			Center 1/3d	f'c varies 4500 – 7000 psi	
North Low Side Bay – Interior	CW1	6"	Vert. # 5 @ 12" O.C. Horiz. # 5 @ 12" O.C.	f'c 5000 psi	10% (Appendix B, Photo: S-019)
Typical Perimeter Wall - Exterior	CW2	10"	Vert. #7 – 9 @ 12" O.C. Horiz. #5 @ 12" O.C.	f'c 5000 psi	10% (Appendix B, Photos: S-018, 03, 04)
Footings				Footings Were Not Exposed	
	FT1			(Continuous)	10%
	FT2			(Spread)	10%

ELEMENT CONDITION SCHEDULE

Steel Elements:

	Mark:	Element Size (w x d)	Comments	Recommendations
	Mark ⇒ (P1...) Labels From Original Drawings, Steel FY = 30 ksi, Fu = 56 ksi			
Beams				
	B1 (P1)	10 I 17	Typical to All Beams, Heavy Mill Scale Surface Rust	White Blast Clean Apply Protective Coating 100% (Appendix B, Photo: S-014)
	B2 (P2)	12 I 25		
	B3 (P3)	10 I 17		
	B4 (P4)	10 I 21		
	B5 (P5)	10 I 21		
Girders				
	G1(B1)	12 I 25	Typical to All Beams, Heavy Mill Scale Surface Rust	White Blast Clean Apply Protective Coating 100%
	G2(B2)	18 I 50		
Columns				
	C1	12 x 8 I 45	Typical to All Beams, Heavy Mill Scale Surface Rust	White Blast Clean Apply Protective Coating 100%
	C2	8 x 6.5 I 24		
Braces				
	BR1	L 3 1/2 x 2 1/2 x 1/4	Typical to All Beams, Heavy Mill Scale Surface Corrosion	White Blast Clean Apply Protective Coating 100%
Miscellaneous				
	L1	Angle	Typical to wall head, sill and jamb angles, heavy corrosion resulting in layers of material, minimal material continuity, anchors, reduced size, damaged	Replace 100 % (Appendix B, Photo: S-026)
	C1	C8 x 11.5	Typical to All Beams, Heavy Mill Scale Surface Corrosion	White Blast Clean Apply Protective Coating 100%
	C2	C10 x 20	Typical to All Beams, Heavy Mill Scale Surface Corrosion	
	CB1	16 I 36	Typical to All Beams, Heavy Mill Scale Surface Corrosion	White Blast Clean Apply Protective Coating 100%

ELEMENT CODE EVALUATION SCHEDULE

Wood Elements:

	Mark:	Element Size (w x d)	Span/ Space	Allowable LL	Governs	Comments/Recommend
Sheathing		All Wood Elements – Simple Span, DF Larch Coast				
Typical Roof Decking	WD1	3x6 Straight Horiz. Plane				
Parachute Loft	"	(E) " " " "	0' to 10'/	81psf	L/180	Ok
		(N) dido		82 psf	L/180	Select Dex Ok
High Central Bay	"	(E)" " " "	7' - 6"/	149psf	L/180	Ok
		(N) dido		180 psf	L/150	Select Dex Ok
Low Side Bay	"	(E) " " " "	10' – 0"/	81 psf	L/180	Ok
		(N) dido		82 psf	L/150	Select Dex 0k
Parachute Loft 2nd Floor Deck	WD2	2x Diagonal Horiz. Plane	/23" dia.	100 psf Min		Ok
Mechanical Mezzanine Flr Deck	WD3	3x- Straight Horiz Plane	9.5'/5.0'	100 psf Min		Ok
Typical Exterior Wall	WD4	2x Straight Vert. Plane	~	~		~
Parachute Loft Interior Walls	WD5	1x Diagonal Vert. Plane	/34" dia.	~		~
Floor Joists						
Parachute Loft 2nd Floor	WJ1	2 x 12 Nominal	18'/16"	100 psf		Ok
Plates						
Typical Plates, Top of Wall, Sills	WPL	4 x 6 Nominal	~	~		~
Beams/Ledgers						
Mechanical Mezzanine	WL1	4 x 8 Nominal	~	~		~
Parachute Loft 2nd Floor	WB1	6 x 12 Nominal	18'/18'	40 psf Multiple 2x12s		Ok for previous use
Posts						
Parachute Loft 2nd Floor	WP1	6 x 6 Nominal	~	~		Ok
Studs						
Parachute Loft	WS1	2 x 4 Nominal	16"	~		Ok

ELEMENT CODE EVALUATION SCHEDULE

Concrete Elements:

	Mark:	Element Size (w x d)	Reinf. Size/Spa	Comments	Recommendations
Floor Slab		Depth Uncertain		f'c 5000 psi	
Typical Slab on Grade	SOG	6" +/	#4-6 @ 16" O.C.	Ok	Replace as Condition Requires Only
Walls			Center 1/3d	f'c 5000 psi	
North Low Side Bay – Interior	CW1	6"	Vert. # 5 @ 12" O.C. Horiz. # 5 @ 12" O.C.	Ok	Replace as Condition Requires Only
Typical Perimeter Wall - Exterior	CW2	10"	Vert. #7 – 9 @ 12" O.C. Horiz. #5 @ 12" O.C.	Ok	Replace as Condition Requires Only
Footings				Footings Were Not Exposed	
	FT1	(Continuous)		No unusual settlement/movement observed	Replace as Condition Requires Only
	FT2	(Spread)			

ELEMENT CODE EVALUATION SCHEDULE

Steel Elements:

	Mark:	Element Size (w x d)	Span/ Spacing	Comments	Recommendations
	Mark ⇒ (P1..) Labels from original drawings. Steel FY = 30 ksi, Fu = 56 ksi				
Beams					
	B1(P1)	10 I 17	20'/7.5'	IBC 2000 Load Combinations Ok	Replace as Condition Requires Only
	B2(P2)	12 I 25	20'/10'		
	B3(P3)	10 I 17	20'/7.5		
	B4(P4)	10 I 21	20'/3.75		
	B5(P5)	10 I 21	20'/5'		
Girders					
	G1(B1)	12 I 25	20'/20'	IBC 2000 Load Combinations Ok	Replace as Condition Requires Only
	G2(B2)	18 I 50	30'/20'		
Columns					
	C1	12 x 8 I 45		IBC 2000 Load Combinations Ok	Replace as Condition Requires Only
	C2	8 x 6.5 I 24			
Braces					
	BR1	L 3 1/2 x 2 1/2 x 1/4		IBC 2000 Load Combinations Ok	Replace as Condition Requires Only
Miscellaneous					
	L1	Angle		~	Replace as Condition Requires Only
	C1	C8 x 11.5		IBC 2000 Load Combinations Ok	Replace as Condition Requires Only
	C2	C10 x 20		IBC 2000 Load Combinations Ok	
	CB1	16 I 36		Loading conditions beam may be subjected to are uncertain, beam is in good condition other than requiring cleaning, see condition requirements.	Replace as Condition Requires Only

