ADDENDUM TO
LADD FIELD,
BIRCHWOOD HANGAR (STRUCTURE 3008)
Fort Wainwright
Fairbanks
Fairbanks North Star Borough
Alaska

HABS No. AK-36-M

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Park Service
Alaska Support Office
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501

HISTORIC AMERICAN BUILDINGS SURVEY

ADDENDUM TO

LADD FIELD, BIRCHWOOD HANGAR (Hangar No. 2)

HABS NO. AK-36-M

Location: Montgomery Road and Meridian Road, northeast quadrant
Fort Wainwright; Fairbanks; Fairbanks North Star Borough; Alaska
Hangar No. 2 was located at latitude: 64.830555°, longitude: -147.639290. The coordinate was taken on 20 June 2007 from the center of the building's roof, using the North American Datum 1983. The location of Hangar No. 2 has no restriction on its release to the public.

Present Owner/Occupant: U.S. Army

Present Use: Demolished

Significance: Constructed in 1943-1944, Hangar No. 2 was significant for its integral role in successive Army and Air Force missions during World War II and the Cold War, between 1943 and 1991. The hangar was a contributing resource within the Ladd Field National Historic Landmark (NHL) District. Additionally, it was listed on the National Register of Historic Places (NRHP) under Criterion A for its role as an aircraft supply and repair depot and a cargo and passenger flight hub for the Air Transport Command mission of World War II. While Ladd Field was established as a small research base prior to the United States' entry into World War II, Hangar No. 2 was constructed as part of the installation's rapid expansion during the wartime Aleutian Campaign and Lend-Lease Program, during which approximately 4,500 troops were stationed at the post. Hangar No. 2 provided repair facilities for aircraft used in the installation's combat, Lend-Lease, and testing missions. The building also housed shops that supported the base's cold-weather testing program.

Hangar No. 2 was also significant as a contributing resource within the Cold War Historic District, which is eligible for the NHRP under Criterion A for its association with strategic air reconnaissance, air defense, and arctic research missions of the Cold War, between 1945 and 1991. Following World War II, Ladd Field was transferred to the Air Force and renamed Ladd Air Force Base. Due to its northern location near Siberia, the facility was strategically critical for reconnaissance and defense activities aimed

toward the Soviet Union. The installation supported missions in polar areas intended to collect information on arctic weather conditions as well as Soviet military facilities. Ladd AFB served as the front line for a hypothesized northern invasion, and the Air Force used its facilities to prepare for arctic air combat. Early in the Cold War, Hangar No. 2 was used as a repair facility for aircraft, specifically housing fighter intercept squadrons and support offices for weather reconnaissance missions.

Finally, Hangar No. 2 was significant for its representation of military construction during World War II. Built from an Army standard termed the Birchwood Hangar, it was one of several such structures erected around Alaska during the war. These featured all-wood construction, barrel-arch roof profiles and open hangar spaces flanked by two-story office wings. Almost all of the Birchwood Hangars in Alaska have since been demolished, meaning that Ladd Field Hangars No. 1 (HABS No. AK-36-E), 2, and 3 were all among the last of their type.

Hangars No. 2 and 3 were demolished in July 2014, after the HABS documentation process was completed. An architectural conditions assessment of the hangars followed extensive fire damage to Hangar No. 2 in February 2011, and the decision to demolish both hangars came as a result of the assessment.

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: 1943-1944

2. Architect: Designed by the Seattle District Engineer Office of the U.S. Army Corps of Engineers. This office oversaw the design of all new construction by the U.S. Army in Alaska during World War II.

3. Original and subsequent owners: U.S. Army Air Corps, 1943-1947; U.S. Air Force, 1947-1961; U.S. Army, 1961-present

4. Original plans and construction: The design for the hangar was the U.S. Army Corps of Engineers' Plan No. 6808-630, Modified Birchwood Hangar #1. Original drawings were N-17-310 (fifteen sheets) and 310.1 (nine sheets), "Modified Birchwood Hangar." As designed, the hangar was approximately 200'-0" x 202'-0". The building was constructed with a concrete foundation and wood timber framing. The central

portion of the hangar consisted of a barrel-roofed open hangar floor measuring about 152'-0" x 200'-0". Providing space for offices and shops, the two-story side wings measured roughly 25'-0" x 200'-0" per story and contained an aggregate space of 20,000 square feet. The building's total area is about 50,400 square feet.

The building was originally constructed with large sliding metal hangar doors spanning the east and west façades. Each door consisted of twelve panels that separated from the center and slid on metal rails into compartments on either end of the door opening where they stacked side by side. The compartments projected forward from the exterior wall and rose higher than the arched roof behind them. These towers were joined by a shed-roof overhang that spanned the façade, sheltering the hangar doorway. Railed platforms were constructed on the roofs of the door compartments. External staircases, built in 1945, were located at the outer ends of the west and east façades.

5. Alterations and additions: Hangar No. 2 received alterations to its exterior and interior fabric over time, in response to periodic needs for repairs and systems updates. Fort Wainwright property records indicate that the building's roof was first replaced in 1950 with corrugated aluminum sheeting. Roof replacement occurred again in 1970, 1986 and in 1996, at which time EPDM rubber roofing was installed on the main roof surface. The original exterior metal siding was replaced with corrugated metal siding in 1949 and replaced again in 1974. In 1945, fire escapes were added on the exterior corners of the hangar**.** In 1949, an 8'-0" x 8'-0" double-leaf storm entrance was installed on the north side of the hangar; in 1980, the metal entrance canopies were installed. In 1960, the original metal sliding doors were repaired, with the replacement of the wheels and weather stripping. In 1989, the doors were replaced entirely. At this time, the door openings were reduced in size, and fabric curtain doors were installed. Portions of the exterior two-story stairways were removed, reinstalled, and enclosed in 1973. Original wood window frames and glass lights were removed in 1971 and infilled with single-light casement windows. The windows were replaced with vinyl-clad windows in 2001. In 2011, an electrical fire burned through the roof frame near the hangar's west end. The siding at the top of the west façade was subsequently removed and patched with plywood board. At roughly this time, the exterior door compartment towers, railed platforms, and enclosed stairwells were partially removed from the building.

   Structural, mechanical, and electrical alterations were made to the interior of Hangar No. 2 at various times after its construction. In 1973, cracks and breaks in the wood roof trusses were repaired, and in 1984, the trusses were reinforced. At that time plywood plates were installed on the central truss to provide better shear resistance. In 1953, dust-proofing and air conditioners were added to the hangar. This work included piping, duct work, and insulation. During the 1950s and 1960s, lighting systems were improved, benches and shelves were added, fume exhaust fans were

replaced, a water cooler was installed, and an air conditioning unit was removed. In the 1970s and 1980s, steam lines, tube radiation units, lighting, and unit heaters were replaced. In addition, a deluge and wet pipe system were installed complete with piping, controls, flow meters, air compressor, fire department connections, water motor gong, and appurtenances. An existing alarm system was modified to work with the deluge system. The heating system was replaced by two unit heaters during the 1990s.