ELEMENT CODE EVALUATION SCHEDULE

Steel Elements:

	Mark:	Element Size (w x d)	Span/ Spacing	Comments	Recommendations
Mark ⇒ (P1..) Labels from original drawings. Steel FY = 30 ksi, Fu = 56 ksi					
Miscellaneous					
Rivets/Bolts		3/4" Diameter		The type of fastener varies from rivets, to round headed bolts to square and hex head bolts. The fasteners were verified against an A307 and found to be sufficient. The variety, the type of fastener used appears to be dependant upon the installation access during construction.	Replace as Condition Requires Only (Appendix B, Photo: S-025)

APPENDIX E

STRUCTURAL EVALUATION CRITERIA

APPENDIX E

Structural Evaluation Criteria

(Appendix E is included to document the methodology and references used to evaluate the Torpedo Building. At the beginning of each section is a brief statement clarifying the intent of the information included.)

INDEX

APPENDIX E

Request for Proposal: **#36832060**
Project Title & Contract Description: **Unalaska Torpedo Building Demolition**

(The request for proposal is included to provide an at hand reference of the project scope.)

EXHIBIT B-3
BUILDING CONDITION ASSESSMENT AND MATERIALS INVESTIGATION GUIDANCE

I. Documentation

a. Drawings: Reproduction of existing drawings and documentation drawings of existing conditions prepared by the contractor. Both Historic American Building Survey and copies of original drawings are available.

b. Photographs: Reproductions of historic views (if available) and photographs of exterior and interior view and details as part of assessment and documentation of condition. 35mm.

c. Written Data: History and Physical description of building including spatial organization and its use.

d. Condition Assessment of building and systems, not limited to but including the following. Condition Assessment will include:
   - Existing conditions
   - Causes of deterioration
   - Identifying characteristics

   (1 and 2 are usually the first to examine and for "stabilization" efforts should be addressed first.)
   1. Foundation
   2. Roof and related assemblies including trusses, drainage, (ie: gutters etc.)
   3. Primary Structure (walls and columns/connections)
   4. Special Features (lifts, hoists on tracks etc.)
   5. Exterior Cladding
   6. Windows and Doors
   7. Interior Finishes (to include trim and ornamentation, if any)
   8. Electrical Systems (document should explain what the power source was and how it was used/changed/adapted over time)
   9. Mechanical Systems (same as electrical)

II. Materials Testing Concrete and Steel:
   - Causes of Deterioration
   - Identifying the Problem
   - Inspection and Testing
   - Treatment Overview
   - Cracks
   - Separation/spalling

Design/Evaluation Criteria

(The following references and specific design criteria were used in the evaluation of the existing building.)

Codes:

- International Existing Building Code 2003, ICC
- International Building Code 2000, ICC
- ASCE 7, Loads
- AISC, Steel Design
- ACI, Concrete Design
- AFPA, Wood Design
- FEMA, Federal Emergency Management Agency

Loads:

LIVE LOADS

Wind	3 Sec Gust, 135 mph, Exposure C
Snow	40 psf, Roof Design Snow Load
Snow Drift	IBC/ASCE

Existing Structure Consideration: Snow drifting – Not a consideration for the original design and unless modifications or alterations are made that induce drifting drift loads are not required to be included in the assessment.

Floor: Stairs/Exit	75 psf (Reduction from 100 psf)
Mechanical Floor, Weight of Equip	100 psf, equipment is unknown
Existing Structure Considerations:	
Gravity loads	may be within 5% ±.
Wind loads	if allowable stress is method of verification 1/3 increase is acceptable for the stress increase.
Seismic:	See following sheet. If the IBC is used, (IBC is the code used for review) Reduced IBC loads are permissible for evaluation of existing components. Reduction of up to 25%.

Alterations:

Alterations will require other load considerations dependant on the proposed use options.

Design/Evaluation Criteria

Seismic

Earthquake Spectral Response Acceleration Maps – Results

MCE (Maximum Considered Earthquake)

7/9/2003

Dutch Harbor
Latitude ≅ 53.4 Deg, Longitudinal ≅ -166.8 Deg

New Construction

MCE Ground Motion – Alaska, Spectral Parameters for Site Class C

Period (Sec)	MCE Sa (%g)	
0.2	138.3	Sa = FaSs, Fa = 1.00
1.0	068.1	Sa = FvS1, Fv = 1.30

Existing Construction, Design and Evaluation of Existing Construction, FEMA 356

MCE Ground Motion – Alaska, Spectral Parameters for Site Class C

Period (Sec)	MCE Sa (%g)	
0.2	138.3	Sa = FaSs, Fa = 1.00
1.0	068.1	Sa = FvS1, Fv = 1.30

10% in 50 yr Ground Motion – Alaska, Spectral Parameters for Site Class C

0.2	098.8	Sa = FaSs, Fa = 1.00
1.0	045.7	Sa = FvS1, Fv = 1.50

Design/Evaluation Criteria

DEAD LOADS

1st Floor:	Thickness is uncertain, 4" – 6", 50 psf to 75 psf
Loft:	
2x floor boards	4.0 psf
2x12 floor Joists at 16" O.C.	3.0 psf
Miscellaneous	2.0 psf
	9.0 psf
	⇒10 psf
Roof:	
Corrugated M.P.	1.5 psf
Felt	
2 5/8" Plank	7.0 psf
3" Nominal Planking	
	8.5 psf ⇒ 10 psf
	(Does not include Stl)
	(Does include min. Misc.)
(E) Steel	4 psf ⇒ 14 psf
(N) Roof Shtg + EPDM + Insul	4 psf ⇒ 18 psf

Walls:
Light weight steel frames, glass, 2x wood planks ⇒ 10 psf

APPENDIX E

Design/Evaluation Criteria

General System

ROOF

Roof Diaphragm
High Roof – X Bracing of dbl angles
Low Roof/Shed Roofs – Wood decking

WALLS

Interior Walls – X Bracing is present
Parachute Tower – X Bracing is present
Exterior Walls – No Bracing is present
Transverse: Moment frames at 20 ft.

Design/Evaluation Criteria

Material/Section Properties

Steel:

Material Properties

Properties are estimated from testing coupons removed from the existing steel. The properties are compared to the data provided in the reference "Iron and Steel Beams 1873 to 1952" a publication of the American Institute of Steel Construction. Steel manufactured between 1924 to 1931, Structural Steel – A7 and A9 Tensile Strength equal to 55 ksi to 65ksi. The corresponding yield strength is noted as 1/2 T.S. or not less than 30 ksi. The allowable working stress is noted as 18 ksi. From 1933 to 1949 the designation were modified and combined in some cases. With the revisions came an increase in T.S. equal to 60 ksi to 72 ksi resulting in revised yield strength between 33 ksi and 36 ksi. The allowable working stress was increased to 20 ksi. The tested material properties are similar to the material A7 and A9 manufactured prior to 1933.

Yield	Fy =	30 ksi
Allowable working stress	=	18,000 ksi – used typically for bending
Shear	=	Allowable similar to current ASD specifications
Material Specification	=	ASTM A7 – 61T, 1961 AISC 6th Edition – for information and comparison – not used for the existing steel.

Scope:

Carbon Steel shapes, plates and bars of structural quality for use in the construction of bridges and buildings and for general structural purposes.

Product	Group	Properties								
		Mechanical				Chemical				
		Ten. ksi	YP ksi min	% Elong min		Percentages				
				8"	2"	C max	Mn	Si	S max	P max
Shapes	All	60 – 75	33	21	24	...	...	...	.05	Acid .06 Basic .04 Acid bess. .11
Plates and bars	To 1 1/2 thk incl	60 – 72								
	Over 1 1/2 thk	60 – 75								

Remarks:

Copper steel if required shall be specified on order. Cu = 0.20% min. Unless otherwise specified mechanical tests shall not be require for plates over 1 1/2 in. thick used as bearing plates in buildings and for general structural purposes. Such plates when used as bearing plates for bridges shall be subjected to mechanical tests and shall conform to tabulated tensile requirements.

Design/Evaluation Criteria

Existing Building Shapes/Sections:

Field Measured and compared to the ref. information from the publication, "Iron and Steel Beams 1873 to 1952", published by the American Institute of Steel Construction.

Mark/ Section	Wt. / Ft Lb	A In2	D In	bf In	tw In	Dimension		Axis x-x			Axis y-y		
						m In	n In	I In4	S In3	r In	I In4	S In3	r In
P1 & P3 10 I 17	17	4.98	10.12	4.01	.24	.329	.329	81.8	16.2	4.05	3.45	1.72	.83
P2 B12	25	7.44	11.88	6.495	.24	.49	.23	185.1	31.2	4.99	13.6	4.19	1.35
P4 & P5 10 I 21	21	6.19	9.9	5.75	.24	.34	.34	106.3	21.5	4.14	9.7	3.4	1.25
B1 12 I 32	32	9.41	12.12	6.533	.273	.48	.48	246.8	40.7	5.12	20.6	6.3	1.48
B2 18 I 50	50	14.71	18	7.5	.358	.57	.57	800.6	89	7.38	37.2	9.9	1.59
G1 12 I 25	25	7.39	11.87	6.5	.24	.355	.355	183.4	30.9	4.98	14.5	4.5	1.4
C1 12x8 I 45	45	13.2	12.06	8.04	.336	.576	.576	350.8	58.2	5.15	50	12.4	1.94
C2 8x6.5 I 24	24	7.06	8	6.5	.245	.478	.32	83.81	20.95	3.45	16.52	5.08	1.53
CB1 16 I 36	36	10.59	15.85	6.992	.299	.428	.428	446.3	56.3	6.47	22.1	6.3	1.45
8C x 11.5	11.5	3.38	8	2.26 x .39	.220			32.6	8.14	3.11	1.32	.781	.625
10C x 20	20	5.88	10	2.739 x .436	.379			78.9	15.8	3.66	2.81	1.32	.691

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

The following information is from the International Existing Building Code 2003, ICC and is included to document the direction provided by the ICC and how the information is applied. The ICC is a supplement to the IBC providing specific guidance with respect to existing buildings. The information inside the brackets and italicized, [], clarifies the application of the section or sections prior.

CHAPTER 1 – ADMINISTRATION

SECTION 101 GENERAL

101.2 Scope. Repairs, alterations, change of occupancy, existing buildings to which additions are made, historic buildings, and relocated buildings complying with the provisions of the International Building Code, International Mech... as applicable shall be considered in compliance with the provisions of this code.

[The building does require repairs, may require alterations and or a change of occupancy if renovated and is part of a historic building site. The repairs, if undertaken, will comply with the International Building Code as determined applicable by the provisions of this code]

101.5 Maintenance. Buildings and parts thereof shall be maintained in a safe and sanitary condition. The ... All existing devices or safeguards shall be maintained in all existing buildings. The owner or the owner's designated agent shall be responsible for the maintenance of the building.

[This building is not maintained in a safe condition. Preventing access and removing loose materials will return the building to an unoccupied safe condition.]

101.5.1 Work on individual components or portions. Where the code official determines that a component or a portion of a building or structure is in need of repair, strengthening or replacement by provisions of this code, only that specific component or portion shall be required to be repaired, strengthened, or replaced unless specifically required by other provisions of this code.

[This condition survey and assessment indicates the components or portions of the structure in need of repair, strengthening or replacement in accordance with the International Existing Building Code.]

101.5.1 Design values for existing materials and construction. The incorporation... Minimum quality levels and maximum strength values shall comply with this code.

[Maximum strength values comply with the International Existing Building Code.]

SECTION 102 APPLICABILITY

102.1 General. Where... Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

102.4 Referenced codes and standards.

102.4.1 Standards and guidelines for structural evaluation. The code official shall allow structural evaluation, condition assessment, and rehabilitation of buildings, structures, or individual structural members based on this code's appendix chapters, referenced standards, guidelines, or other approved standards and procedures.