B. Historical Context

1. Ladd Field as Cold Weather Test Station

During the 1930s, U.S. Army Major General H.H. "Hap" Arnold identified the need for a cold-weather testing station in Alaska to experiment in adapting military planes, personnel, equipment, and base facilities for operation in arctic temperatures. The construction of such a base was authorized—though not funded—by the Wilcox National Air Defense Act in 1935. In March 1937, the government set aside 960 acres of public land for a military reservation in the Fairbanks area. After Arnold became chief of the Army Air Corps, he persuaded the War Department to conduct a survey for a cold weather aircraft testing facility on the Fairbanks military reservation land during the early summer of 1938. The Army chose a site three-and-one-half miles east of Fairbanks and began constructing the Cold Weather Experimental Station that fall. On December 1, 1939, while construction of the airfield was underway, the installation was named Ladd Field, in honor of Major Arthur K. Ladd, who had died in an aircraft accident in South Carolina in 1935. Ladd Field was activated with the arrival of the first Army Air Corps troops on April 14, 1940. It was the first Army airfield in Alaska Territory.

Additional troops arrived in September 1940, soon followed by the first Boeing B-17 Flying Fortress bomber. Personnel in the Cold Weather Testing Detachment [CWTD] used portable nose docks to service the aircraft during cold weather, while a permanent maintenance facility, Hangar No. 1, was under construction. Weather and communications detachments were assigned to the post in 1941. Construction of the runway and buildings continued, and by September the post was staffed by 41 officers and 479 enlisted men. Most were assigned to Ladd Field temporarily due to the rapid build-up of military forces in other parts of Alaska. This prompted base commander Lt. Colonel Dale W. Gaffney to complain to his superiors about the difficulties of mounting a testing program with limited personnel and incomplete facilities, amid rumors that Ladd Field would be used for other purposes.

Despite these problems, cold weather testing continued at Ladd Field until the spring of 1942. After the Japanese invasion of the Aleutians, the Army disbanded the CWTD and dispersed its personnel to other military posts in the territory. In July

1942, the commanding general of the Army Air Corps recognized the need for further cold-weather testing and reactivated the CWTD at Ladd. Crews undertook field testing of aircraft and experimenting with clothing, food, motor transportation, medical research, and communications. The AAC collected critical information about wing icing, navigation, maintenance and operations, instruments and controls, radio communication, cold-weather clothing, armaments, and other issues pertaining to aircraft operation under arctic conditions. The military incorporated this data into production-line requirements for new airplanes and modification of existing craft, thus improving U.S. cold-weather aircraft operations. Testing continued well after the conclusion of World War II. During peak operations each winter, the CWTD averaged 560 personnel, including as many as 52 civilian factory representatives.

2. Air Depot

U.S. entry into World War II broadened Ladd Field's mission and resulted in significant development of its facilities. After the Japanese attack on Pearl Harbor in December 1941, the Army placed Ladd Field on wartime status, evacuating dependents from Alaska. In May 1942, following the dissolution of the CWTD, the Eleventh Air Division assumed command of the post and established an air depot at Ladd Field to repair military aircraft used in defending the territory. The Sixth Air Depot Group and eight attached units, comprising 25 officers and 843 enlisted men, arrived at Ladd in July 1942. The Sixth Air Depot had sub-posts at Galena, Big Delta, Tanacross, and Northway to support its operations. Personnel at Ladd Field serviced and repaired military aircraft used in the Aleutian Campaign.

With the increased wartime demands, Ladd Field rapidly developed from a small garrison into a major military installation that was home to thousands of troops. Ladd had been laid out originally as a formal cluster of buildings arrayed in a horseshoe pattern on the north side of the main runway, with massive Hangar No. 1 (HABS No. AK-36-E) dominating the horseshoe's base. Around the horseshoe were quarters for officers and enlisted men, the commanding officer's house, a hospital, theater, and power plant, among other supporting structures. The design and construction of this section of the field occurred before the demands of war created an emergency situation in which formality and architectural appearance were subsumed by the need for rapid deployment. During this period of rapid expansion, the airfield grew with more than 700 buildings constructed to accommodate the addition of 4,500 troops needed to support aircraft repair, supply depot activities, and Lend-Lease Operations. After U.S. and Canadian forces drove the Japanese from the western Aleutians in 1943, the size of the Eleventh Air Force decreased, resulting in less work for the depot at Ladd Field. The Sixth Air Depot Group was disbanded in April 1944.

3. The Air Traffic Command and Alaska-Siberia Lend-Lease Operations

During the second half of 1942, the Army Air Corps assigned Ladd Field a third mission—to assist in the transport of aircraft from the U.S. to the Soviet Union. The

Lend-Lease Act of March 1941 authorized the president to sell, lease, or lend arms, munitions, food, and other war materiel to any country whose defense he deemed vital to the defense of the U.S. Ultimately costing some $42 million, the program was designed to assist Great Britain, but after Germany invaded the Soviet Union in June 1941, President Roosevelt extended the program to include Russia. Routes for ferrying American aircraft to the Soviets included a northern route across the Atlantic to Murmansk (4,000 miles), a southern route from Florida through North Africa, Iraq, and Iran to Moscow (13,000 miles), and a northern route from Great Falls, Montana, through Canada, Alaska, and Siberia to Moscow (7,900 miles). The first route was vulnerable to German air and naval forces. The southern route was too long and lacked adequate facilities. This left the Alaska-Siberia [ALSIB] route as the most feasible alternative. Soviet Premier Joseph Stalin initially opposed the ALSIB route, as he did not want U.S. bases in Siberia, and he did not want to offend Japan, with whom he had signed a neutrality pact. In July 1942, as Russia's military situation deteriorated, Stalin agreed to the northern route. The U.S. in turn agreed not to build bases in Siberia or have its pilots fly over Soviet airspace.

The portion of the Lend-Lease ferrying route that led from Great Falls, Montana, to Alaska was called the Northwest Staging Route. As the operation involved limited-range aircraft, the distance between successive airfields was restricted. For refueling points, the U.S. and Canada adapted a series of airfields that had been constructed between 1940 and 1942. The Alaskan airfields were at Northway, Tanacross, Big Delta, Fairbanks, Galena, and Nome. Sixty remote outposts were set up in Canada and Alaska to provide weather and communication services for the North American portion of the ALSIB operation. Pilots of the Seventh Ferrying Group flew the aircraft from Montana to Ladd Field. Ground personnel from this group provided support at airfields along the way.