[As applicable this code, the code's appendix chapters, referenced standards, guidelines and other approved standards, procedures are incorporated into the structural evaluation, condition assessment and rehabilitation of the building and the individual members.]

SECTION 115 UNSAFE BUILDINGS AND EQUIPMENT

115.1 Conditions. Buildings or existing equipment that are or hereafter become unsafe, insanitary, or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or which constitute a fire hazard, or in which the structure or individual structural members exceed the limits established by the definition of Dangerous in Chapter 2.... Unsafe buildings shall be taken down and removed or made safe, as the code official deems necessary and as provided for in this code. A vacant structure that is not secured against entry shall be deemed unsafe.

[The structure and individual members have been evaluated to determine if they are within the limits established by the definition of Dangerous per Chapter 2, the specific results of the evaluation are included in Appendix D.]

[The structure is not secured against entry and is therefore unsafe]

115.5 Restoration. To the extent that repairs, alterations, or additions are made or a change of occupancy occurs during the restoration of the building, such repairs, alterations, additions, or change of occupancy shall comply with the requirements of this code.

[Repairs, alterations or change of occupancy are considered in the condition survey and assessment of the existing structure and the possible restoration as prescribe by the International Existing Building Code.]

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 2 – DEFINITIONS

SECTION 202 GENERAL DEFINITIONS

DANGEROUS. Any building or structure or any individual member with any of the structural conditions or defects described below shall be deemed dangerous:

1. The stress in a member or portion thereof due to all factored dead and live loads is more than one and one third the nominal strength allowed in the International Building Code for new buildings of similar structure, purpose, or location.

[Item 1 permits a one third increase in the nominal allowable strength – this relates to the definition of dangerous and is not applicable to the assessment of the existing structures ability to support live and dead loads that would have been part of the original design or are added to the structure due to alterations… 5% is the permissible increase in stress/allowable load for gravity loads and wind loads. The applied loads of the IBC may be reduced by 25% for seismic evaluation if modifications/alterations are not made that will change the loading to the existing structural elements.]

[A structure that exceeds the 33% allowable stress increase is considered dangerous. The stresses of the structure generally are within the allowable 5% increase in stress and therefore the structure does not cause the building to be classified as dangerous.]

2. Any portion, member, or appurtenance thereof likely to fail, or to become detached or dislodged, or to collapse and thereby injure persons.

[The roof decking and wall paneling are rotting/failing and likely to continue to fail and detach thereby injuring persons. The loose components do cause the building to be classified as dangerous.]

3. Any portion of a building, or any member, appurtenance, or ornamentation on the exterior thereof is not of sufficient strength or stability, or is not anchored, attached, or fastened in place so as to be capable of resisting a wind pressure of two thirds of that specified in the International Building Code for new buildings of similar structure, purpose, or location without exceeding the nominal strength permitted in the International Building Code for such buildings.

[The roof decking and wall paneling is rotting/failing and are incapable of resisting a wind pressure of two thirds of that specified in the International Building Code for new buildings of similar structure, purpose or location and exceeding the permitted nominal strength as noted in the International Building Code. The loose components do cause the building to be classified as dangerous.]

Existing Building/Historic Building: International Existing Building Code 2003, ICC

4. The building, or any portion thereof, is likely to collapse partially or completely because of dilapidation, deterioration or decay; construction in violation of the International Building Code; the removal, movement or instability of any portion of the ground necessary for the purpose of supporting such building; the deterioration, decay or inadequacy of its foundation; damage due to fire, earthquake, wind or flood; or any other similar cause.

[Portions/components of the building have collapsed and similar portions/members are likely to collapse due to dilapidation, deterioration and decay – example: roof decking.]

5. The exterior walls or other vertical structural members list, lean, or buckle to such an extent that a plumb line passing through the center of gravity does not fall inside the middle one third of the base.

EXISTING BUILDING. A building erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.

HISTORIC BUILDING. Any building or structure that is listed in the State or National Register of Historic Places; designated as a historic property under local or state designation law or survey; certified as a contributing resource within a National Register listed or locally designated historic district; or with an opinion or certification that the property is eligible to be listed on the National or State Registers of Historic Places either individually or as a contributing building to a historic district by the State Historic Preservation Officer or the Keeper of the National Register of Historic places.

[Per the RFP documents, "The Torpedo Bombsight and Utility Shop at the Unalaska Airport is a contributing building to the Dutch Harbor Naval Operating Base and Fort Mears National Historic Landmark, Unalaska, Alaska"]

SUBSTANTIAL STRUCTURAL DAMAGE. A condition where:

1. In any story, the vertical elements of the lateral-force-resisting system, in any direction and taken as a whole, have suffered damage such that the lateral load-carrying capacity has been reduced by more than 20 percent from its pre-damaged condition, or

[The lateral-force-resisting system, in any direction and taken as a whole, has suffered damage such that the lateral load-carrying capacity has been reduced by more than 20 percent from its original condition]

Existing Building/Historic Building: International Existing Building Code 2003, ICC

2. The vertical load-carrying components supporting more than 30 percent of the structure's floor or roof area have suffered a reduction in vertical load-carrying capacity to below 75 percent of the International Building Code required strength levels calculated by either the strength or allowable stress method.

[The vertical load-carrying components supporting more than 30 percent of the structure's floor or roof area have suffered a reduction in vertical load-carrying capacity to below 75 percent of the International Building Code required strength levels.]

[The roof decking has deteriorated, rotted, and subsequently has been removed by the wind, such that more than 30 percent of the structure's roof area has suffered a reduction in vertical load-carrying capacity to below 75 percent of the International Building Code required strength levels.]

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 3 – CLASSIFICATION OF WORK

SECTION 302 REPAIRS

302.1 Scope. Repairs, as defined in Chapter 2, include the patching or restoration of materials, elements, equipment, or fixtures for the purpose of maintaining such materials, elements, equipment, or fixtures in good or sound condition.

302.2 Application. Repairs shall comply with the provisions of Chapter 4.

SECTION 303 ALTERATION–LEVEL 1

303.1 Scope. Level 1 alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.

[The condition survey and assessment considers the removal and replacement of the structural elements and fixtures – such as the roof decking, and wall paneling – Alteration-Level 1 is applicable.]

303.2 Application. Level 1 alterations shall comply with the provisions of Chapter 5.

SECTION 304 ALTERATION–LEVEL 2

304.1 Scope. Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

[The condition survey and assessment considers the reconfiguration of space and installation of additional equipment as necessary to provide viable future uses for the facility – Alteration-Level 2 is applicable.]

304.2 Application. Level 2 alterations shall comply with the provisions of Chapter 5 for Level 1 alterations as well as the provisions of Chapter 6.

SECTION 305 ALTERATION-LEVEL 3

305.1Scope. Level 3 alterations apply where the work area exceeds 50 percent of the aggregate area of the building.

[The condition survey and assessment will likely require the work area to exceed 50 percent of the aggregate area of the building and therefore - Alternate-Level 3 is applicable.]

305.2 Application. Level 3 alterations shall comply with the provisions of Chapters 5 and 6 for Level 1 and 2 alterations, respectively, as well as the provisions of Chapter 7.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

SECTION 306 CHANGE OF OCCUPANCY

306.1 Scope. Change of occupancy provisions apply where the activity is classified as a change of occupancy as defined in Chapter 2.

[The condition survey and assessment considers the reconfiguration of space as necessary to provide viable future uses for the facility – Change of Occupancy is applicable.]

306.2 Application. Changes of occupancy shall comply with the provisions of Chapter 8.

SECTION 308 HISTORIC BUILDINGS

308.1Scope. Historic buildings provisions shall apply to buildings classified as historic as defined in Chapter 2.

[Per the RFP documents, "The Torpedo Bombsight and Utility Shop at the Unalaska Airport is a contributing building to the Dutch Harbor Naval Operating Base and Fort Mears National Historic Landmark, Unalaska, Alaska" – Historic Buildings is applicable]

308.2 Application. Except as specifically provided for in Chapter 10, historic buildings shall comply with applicable provisions of this code for the type of work being performed.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 4 – REPAIRS

SECTION 401 GENERAL

401.1Scope. Repairs... Repairs to historic buildings shall comply with this chapter, except as modified in Chapter 10.

[Chapter 4 – Repairs is applicable to the condition survey and assessment – replacement of roof decking, wall panels are repairs. Chapter 4 – Repairs partially defines the level of force to be applied as part of the condition survey and assessment.]

401.3 Conformance. The work shall not make the building less conforming to the building, plumbing, mechanical, electrical or fire codes of the jurisdiction, or to alternative materials, design and methods of construction, or any previously approved plans, modifications, alternative methods, or compliance alternatives, than it was before the repair was undertaken.

SECTION 407 STRUCTURAL

407.1 General. Repairs of structural elements shall comply with this section.

407.1.1 Seismic evaluation and design. Seismic evaluation and design of an existing building and its components shall be based on the assumed forces related to the response of the structure to earthquake motions.

407.1.1.1 Evaluation and design procedures. The seismic evaluation and design of an existing building shall be based on the procedures specified in the International Building Code, Appendix A of this code (GSREB), ASCE 31 or FEMA 356.

407.1.1.2 IBC level seismic forces. When seismic forces are required to meet the International Building Code level, they shall be based on 100 percent of the values in the International Building Code or FEMA 356. Where FEMA 356 is used, the FEMA 356 Basic Safety Objective (BSO) shall be used for buildings in Seismic Use Group I. For buildings in other Seismic Use Groups the applicable FEMA 356 performance levels shown in Table 407.1.1.2 for BSE-1 and BSE-2 Earthquake Hazard Levels shall be used.

[(IBC Seismic Use Group Table 1604.5, Category I, Seismic Factor IE = 1.0, Snow Factor IS = 1.0, Wind Factor IW = 1.0]

SEISMIC USE GROUP	PERFORMANCE LEVELS OF ASCE 31 AND FEMA 356 BSE-1 EARTHQUAKE HAZARD LEVEL	PERFORMANCE LEVELS OF FEMA 356 BSE-2 EARTHQUAKE HAZARD LEVEL
I	Life Safety (LS)	Collapse Prevention (CP)

[The FEMA requirements provide a clear definition of what will be achieved – can be expected of a structure meeting the requirements of the BSO – a building in Seismic Use Group I. Life Safety Performance (3-C), Collapse Prevention Performance (5-E).

Existing Building/Historic Building: International Existing Building Code 2003, ICC

407.1.1.3 Reduced IBC level seismic forces. When seismic forces are permitted to meet reduced International Building Code levels, they shall be based on 75 percent of the assumed forces prescribed in the International Building Code, applicable chapters in Appendix A of this code "Guidelines for the Seismic Retrofit of Existing Buildings" (GSREB), the applicable performance level of ASCE 31 as shown in Table 407.1.1.2, or the applicable performance level for the BSE-1 Earthquake Hazard level of FEMA 356 shown in Table 407.1.1.2.

[The Building is in Seismic Use Group I. With the requirement of FEMA 356 – Basic Safety Object (BSO), the target building performance level is:

Life Safety Performance Level (3-C)
Collapse Prevention Performance Level (5-E)

(3-C) + (5-E) = BSO

FEMA 356,

Table C1-1	*Rehabilitation Objectives*				
		Target Building Performance Levels			
		Operational Performance Level (1-A)	*Immediate Occupancy Performance Level (1-B)*	*Life Safety Performance Level (3-C)*	*Collapse Prevention Performance (5-E)*
Earthquake Hazard Level	*50%/50 year*	*A*	*b*	*C*	*d*
	20%/50 year	*E*	*f*	*G*	*h*
	BSE-1 (~10%/50 year)	*I*	*j*	*K*	*l*
	BSE-2 (~2%/50 year)	*M*	*n*	*O*	*p*

k+p = Basic Safety Objective (BSO)]

407.1.2 Wind design. Wind design of existing buildings shall be based on the procedures specified in the international Building Code as applicable.

[Evaluation of the lateral systems and components resistance to wind forces is per the International Building Code and International Existing Building Code, Historic Buildings, as applicable]

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

407.3 Damaged buildings. Damaged buildings shall be repaired in accordance with this section.

[The Torpedo Building, as a result of neglect, has incurred damage to the structural systems and elements in the form of rotted wood members, corroded steel frame elements and possibly differential settlement due to freeze thaw forces as a result of the building being unheated.]