The Air Transport Command [ATC] oversaw Lend-Lease operations at Ladd Field. Ladd was the most significant base on the route because it was the location at which Soviet pilots took custody of airplanes from the Americans. The first group of Lend-Lease aircraft, five A-20 Havoc attack bombers, landed at Ladd Field on September 3, 1942. On the following day, officers of the permanent Soviet mission arrived from Siberia. A contingent of Soviet pilots landed at Ladd Field on September 24 to begin five days of training before flying the planes to Russia.

After aircraft arrived at Ladd Field, they were inspected by U.S. and Soviet personnel, serviced, and repaired if necessary. Soviet pilots flew the aircraft to Nome for refueling and repairs before crossing the Bering Strait. Soviet personnel at Ladd Field generally got along well with the Americans, despite the language barrier, delays in receiving aircraft, and differences in orientation toward aircraft training. Soviet pilots and mechanics had free run of Ladd Field and occupied many of the hangars and shops erected in 1943. Soviet cargo aircraft delivered Russian pilots to Fairbanks and carried high priority cargo—such as aircraft engines, parts, and

munitions—on the return trip west. This cargo operation was a significant part of the Lend-Lease program.

On September 30, 1943, the ATC took command of Ladd Field, including the cold-weather testing program and air-depot functions. The activities of other ATC airfields in Alaska were directed from Ladd Field. The exigencies of war took precedence over cold-weather testing, and many of Ladd Field's original facilities were used principally for Lend-Lease operations. In 1942 the number of Lend-Lease aircraft flown through Alaska to the Soviet Union increased totaled 150 planes, 2,662 planes in 1943. In June 1944, the Soviets requested that all Lend-Lease aircraft be sent by way of Alaska. The number of aircraft delivered over the route continued to increase, totaling 3,164 in 1944 and 2,009 planes through the first seven months of 1945. By September 1945, when the operation ended and the Soviets left Alaska, the U.S. had delivered 7,926 combat and transport aircraft to the Soviets over the ALSIB route. This included more than 5,000 fighters (mostly P-39s and P-63s), more than 1,300 light bombers (A-20s), about 700 medium bombers (B-25s), and 700 transports (C-47s). The number of aircraft ferried across the ALSIB route to the Soviet Union exceeded the number of aircraft sent to the Soviet Union by all other routes. U.S. aircraft delivered over this route helped the Soviets stop the German invasion and contributed to the Russian victory on the eastern front in Europe.

In addition to coordinating the movement of Lend-Lease aircraft across the Northwest Staging Route, the ATC was responsible for delivering cargo and passengers throughout the Alaskan theater, as well as between the territory and the contiguous United States. These roles were overseen by the ATC's Priorities & Traffic [P&T] division. Following the Japanese invasion of the Aleutian Islands, the need to transport supplies, materiel, and soldiers to western Alaska increased significantly. Ladd Field's central location in Alaska made it a prominent transfer point. The volume of supplies, personnel, and mail passing through Ladd Field was so great that the ATC contracted with two commercial airline carriers—Northwest Airlines and Western Airlines—to ferry Army cargo. The Air Freight and Cargo section of the P&T was responsible for warehousing, manifesting, and loading mail and all cargo that passed through the field.

Transporting civilian and military passengers was also a major operation at Ladd Field, forming approximately half of P&T's total traffic. The number of passengers per month could surpass 3,000. One primary group was American Lend-Lease pilots who landed in Fairbanks and required return passage to Great Falls. ATC passengers also included American and Soviet officials who traveled the ALSIB route on diplomatic and military missions. Distinguished Soviet visitors to Ladd Field included Ambassador Andrei Gromyko and Foreign Minister Vyacheslav M. Molotov. High ranking U.S. officials who visited the post included Wendell L. Wilkie, Vice President Henry A. Wallace, and special presidential envoy Joseph E.

Davies. In addition, contract flights carried celebrity entertainers to their goodwill engagements at Ladd Field, including Bob Hope, Ingrid Bergman, and Joe Louis.

4. Construction and Use of Hangar No. 2 during World War II

Located on the southwestern corner of the Ladd Field air strip, Hangars No. 2 and 3 were erected as part of the rapid expansion of the base during World War II. In addition to new housing and utility facilities, construction at Ladd included significant improvements to the existing runway system. Among these improvements were a 7,200-foot south runway, one-half million square yards of paved parking aprons, taxiways, and an extension to the original runway. Eight new aircraft hangars were authorized on Ladd Field at that time, including Hangars No. 2 and 3. The two adjacent hangars were sited approximately one mile from the original core of the cantonment, separated from Hangar 1 and the parade ground by the expanded runway system. In this location, the hangars were integrated within Ladd Field's southern half in order to provide repair and other support functions for the post's air missions.

Hangars No. 2 and 3 were designed by the Seattle District Office of the Army Corps of Engineers, which was responsible for supervising the design and construction of Army facilities in Alaska, as well as for shipping materials north to the territory. Based upon a standard design, Hangars No. 2 and 3 typified wartime construction. The Army had been building hangars for aircraft storage and maintenance since the adoption of fixed-wing aircraft use. Military aviation in the United States had its roots in the Civil War, when unmanned Union balloons were occasionally flown over enemy positions to reconnoiter troop movements. The practice was soon discontinued, however, because the balloons were thought to be too dangerous and too expensive to justify their relatively modest returns to intelligence. It was not until 1891 that the Signal Corps officially adopted the use of balloon observation. The Army later flew an unmanned balloon over Cuba during the Spanish-American War. Once again, the craft proved too frail and the handlers too ill-trained to be of much strategic value, and its use was abandoned.

In 1903, Wilbur and Orville Wright completed the first powered flight at Kitty Hawk, North Carolina, pioneering the era of controlled, fixed-wing flight. The Wright brothers almost immediately began lobbying for the military use of airplanes, and four years later the newly formed Signal Corps Aeronautical Division contracted with them for the Army's first aircraft. A canvas-skinned biplane with a 40-foot wingspan, the *Wright Flyer* was delivered to Fort Myer, Virginia, in August 1908. The craft was parked in a gable-roofed frame barn that had been converted to aviation use by knocking out some of the internal supports. After a year of testing, in which the Army's first pilot, Lt. Thomas E. Selfridge, was killed, the new plane was approved. The date—August 2, 1909—on which the Chief Signal Officer approved the plane, was generally considered the initiation of the Army Air Force. Designated as the

Wright A, the Signal Corps' first airplane underwent further testing at College Park, Maryland, and then Fort Sam Houston, Texas.