407.3.1 New structural frame members. New structural frame members used in the repair of damaged buildings, including anchorage and connections, shall comply with the International Building Code.

Exception: For the design of new structural frame members connected to existing structural frame members, the use of reduced International Building code level seismic forces as specified in Section 407.1.1.3 shall be permitted.

[Torpedo Building – reduced International Building Code Level seismic forces are applicable (75%).]

407.3.2 Substantial structural damage. Buildings that have sustained substantial structural damage shall comply with this section. (See previous definitions)

[Torpedo Building has sustained substantial structural damage.]

407.3.2.1 Engineering evaluation and analysis. An engineering evaluation and analysis that establishes the structural adequacy of the damaged building shall be prepared by a registered design professional and submitted to the code official. The evaluation and analysis may assume that all damaged structural elements and systems have their original strength and stiffness. The seismic analysis shall be based on one of the procedures specified in Section 407.1.1.

[Torpedo Building – International Building Code per Section 407.1.1]

407.3.2.1.1 Extent of repair. The evaluation and analysis shall demonstrate that the building, once repaired, complies with the wind and seismic provisions of the International Building Code.

Exception: The seismic design level for the repair design shall be the higher of the Building Code in effect at the time of original construction or reduced International Building Code level seismic forces as specified in Section 407.1.1.3.

[Torpedo Building - Reduced International Building Code Level Seismic Forces are applicable]

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

407.3.3 Below substantial structural damage. Repairs to buildings damaged to a level below the substantial structural damage level as defined in Section 202 shall be allowed to be made with the materials, methods and strengths in existence prior to the damage unless such existing conditions are dangerous as defined in Chapter 2. New structural frame members as defined in Chapter 2 shall comply with Section 407.3.1.

[Torpedo Building – Repairs to the extent that the condition is defined by the Dangerous Building definition]

407.3.4 Other uncovered structural elements. Where in the course of conducting repairs other uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements of Section 407.3.2.1.1.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 5 – ALTERATIONS-LEVEL 1

SECTION 501 GENERAL

501.1 Scope. Level 1 alteration to historic buildings shall comply with this chapter, except as modified in Chapter 10.

SECTION 507 STRUCTURAL

507.1 General. Where alteration work includes replacement of equipment that is supported by the building or where a reroofing permit is required, the structural provisions of this section shall apply.

507.2 Design criteria. Existing structural components supporting alteration work shall comply with this section.

507.2.1 Replacement of roofing or equipment. Where replacement of roofing or equipment results in additional dead loads, structural components supporting such reroofing or equipment shall comply with the vertical load requirements of the International Building Code.

[Torpedo Building – The building will require a reroofing, efforts will be made to replace the existing roofing to weigh no more than the previous roofing. Code permits up to 5% increase in mass/stress]

Exceptions:
1. Structural elements whose stress is not increased by more than 5 percent.
2. Buildings constructed in accordance with the International Residential Code or the conventional construction methods of the International Building Code and where the additional dead load from the equipment is not increased by more than 5 percent.

[The exception permits and increase of 5% stress/dead load before requiring the use of the IBC code requirements.]

507.3 Roof diaphragm. Where roofing materials are removed from more than 50 percent of the roof diaphragm of a building where the roof diaphragm is a part of the main wind force-resisting system the integrity of the roof diaphragm shall be evaluated and if found deficient because of insufficient or deteriorated connections, such connections shall be provided or replaced.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 6 – ALTERATIONS-LEVEL 2

SECTION 601 GENERAL

601.1 Scope. Level 2 alterations as described in Section 304 shall comply with the requirements of this chapter.

601.2 Alteration Level 1 Compliance. In addition to the requirements of this chapter, all work shall comply with the requirements of Chapter 5.

SECTION 607 STRUCTURAL

607.1 General. Where alteration work includes installation of additional equipment that is structurally supported by the building or reconfiguration of space such that portions of the building become subjected to higher gravity loads as required by Tables 1607.1 and 1607.6 of the International Building Code, The provisions of this section shall apply.

607.3 New structural members. New structural members in alterations, including connections and anchorage, shall comply with the International Building Code.

607.4 Existing structural members. Existing structural components supporting additional equipment or subjected to additional loads based on International Building Code Tables 1607.1 and 1607.6 as a result of a reconfiguration of spaces shall comply with Sections 607.4.1 through 607.4.3.

607.4.1 Gravity loads. Existing structural elements supporting additional gravity loads as a result of additional equipment or space reconfiguration shall comply with the International Building Code.

Exceptions:

1. Structural elements whose stress is not increased by more than 5 percent.
2. Buildings of group R occupancy with not more than five dwelling units or sleeping units used solely for residential purposes where the ...

607.4.2 Lateral loads. Buildings in which Level 2 alterations increase the seismic base shear by more than 5 percent shall comply with the structural requirements specified in Section 707.

[Per 407.3.1 – the existing building may be evaluated for seismic loads using the reduced IBC loads – a reduction of 25% force.]

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

607.4.3 Snow drift loads. Any structural element of an existing building subjected to additional loads from the effects of snow drift as a result of additional equipment shall comply with the International Building Code.

Exception:
1. Structural elements whose stress is not increased by more than 5 percent.
2. Building of Group R occupancy...

[The existing structure may be evaluated for base snow load without drift loads if unaltered – the code at the time of construction would not have included drifting snow loads as part of the design and analysis of the elements.]

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 7 – ALTERATIONS-LEVEL 3

SECTION 701 GENERAL

701.1 Scope. Level 3 alterations as described in Section 305 shall comply with the requirements of this chapter.

701.2 Compliance. In addition to the provisions of this chapter, work shall comply with all of the requirements of Chapters 5 and 6. The requirements of Sections 603, 604, and 605 shall apply within all work areas whether or not they include exits and corridors shared by more than one tenant and regardless of the occupant load.

Exception: Buildings...

SECTION 707 STRUCTURAL
707.1 General. Where buildings are undergoing Level 3 alterations including structural alterations, the provisions of this section shall apply.

707.3 New structural members. New structural members in alterations, including connections and anchorage, shall comply with the International Building Code.

707.4 Minimum design loads. The minimum design loads on existing elements of a structure that do not support additional loads as a result of an alteration shall be the loads applicable at the time the building was constructed.