At College Park, the Quartermaster Department constructed four small wooden hangars—its first shelters erected specifically for aircraft. Built to accommodate planes with 40-foot wingspans, the structures were relatively small, with wood construction and bowstring arched roofs. "The first of these hangars was constructed by contractor Otto P. Koerner," states Michael Pedrotty in an Air Force history of military hangars, "measuring 41 x 49 ft, with a packed dirt floor and accordion doors." He further states:

> It appears that these four hangars were constructed in accordance with the Quartermaster Department's first standard aircraft hangar design, which was published sometime in 1911. This design depicted a wood-frame, board-and-batten wood-sided structure, with dimensions of 45 x 45ft. It is here that standardized design was first specifically applied to the requirements of military aviation.

The Construction and Repair Division of the U.S. Army Quartermaster Department had been responsible for engineering and building posts and facilities since as early as the Revolutionary War. Beginning in 1860 the Department had been issuing standard plans for typical military structures, and these were used to one extent or other over the following decades. "In 1893, the Office of the Quartermaster General issued hundreds of standardized plans in support of an intensive building program intended to improve the living conditions on Army posts," states Pedrotty. "They were distributed from the Office of the Quartermaster General in Washington, DC, to the local Constructing Quartermasters who supervised onsite modifications and monitored the execution of contracts. The Constructing Quartermaster was expected to follow the standard design as closely as possible, and was required to get approval from Washington for any variation." The 1911 standard plan for aircraft hangars was developed as part of the general set.

In 1912, the Army ordered five new planes—three Wrights and two models built by Glenn Curtis, who had begun building similar craft for the Navy. As more pilots joined in flight, an official aviator rating was developed, and the technology of the airplanes developed. Another hangar was built at Fort Leavenworth, Kansas, to support an aerial artillery spotting school. By 1913, the Army had assigned 23 officers and 91 enlisted men to maintain and fly 17 planes. Aviation operations had been consolidated into two installations— an aviation facility at Fort Sam Houston and a training center at North Island near San Diego. A third installation at Camp Sill, Oklahoma, opened in 1914 as a training facility for aerial artillery observers. It was from the start a makeshift operation, with the pilots constructing their own flying field, tent barracks and hangar. Made of canvas and wooden supports, this last structure was little more than an enlarged tent, really.

In July 1914, the Aviation Section of the U.S. Army Signal Corps was authorized by Congress. A month later the First Aero Squadron was established. The Army's aviation program progressed by fits and starts over the following years, until the United States joined in World War I in April 1917. The Signal Corps at that time comprised some 53 officers and slightly more than 1,000 enlisted men. Only 35 pilots were qualified to fly. Most of the airplanes were obsolete—under-powered and under-armed—and dangerously unfit for observation or combat. The Aviation Section then managed only the three flight-related installations at Fort Sam Houston, North Island and Fort Sill, with four others underway.

In 1917, Congress appropriated $640 million for Army aviation, to be used for airplane production and acquisition, facility development and personnel training. The first task was to train flyers, and for this purpose flying schools and ground schools were set up at a number of schools and colleges. Nearly 15,000 flying cadets received training in this country, and about 1,800 in Europe. As the conflict progressed, the Army expanded its staff and its aircraft inventory, so that by war's end in November 1918 the number of pilots had increased to 2,159 and airplanes—most built in England and France—to more than 1,500. Several airfields had developed around the U.S. to train aviators and ground crewmen, the most notable of which were the Selfridge Army Air Field in Michigan and Langley Field in Virginia.

Most of these new facilities featured hangars built from Quartermaster standard plans. These had been developed by noted industrial architect Albert Kahn, known as "the architect of Detroit." Much larger than the 1911 design, these frame structures featured shallowly pitched gambrel roofs, track-mounted sliding doors on the end walls and banks of multi-pane windows mounted high on the side walls. Beginning in 1917, Kahn also delineated large metal frame structures with exterior walls sheathed by galvanized corrugated iron sheets. The first of these was erected at Langley Field.

The government began demobilizing soon after World War I ended. The Army Reorganization Act of 1920 reduced the Aviation Section to 1,516 officers and 10,300 enlisted men, a number that was increased somewhat to 1,650 officers and 15,000 enlisted men by the Air Corps Act of 1926. But the administrative structure of the country's air force, cobbled together hurriedly during an ongoing world war, had begun to show strains by the 1920s and 1930s. Grappling with the issue of a separate air arm, the Army formed the General Headquarters [GHQ] Air Force in 1935, an agency separate from the Air Corps that centralized control of the country's aviation combat units.

On March 1, 1935, the GHQ Air Force was established, embracing all tactical Air Corps units within the Continental United States. Prior to its formation combat squadrons were trained under widely different methods, depending upon the conception of the Group Commanders. The purpose, which was accomplished, of the GHQ Air Force was to co-ordinate the systems of training so as to produce uniformity

and the ability to operate together as a team. Another accomplishment was the later development of the combat crew as a fighting team. In practice, the same officers and men were assigned to the same airplane, and each team, through constant cooperation and practice, was able to attain a high degree of efficiency. The division of the GHQ Air Force from its combat units produced problems of unified command, exacerbated as the Air Corps prepared for another war in Europe in the late 1930s. In June 1941, the Army Air Force [AAF] was established, and by March 1942 the Air Corps effectively ceased as an administrative structure.

Hangar development during the interwar period lagged as a result of the post-WWI hiatus. Essentially nothing was done in the years immediately after the armistice, until 1927 when construction increased in the wake of the Air Corps Act. The most noticeable change that occurred at that time involved the permanence of the buildings' construction. Whereas hangars built during WWI were typically wood-frame and wood-sided, the newer structures were designed to be fireproof, with structural steel frames enclosed by brick or stuccoed clay tile exterior walls.

The typical hangar from the early 1930s featured a rectangular footprint and front-gabled roof, with sliding metal doors on overhead tracks situated on the end walls and steel sash windows lining the side walls. Measuring 110'-0" in width, the hangar bays were configured singularly or in pairs. These large central bays were flanked on one or both sides by smaller shops and offices. One of the earliest examples of this new hangar type was completed in 1932 at Fort Sill. In addition to the main aircraft space, the structure incorporated ancillary facilities used by the observation squadron. These include such spaces as shops and offices, a parachute room, photo lab and accommodations for visiting personnel and planes.