[707.4 is in agreement with the statement made is section 607.4.3 Snow Drift Loads. Snow drift loads were not part of the code requirements at the time of original construction.]

707.5 Structural alterations. Buildings and structures undergoing structural alterations or buildings in which the seismic base shear is increased by more than 5 percent because of alterations shall comply with this section.

707.5.1 Evaluation and analysis. An engineering...

707.5.2 Limited structural alteration. Where not more than 30 percent of the total floor and roof areas of the building is involved in structural alteration within a 12-month period, the evaluation and analysis shall demonstrate that the altered building or structure complies with the loads applicable at the time the building was constructed.

707.6 Additional vertical loads. Where gravity loading is increased on the roof or floor of a building or structure, all structural members affected by such increase shall meet the gravity load requirements of the International Building Code.

Exception:
1. Structural elements whose stress is not increased by more than 5 percent.
2. Buildings of ...

707.7 Voluntary later-force-resisting system alterations. Alterations of existing structural elements that are initiated for the purpose of increasing the lateral-force-resisting strength or stiffness of an existing structure and that are not required by other sections of this code shall not be required to be designed for forces conforming to the International Building Code provided that an engineering analysis is submitted to show that:

1. The capacity of existing structural elements required to resist forces is not reduced;
2. The lateral loading to existing structural elements is not increased beyond their capacity;
3. New structural elements are detailed and connected to the existing structural elements as required buy the International Building Code;
4. New or relocated nonstructural elements are detailed and connected…
5. A dangerous condition as defined in this code is not created.

Voluntary alterations to lateral-force-resisting systems conducted in accordance with Appendix A and the referenced standards of this code shall be permitted.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 8 – CHANGE OF OCCUPANCY

SECTION 801 GENERAL

801.1 Repair and alteration with no change of occupancy classification. Any repair or alteration work undertaken in connection with a change of occupancy that does not involve a change of occupancy classification as described in the International Building Code shall conform to the applicable requirements for the work as classified in Chapter 3 and to the requirements of Sections 802 through 811.

Exceptions:
1. ...
2. As modified in Section 1005 for historic buildings.
3. As permitted in Chapter 12.

SECTION 807 STRUCTURAL

807.1 Gravity loads. Buildings or portions thereof subject to a change of occupancy where such change in the nature of occupancy results in higher uniform or concentrated loads based on Tables 1607.1 and 1607.6 of the International Building Code shall comply with the gravity load provisions of the International Building Code.

Exception: Structural elements whose stress is not increased by more than 5 percent.

[This is applicable to gravity loads – not seismic, see 407.1.1.3]

807.2 Snow and wind loads. Buildings and structures subject to a change of occupancy where such change in the nature of occupancy results in higher wind or snow importance factors based on Table 1604.5 of the International Building Code shall be analyzed and shall comply with the applicable wind or snow load provisions of the International Building Code.

Exception: Where the new occupancy with a higher importance factor is less than or equal to 10 percent of the total building floor area. The cumulative effect of the area of occupancy changes shall be considered for the purposes of this exception.

807.3 Seismic loads.
Existing buildings with a change of occupancy shall comply with the seismic provisions of Sections 807.3.1 and 807.3.2.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

807.3.1 Compliance with the International Building Code. When a building or portion thereof is subject to a change of occupancy such that a change in the nature of the occupancy results in a higher seismic factor based on Table 1604.5 of the International Building Code or where such a change of occupancy results in a reclassification of a building to a higher hazard category as shown in Table 812.4.1 and a change of a Group M occupancy to a Group A, E, I-1 R-1, R-2, or R-4 occupancy with two-thirds or more of the floors involved in Level 3 alteration work, the ;building shall conform to the seismic requirements of the International Building Code for the new seismic use group.

Exceptions:

1. Group M occupancies being changed to Group....for buildings less than six stories in height and in Seismic Design Category A, B, or C.

2. specific detailing provisions required for a new structure are not required to be met where it can be shown that an acceptable level of performance and seismic safety is obtained for the applicable seismic use group using reduced International Building Code level seismic forces as specified in Section 407.1.1.3. The rehabilitation procedures shall be approved by the code official and shall consider the regularity, over-strength, redundancy, and ductility of the later-load-resisting system within the context of the existing detailing of the system.

3. Where the...

4. Where the...

5. Where unreinforced...

812.6 Seismic loads. Existing buildings with a change of occupancy classification shall comply with the seismic provisions of Section 807.3.

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

CHAPTER 9 – ADDITIONS (NA)

CHAPTER 10 – HISTORIC BUILDINGS

SECTION 1001 GENERAL

1001.1 Scope. It is the intent of this chapter to provide means for the preservation of historic buildings. Historical buildings shall comply with the provisions of this chapter relating to their repair, alteration, relocation and change of occupancy.

1001.2 Report. A historic building undergoing repair, alteration, or change of occupancy shall be investigated and evaluated. If it is intended that the building meet the requirements of this chapter, a written report shall be prepared and filed with the code official by a registered design professional when such a report is necessary in the opinion of the code official. Such report shall be in accordance with Chapter 1 and shall identify each required safety feature that is in compliance with this chapter and where compliance with other chapters of these provisions would be damaging to the contributing historic features. In high seismic zones, a structural evaluation describing, at minimum, a complete load path and other earthquake-resistant features shall be prepared. In addition, the report shall describe each feature that is not in compliance with these provisions and shall demonstrate how the intent of these provisions is complied with in providing an equivalent level of safety.

[1001.2 – This report is in accordance with chapter 1 and the requirements of the RFP, including a description of the earthquake-resistant load path and whether it is in compliance and where not in compliance recommendations are made to achieve compliance.]

SECTION 1002 REPAIRS

1002.1 General. Repairs to any portion of a historic building or structure shall be permitted with original or like materials and original methods of construction, subject to the provisions of this chapter.

1002.2 Dangerous buildings. When a historic building is determined to be dangerous, no work shall be required except as necessary to correct identified unsafe conditions.

[Work required to correct the unsafe conditions are identified.]

1002.4 Chapter 4 compliance. Historic buildings under going repairs shall comply with all of the applicable requirements of Chapter 4, except as specifically permitted in this chapter. (Chapter 4 Repair)

SECTION 1004 ALTERATIONS

1004.1 Accessibility requirements. The provisions of Section 506 (Accessibility) shall apply to buildings and facilities designated as historic structure that undergo alterations, unless technically infeasible.