New hangars built later in the 1930s reflected a technological change then underway. As the Army shifted from open-cockpit, canvas-sheathed planes to more weatherproof all-metal craft with enclosed cockpits, it began storing its rolling stock out on the tarmac with the wings secured against the wind by hold-down anchors or tie-downs. Hangar function thus shifted from aircraft storage to repair, maintenance and training. The newer buildings were also increased in width from 110'-0" to 120'-0" to accommodate the larger wingspan of recently deployed bombers. To handle the planes' taller tails— some of which reached a height of 45'-0"—small lift doors were installed over the main sectional doors.

These new designs featured steel frame construction with segmental arch roofs supported by steel bowstring trusses. The Quartermaster Department developed three types of roofs to accommodate various structure widths. The most commonly used configuration was a tied arch with spans of 200'-0", 250'-0" and 275'-0", using 37'-0" x 250'-0" doors. The other two arch types, built under license by the Steel Arch Roof Construction Company, spanned widths of 200'-0" and 275'-0". Shed-roofed additions, called lean-tos, housed smaller office and shop spaces along the side walls.

The exterior walls were built of concrete, brick, corrugated asbestos or asbestos-coated steel.

The structures at Ladd Field typified the Army's WWII hangar design. Hangars No. 2 and 3 shared a design based on the "Modified Birchwood hangar." Like other hangar types used in Alaska during the war, the Birchwood hangar was named for the location in which it was first proposed to be built—in this instance, Birchwood Airfield near Anchorage. Birchwood hangars were built in several locations in Alaska, such as Elmendorf Field outside of Anchorage, the Galena Airfield, and Eareckson Air Station on Shemya Island in the Aleutian Islands. Two other hangars built at Ladd Field during World War II, Hangars No. 5 and 6, were also of the Birchwood type and stood on a parking apron at the field's southeast corner.

The Birchwood hangar was characterized by its entirely wood frame, including a closed bowstring truss system supporting a barrel-arch roof. Two-story, shed-roofed lean-tos were built on either side of the central hangar space in order to house support functions. Based on a standardized design, the hangars' wood truss structural systems indicate that the buildings were not intended as permanent solutions to the post's long-range needs. The Engineers reserved permanent construction primarily for technical facilities; like many buildings erected rapidly on post during the war, the hangars were constructed as a short-term response to the demands of wartime missions, restricted by available time and resources. Classified as semi-permanent, Hangars No. 2 and 3 were constructed using a combination of wood trusses and synthetic exterior materials. Few, if any, wood-frame hangars are believed to have been built by the Army Air Corps or the Air Force after World War II.

Hangar No. 2's role during World War II was primarily as a maintenance and storage facility to support the operations of the Air Transport Control, Cold Weather Testing Detachment, and the Sixth Air Depot Group. The high volume of aircraft passing through Ladd Field during the war required additional facilities adjacent to the runway network; the large open floors in both Hangars No. 2 and 3 provided space where aircraft were serviced between flights, as well as stored during cold weather. The north and south lean-tos of the hangar provided shop space that supported aircraft repair within the hangar, as well as housed cold-weather testing activities. A 1945 Corps of Engineers fire evacuation plan of the building indicates that by the end of the war, the south wing contained instrument shops, radio shops, hydraulic shop, tool room, electric shop, and battery shop. At this time, the north wing housed drafting and blueprinting offices, fabric shop, parachute shop, hanger office, spark plug shop, navy tool room, S.E.R. room, hangar workshop, and fire extinguisher shop. The west end of the north wing was open between stories and served as a parachute tower. As Hangar No. 1 contained the airfield's primary parachute shop, the parachute facilities in Hangar No. 2 played an auxiliary role.

5. The Early Cold War at Ladd Field, 1946-1961

The Lend-Lease program concluded with the end of World War II. In spite of the Americans' and Soviets' recent cooperative struggle against the Axis powers, their diplomatic relationships quickly eroded. The Cold War standoff between these two global superpowers dominated the immediate postwar period. Ladd Field's far-north location near the eastern Soviet Union—the same attribute that had made the installation valuable for Lend-Lease operations—rendered it strategic in the United States' attempts to engage the Soviet threat. Alaska was an obvious point of origin for American reconnaissance missions that monitored Soviet military activities throughout the Arctic. Just as significantly, Alaska held great defensive importance. With the development of new long-range bombers and rockets, some Americans theorized that the Soviet Union would launch an invasion of North American through the Polar Regions. According to the "polar concept," Alaska's global position made it particularly vulnerable to attack, and it was feared that Soviets could gain a foothold in the territory before advancing south to the contiguous U.S.

The Cold War context reshaped the mission and infrastructure of Ladd Field and prompted a series of command reorganizations. Between 1945 and 1947, Ladd Field was under the command of the Army Air Corps. Following the formation of the U.S. Air Force [USAF], the installation became Ladd Air Force Base, overseen by the multi-service Alaskan Command [ALCOM]. ALCOM decommissioned installations in the Aleutians and concentrated military presence along established supply lines in central Alaska. The 11th Air Force, a division of the Air Force's Air Defense Command, was assigned to Alaska and designated as the Alaskan Air Command [AAC]. The Northern Sector of the AAC, encompassing the area north of the Alaska Range, was headquartered at Ladd Field. Additionally, the Army retained its presence at Ladd and was overseen by U.S. Army Alaska [USARAL], the Army division of ALCOM. After 1955, USARAL's Yukon Command was stationed at Ladd AFB and controlled artillery, infantry, ordnance, quartermaster, and signal units.

Ladd AFB's primary Cold War missions were reconnaissance, air defense, and cold weather research. The goal of the first of these, reconnaissance, was to collect strategic intelligence on Soviet military activities in order to inform American security policy. Air squadrons stationed at Ladd were responsible for photographic, electronic, and weather reconnaissance. Photographic reconnaissance missions entailed flying throughout the Arctic to photograph Soviet installations, as well as to map uncharted polar areas. Electronic reconnaissance crews flew near Soviet territory and sent out radio signals in order to collect information on enemy radar sites and communication systems. Weather reconnaissance missions collected and study weather data, which was subsequently used to prepare future flights through the Arctic (including for potential air combat with the Soviets). Weather reconnaissance flights, known under the code names Ptarmigan and Loon, flew as far as the North Pole before returning to Alaskan bases. The number of these flights

from Ladd AFB surpassed 3,000 by 1960. Weather reconnaissance operations also provided a convenient cover for classified electronic and photographic monitoring flights that gathered information on military facilities in the Soviet Union.