SECTION 1005 CHANGE OF OCCUPANCY

APPENDIX E

Existing Building/Historic Building: International Existing Building Code 2003, ICC

SECTION 1006 STRUCTURAL

1006.1 General. Historic buildings shall comply with the applicable structural provisions for the work as classified in Chapter 3.

Exception: The code official shall be authorized to accept existing floors and approve operational controls that limit the live load on any such floor.

[If floor live loads can be limited while achieving the project goals the floor capacities will be considered sufficient.]

1006.2 Unsafe structural elements. Where the code official determines that a component or a portion of a building or structure is dangerous as defined in this code and is in need of repair, strengthening, or replacement by provisions of this code, only that specific component or portion shall be required to be repaired, strengthened, or replaced.

[At the very least identified unsafe conditions shall be repaired, strengthened or replaced.]

APPENDIX E

Testing

1. Testing Institutes of Alaska, Inc.
   Lab Report - Rockwell B Hardness
   Lab Report - Tensile Tests
   Lab Report - Chemical Analysis - Column
   Lab Report - Chemical Analysis - Beam

Testing Institute of Alaska, Inc.

2114 Railroad Avenue
Anchorage, Alaska 99501-1779
PHONE: (907) 276-3440
FAX: (907) 279-7093
EMAIL: tia@tialaska.com
WEB SITE: www.tialaska.com

LAB REPORT

CLIENT: TRYCK NYMAN HAYES, INC.

TIA JOB No.: 12137

SUBJECT: Rockwell B Hardness Test

TIA TEST No.: 12137

IDENTIFICATION: Torpedo Building Samples
Specimen #1: Sample from Flange Grid 6 & C (Column)
Specimen #2: Sample from Flange Grid 7 & C (Beam)

CODE: ASTM E 18

Specimen No	Rockwell B Hardness						Approximate Tensile Strength Conversion From Hardness (psi)
	Indentation No					Average	
	1	2	3	4	5		
COLUMN	58	61	59	61	61	**60**	**52,000**
BEAM	66	65	63	62	62	**64**	**56,000**

HAMILTON ITO – METALLURGICAL ENGINEER

DATE: 06-17-03

Testing Institute of Alaska, Inc.

2114 Railroad Avenue
Anchorage, Alaska 99501-1779
PHONE: (907) 276-3440
FAX: (907) 279-7093
EMAIL: tia@tialaska.com
WEB SITE: www.tialaska.com

LAB REPORT

CLIENT: TRYCK NYMAN HAYES, INC.

TIA JOB NO.: 12137

TIA TEST NO.: 12137

SUBJECT: MATERIAL IDENTIFICATION

IDENTIFICATION: BEAM - TORPEDO BUILDING - SAMPLE FROM FLANGE GRID 7 & C (BEAM)

CODE: ASTM A370

TENSILE PROPERTIES FOR STRIP SPECIMENS

Specimen No.	Width In.	Thick. In.	Area Sq. In.	T. Load Lbs.	Y. Load Lbs.	Tensile psi	Yield psi	Elongation %	T ° F	Failure Location
T1	0.765	0.465	0.3557	20,800	11,500	58,472	32,328	29	RT	N/A
T2	0.756	0.461	0.3485	19,450	10,600	55,808	30,415	35	RT	N/A
AVERAGE VALUES						**57,190**	**31,372**	**32**		
MINIMUM SPECIFICATION REQUIREMENTS										

*Yield strength determined by 0.2% offset method
RT = Room Temperature - Approximately 70° F

We certify that the statements made in this record are correct and that the tests were prepared and tested in accordance with the requirements of the applicable codes referenced above.

TESTING INSTITUTE OF ALASKA, INC.

HAMILTON ITO - METALLURGICAL ENGINEER

DATE: 06-17-2003

Testing Institute of Alaska, Inc.

2114 Railroad Avenue
Anchorage, Alaska 99501-1779
PHONE: (907) 276-3440
FAX: (907) 279-7093
EMAIL: tia@tialaska.com
WEB SITE: www.tialaska.com

LAB REPORT

CLIENT: TRYCK NYMAN HAYES, INC. **TIA JOB NO.:** 12137

SUBJECT: CHEMICAL ANALYSIS **SECTION NO.:** 12137

IDENTIFICATION: COLUMN - TORPEDO BUILDING - SAMPLE FROM FLANGE GRID 6 & C (COLUMN)

CODE(S): ASTM A751 & E1282

CHEMICAL ANALYSIS

ELEMENT	COMPOSITION (%)
Carbon, C	0.16
Manganese, Mn	0.51
Silicon, Si	<0.01
Phosphorus, P	0.005
Sulfur, S	0.022
Nickel, Ni	0.02
Chromium, Cr	0.02
Molybdenum, Mo	<0.01
Vanadium, V	<0.01
Iron, Fe	Balance

ANALYSIS BY X-RAY & LECO

TESTING INSTITUTE OF ALASKA, INC.

DATE: 06-17-2003

MILTON ITO
METALLURGICAL ENGINEER

Testing Institute of Alaska, Inc.

2114 Railroad Avenue
Anchorage, Alaska 99501-1779
PHONE: (907) 276-3440
FAX: (907) 279-7093
EMAIL: tia@tialaska.com
WEB SITE: www.tialaska.com

LAB REPORT

CLIENT: TRYCK NYMAN HAYES, INC. **TIA JOB NO.:** 12137

SUBJECT: CHEMICAL ANALYSIS **SECTION NO.:** 12137

IDENTIFICATION: BEAM - TORPEDO BUILDING - SAMPLE FROM FLANGE GRID 7 & C (BEAM)

CODE(S): ASTM A751 & E1282

CHEMICAL ANALYSIS

ELEMENT	COMPOSITION (%)
Carbon, C	0.22
Manganese, Mn	0.53
Silicon, Si	0.11
Phosphorus, P	0.009
Sulfur, S	0.026
Nickel, Ni	0.08
Chromium, Cr	0.03
Molybdenum, Mo	<0.01
Vanadium, V	<0.01
Iron, Fe	Balance

ANALYSIS BY X-RAY & LECO

TESTING INSTITUTE OF ALASKA, INC.

DATE: 06-17-2003

HAMILTON ITO
METALLURGICAL ENGINEER