An equally significant Cold War mission was air defense. Ladd AFB supported the operations of Aircraft Control and Warning (AC&W) sites and the Distant Early Warning (DEW) Line across northern Alaska. The AC&W sites consisted of radar and intercept facilities, primarily located along Alaska's western coast, that were capable of detecting enemy aircraft and supplying ground-based fire. The DEW Line spread east from Alaska, spanned Canada, and reached Greenland. Contributing facilities were intended specifically to monitor air traffic, identify enemy bombers, and relay information to command centers. The main post of Ladd AFB hosted fighter intercept squadrons of the 11th Air Division, Defense, whose purpose was to engage any hostile enemy aircraft detected in Alaskan air space.

Ladd AFB's Cold War research mission continued the tradition of the installation's World War II-era cold-weather testing. The proposed scenario of arctic warfare required the Air Force to prepare its troops and equipment for combat in severely cold conditions. While cold-weather aircraft testing was transferred to simulation facilities elsewhere in the country, Ladd AFB retained an extensive program for testing arctic gear, including clothing, weapons, and rations. The Arctic Aeromedical Laboratory was responsible for researching human acclimation to arctic conditions. Specific research topics included sanitation, preventative medicine, human physiology, and psychological health. Air Force personnel at Ladd AFB also oversaw studies of ice masses in the Arctic Ocean.

To accommodate its Cold War missions, Ladd Air Force Base had constructed over 300 new buildings by 1959. Existing WWII-era buildings were adapted to Cold War roles. Hangars No. 2 and 3 served the critical missions of Ladd AFB during this period. They were primarily used for maintenance and storage for numerous aircraft involved in the base's Cold War reconnaissance, defense, and research operations. While servicing a range of aircraft, the hangars specifically housed intercept squadrons belonging to the 11th Air Division, Defense. Apart from their maintenance roles, Hangars No. 2 and 3 provided facilities for the base's 55th Weather Reconnaissance Squadron detachment. Hangar No. 2 housed several of the unit's maintenance and supply personnel. By the late 1950s, the building also contained the Yukon Command's Army aviation operations and maintenance offices.

6. Fort Wainwright Under U.S. Army Command, 1961-1994

On January 1, 1961, Ladd AFB was granted back to the U.S. Army, and the base was renamed Fort Jonathan Wainwright [FWA]. The transfer of the installation coincided with a change in the nature of Cold War defense measures in Alaska. AC&W and DEW Line facilities, in addition to the base's air intercept squadrons, could not respond to the threat of Intercontinental Ballistic Missiles, which the Soviet Union

had first tested successfully in 1957. Further, the use of satellites would make the existing land-based communications infrastructure obsolete. During the turnover of Ladd AFB to the Army, Air Force operations were disbanded or transferred. Some moved to nearby Eielson Air Force Base, including the 55th Weather Reconnaissance Squadron, which had previously been housed in Hangars No. 2 and 3.

As the headquarters for Yukon Command, Fort Wainwright housed the 1st Battle Group, 9th Infantry, and the 2nd Missile Battalion of the 562nd Artillery. The 65th Transportation Company, activated in August 1961, was equipped with UH-21 Shawnee (Flying Banana) helicopters, and the 12th Aviation Company flew U-1 fixed-wing Otters, L-19 Bird Dogs, L-20 Beavers, and L-23 Seminoles. In 1963 the 171st Infantry Brigade was designated the Yukon Command's primary combat unit. Army units that had previously been stationed at both Ladd and Eielson AFBs were consolidated at FWA, as upper-level command organizations remained the same. Activated in 1959, the NIKE battalion remained the primary air defense unit. New units, particularly elements of the newly activated USARAL Aviation Battalion, arrived on the post. The mission of USARAL was to support the base's ground defense mission and provide airborne mobility for the infantry. The battalion was equipped with HU-1 Iroquois (Huey) helicopters.

FWA experienced heavy fiscal and personnel pressures during the 1960s and 1970s, largely as a result of the Vietnam War. Funds for facilities were minimal, and units were commonly understaffed. In 1966, the entire 1st Battle Group, 9th Infantry, was withdrawn from FWA and sent to fight. The Chena River inundated Fairbanks and FWA in August 1967, causing extensive damage to the post infrastructure and contributing to the decline of the North Post area. The NIKE missile batteries were closed in 1971.

As the Vietnam War wound down, resources became even tighter, and in 1973 USARAL was directed to reduce its total strength by 4,000 positions. Several units were discontinued and absorbed into the 172nd Separate Infantry Brigade. At that time the 222nd Aviation Battalion transferred to FWA from Vietnam to support the 172nd. The brigade was constituted for global deployment as an Initial Expeditionary Force [IEF]. The 222nd was at that time the most diverse aviation battalion in the Army, flying CH-47 Chinooks, CH-54 Skycranes, UH-1 Hueys, and OH-58 Kiowas to provide brigade reconnaissance, security and medical support.

Between 1974 and 1979, Fort Wainwright functioned as a management center for construction of the Alaskan Pipeline. The drop in military personnel in the 1970s had resulted in a surplus of facilities here, and several buildings on the North Post were used as a construction headquarters. Some 500 pipeline project management personnel worked at FWA and lived in Fairbanks, while an additional 1,100 workers stayed at a construction camp on base. The Army had proposed demolition of the North Post, but this action was suspended by Congress in part because of the pipeline leases.

In 1985, Ladd Field was designated a National Historic Landmark. Owing to their associations with Ladd Field's critical missions during World War II, Hangars No. 2 and 3 were designated as contributing resources within the NHL district. Two years later, the 172nd Infantry Brigade was replaced by the 6th Infantry Division (Light) and the 222nd Battalion was replaced by the 6th Combat Aviation Brigade. The installation's previous activities continued, but it gained a new primary mission: to prepare for rapid worldwide deployment in support of U.S. national interests and to defend Alaska. At its peak the 6th Brigade managed some 80 helicopters, including UH-1 Hueys, CH-27 Chinooks, AH-1 Cobras, OH-58 Kiowas and UH-60 Blackhawks. Hangars No. 2 and 3 continued their maintenance roles during this period, servicing the Army's expanding helicopter fleet at FWA.

7. Army Transformation, 1994-2014

   By 1994, the Army had begun transforming its mission from Cold War heavy forces to lighter, more mobile units that would counter smaller threats worldwide. At Fort Wainwright, this meant the deactivation of the 6th Infantry Division and Aviation Brigade. The Army replaced these with the U.S. Army Alaska [USARAK] headquartered at Fort Richardson, with the 172nd Infantry Brigade posted at FWA. The downsizing to brigade level entailed the removal of many of the helicopters, leaving five companies with UH-60 Blackhawks and CH-47 Chinooks. In 2003, the 172nd was redesignated the 172nd Stryker Brigade Combat Team [SBCT] and equipped with the new Stryker eight-wheel armored vehicles. In May 2006, the Commander U.S. Garrison Alaska approved the renaming of the airfield Ladd Army Airfield.

   In 2009, USARAK began erecting three new aviation hangars on Fort Wainwright in order to provide technologically enhanced facilities for helicopter storage and repair. Hangars No. 2 and 3 continued to be used during the construction of the modern facilities, until the west end of Hangar No. 2's roof system burned in an electrical fire in February 2011. Upon inspection, both hangars were determined to be structurally unfit for occupation, helicopter maintenance was moved out of the buildings, and they were vacated. Hangars No. 2 and 3 were demolished in July 2014 following careful analysis of structural integrity, rehabilitation costs, and potential use.

PART II. ARCHITECTURAL INFORMATION

A. General Statement:

1. Architectural Character: Hangar No. 2 was characteristic of the standardized Birchwood hangar design that was developed by the U.S. Army Corps of Engineers and constructed at several Alaska airfields during World War II. The building's barrel-arch roof, wood bowstring truss structural system, central hangar floor, 200-foot-square footprint, and two full-length side wings were all defining features of this

hangar type. Exterior and interior materials had been repaired, updated, or replaced during numerous maintenance campaigns since the building's construction in 1943-1944. Major alterations to the hangar's design included the removal of the twelve-panel sliding hangar doors, which originally spanned the east and west façades and rolled side by side into compartments. The door voids, measuring approximately 150'-0" x 35'-0", had been infilled with corrugated metal siding and central fabric rolling doors. The hangar's corner towers (containing stairwells and pocket compartments for the earlier sliding doors) had been partially dismantled: some framing remains, and metal cladding covered the building's southwest tower. Despite these alterations, the hangar was representative of design and construction appropriate to the context of World War II in Alaska.

2. Condition of Building Material: Prior to demolition, the condition of Hangar No. 2's exterior and interior fabric was generally poor. The hangar had experienced numerous inspections and as-needed maintenance to its wood frame, mechanical systems, exterior envelope, and interior finishes. However, the hangar was constructed as a semi-permanent building, and its deterioration outpaced maintenance. The wood structural system showed serious evidence of distress, the result of seven decades of load-bearing and exposure to the severe weather conditions of the Alaska interior. The bowstring trusses that supported the hangar's roof had numerous split or severed chords, and connections between supporting members were compromised. Wood columns in the hangar's lateral walls had also split with age and stress. In various locations on the exterior, siding panels were dented or punctured. Wood exposed on exterior door frames and fascia boards had rotted. The concrete floor slab had cracked and settled in places. Finishing materials on interior walls, ceilings, and floors also suffered with use and age. Gypsum board, wood, and tile surfaces were frequently cracked or chipped. And portions of the wood walking surface on the interior catwalk had deteriorated.

   In 2011, an electrical fire broke out in Hangar No. 2's roof, burning truss members and decking at the building's west end. Upon subsequent inspection, the U.S. Army declared the hangar unsafe for occupancy. Following the fire, the uppermost exterior siding panels were removed from the hangar's west façade, and the exposed area was patched with temporary plywood board cladding. Hangar No. 2 was subsequently demolished in July 2014 along with Hangar No. 3.

B. Description of Exterior:

1. Overall Dimensions: Hangar No. 2 has approximate overall dimensions of 200'-0" x 202'-0", forming a footprint that is slightly wider on its north-south axis. The building's central volume, the hangar floor, measures approximately 200'-0" x 152'-0". The two-story wings, which span the entire 200'-0" width of the hangar's north and south façades, each extend approximately 25'-0" from the hangar floor.

2. Foundations: The foundation of the hangar was a reinforced concrete slab, exposed to a height of approximately 0'-6" above the ground. Reinforced concrete piers were situated below the timber columns that support the roof trusses.

3. Walls: Hangar No. 2 was covered over most of its exterior by sheets of vertical-groove corrugated aluminum siding, attached to the girts and studs of the underlying wood frame. This siding was removed from the corner stairwell towers and overhangs of the east and west façades, exposing areas of horizontal or diagonal wood board sheathing. The spandrel arch of the west façade was patched with plywood board in 2011, following the electrical fire in the roof.

4. Structural System, Framing: The structural system for Hangar No. 2 was simple supported wood timber frame supported by a reinforced concrete foundation. The barrel-arched roof—a character-defining feature of the Birchwood hangar type—was supported by a series of nine bowstring trusses, each 22'-6" deep at its crown. The two outer trusses served as structural spandrels on the building's east and west walls, with the remaining seven trusses free-spanning 153'-0" over the central space at 25'-0" intervals. Each truss was connected to 0'-12" x 0'-12" timber columns at its ends by means of rolled steel angles. It featured a 20-panel web, the panels spaced between 7'-0" and 8'-6". The bottom chord was a composite member made up of three 0'-5¼" x 0'-11" timbers with 0'-3½" solid blocking. The upper chord was similarly configured. Truss verticals and diagonals were made up of 0'-5¼" x 0'-3½" members with solid blocking. Purlins supported the roof deck above the trusses. In the lateral hangar walls, pairs of 0'-2" x 0'-12" lateral braces spanned diagonally between the columns—although not all cross-braces were still in place. The columns were further supported laterally by wood-frame buttresses incorporated into the interior walls of the north and south wings. The side wings were supported by typical wood framing, with sawn studs, joists, rafters, and braces. The remaining corner stairwell towers were framed in wood post-and-beam framing.

5. Openings:

    a. Doorways: The hangar's most prominent door openings, measuring roughly 71'-6" x 29'-6", were situated on the east and west façades and allowed aircraft access to the building's interior. These openings were covered by overhead roll-down fabric curtains. Hollow metal replacement personnel doors were located on all walls. The hangar's west façade contained six such doors. Two doors opened from the enclosed stairwell towers at the outer ends of this façade. Two doors opened from the inner sides of the stairwell towers, and two further doors flanked the central rolling fabric openings. The east façade similarly hae six personnel doors. Two doors, one per story, were exposed in each of the partially dismantled corner stairwell towers on this façade. As on the west façade, two doors flanked the fabric opening.

Centered on the north side, a double-leaf doorway was located at the end of a gabled arctic entry.

b. Windows: The hangar's north and south sides contained near-identical arrangements of windows, distributed evenly across sixteen bays on both floors. All windows were single fixed-light, vinyl-sash replacements that had smaller dimensions than the hangar's original windows. The earlier, larger window voids remained; the current windows were held in wood infill surrounds. On the south side, the easternmost nine first-floor windows were placed approximately one foot higher on the wall than the remaining first-floor windows. The north side differed in that the arctic entry replaced the window of one bay, and one further first-floor window was absent. First-floor windows in the westernmost six bays were placed approximately one foot lower on the façade; the westernmost two windows on the second floor were similarly positioned. The hangar's east and west façades contained no windows.

6. Roof: The roof of the hangar was sheathed with sheets of EPDM rubber, continuous from the central barrel arch over the shed roofs of the side wings. The roofs of the hangar's overhangs and stairwell towers had been removed apart from on the southwest stairwell tower: this roof appears to be covered in rolled asphalt roofing.

C. Description of Interior:
1. Floor Plans: The plan of Hangar No. 2 was dominated by the central hangar floor, which is open to both stories. This space was used continuously for aircraft maintenance from the building's construction until its closure in 2011. The hangar floor was concrete slab, containing drains and service pits. A series of doors along the lateral walls granted access from the hangar floor to the side wings.

Interior walls divided the wings into series of offices and shops. The majority of these divisions corresponded to the placement of the seven pairs of vertical support columns in the lateral walls of the hangar floor. (As the columns adjoined buttresses that extend into the wings, they served as natural locations for interior walls.) Both wings were divided into eight segments, each approximately 25'-0" wide. Some of these spaces were further divided by partition walls. The first floor of the north wing contained six offices, two stair chambers, and one restroom. The south wing's first floor contained nine offices and shop rooms, one restroom, and two stair chambers. These rooms were primarily accessed from the hangar floor and have few internal doors. The second floor of the north wing contained eleven offices and two stairwells, connected through two corridors along the building's north wall. The second floor of the south wing contained seven offices, a restroom, and two stairwells that are connected by a corridor along the south wall.

Above the second floor, a wood catwalk system traversed the bottom chords of the roof support trusses. One catwalk crossed from north wing to south wing, while another crossed from east to west; they intersected at the center of the structure. On either side of this intersection, the east-west catwalk branched to reach four platforms. Additional catwalk paths lead alongside the east and west walls and arrived at four additional platforms, one at each corner of the hangar floor.

D. Description of Site:

Hangars No. 2 and 3 were constructed during World War II as component features of Ladd Field's expanding runway and aircraft maintenance network. The buildings remained integrated within the landscape of the airfield, which forms the south half of the Ladd Field National Historic Landmark District, until their demolition in July 2014. The hangars were sited approximately 400'-0" from one another along the south edge of an approximately 23-acre aircraft parking apron. The apron's north edge was laid out to abut the south taxiway, which runs from east to west. The parking apron surrounding Hangars No. 2 and 3 could also be accessed by two taxiways that lead north to meet the rotary wing and north runways at the heart of the airfield. A new helicopter hangar was constructed on the parking apron north of Hangar No. 3. The hangars were located northeast of the intersection of Montgomery Road and Meridian Road, across which are buildings housing command and garrison offices.

PART III. SOURCES OF INFORMATION

A. Interviews:

Marie Haggard, July 30, 2002, Fairbanks, AK.

William Stroecker, April 30, 2002, Fairbanks, AK.

B. Bibliography

1. Primary and Unpublished Sources:

Bush Jr., James D. *Narrative Report of Alaska Construction, 1941-1944*. U.S. Army Engineer District Alaska, 1944.

Lauer, B.C. Official History of Ladd Field - Fairbanks, Alaska, Fall 1938 to 31 January 1944. U.S. Army, 1944. Manuscript on file at the Office of History, Alaska Air Command, Elmendorf Air Force Base, Anchorage, Alaska.

"Priority & Traffic." Monthly Historical Report, 1466th AAF Base Unit, Alaskan Division ATC, January 1945.

Real Property Records for Building 3008 Hangar No. 2 at Fort Wainwright, June 2009.

Telephone Directory, Ladd Air Force Base, Alaska. October 1959.

Transfer and Acceptance of Military Real Property records for Building 3008.

U.S. Department of the Interior, National Park Service. National Historic Landmark Nomination, Ladd Field National Register of Historic Places Registration Form. OMB No.1024-0018.

2. Secondary and published sources:

Aaron, Jayne. "Historical and Architectural Overview of Aircraft Hangars of the Reserves and National Guard Installations from World War I through the Cold War." Department of Defense Legacy Resource Management Program, June 2011.

Beard, Baker B. "The Bradley Mission: The Evolution of the Alaska-Siberia Air Route," in Alaska *At War: The Forgotten War Remembered; Papers from the Alaska at War Symposium, Anchorage, Alaska, November 11-13, 1993*, 311-318, ed. Fern Chandonnet. Anchorage: Alaska at War Committee, 1995.

Brandon, Dean R. "ALSIB: The Northwest Ferrying Route through Alaska, 1942-1945, Research Project 7013, Part 1." *American Aviation Historical Society Journal*, Volume 20, Number 1 (Spring 1975a), 18-28.

Brandon, Dean R. "ALSIB: The Northwest Ferrying Route through Alaska, 1942-1945, Research Project 7013, Part 2." *American Aviation Historical Society Journal*, Volume 20, Number 2 (Summer 1975b), 103-110.

CH2M HILL, Inc. and Northern Land Use Research, Inc. *The Cold War Historic Context of Fort Wainwright and Ladd Air Force Base, 1946-1991*: Prepared for the U.S. Army Alaska, July 2007.

Cole, Dermot with the Tanana-Yukon Historical Society. *Cold Missions: The U.S. Army Air Forces and Ladd Field in World War II.* Fairbanks: Tanana-Yukon Historic Society.

Goodwin, R. Christopher, and Associates, Inc. "Historic Context for Department of Defense Facilities World War II Permanent Construction." Baltimore: U.S. Army Corps of Engineers, 1997.

Haulman, Daniel L. "The Northwest Ferry Route," in *Alaska At War: The Forgotten War Remembered; Papers from the Alaska at War Symposium, Anchorage, Alaska,*

November 11-13, 1993, 319-325, ed. Fern Chandonnet. Anchorage: Alaska at War Committee, 1995.

Kerns, Junior D. editor. *The Early History of Ladd Field, 1938-1943*. Natural Resources Report #91-1, Natural Resources Office, APVR-FW-DE-NR, Fort Wainwright, Alaska, 1991.

Kuranda, Kathryn M. "Historic Context for Army Fixed Wing Airfields, 1903-1989." Christopher Goodwin & Associates, Frederick, Maryland, 2002.

Louis Berger Group, Inc. *Condition Assessment and Rehabilitation Plans, Hangars 2 and 3, Ladd Field National Historic Landmark, Fort Wainwright, Alaska*. Prepared for the U.S. Army Alaska, January 2008.

McNeill, William Hardy. *America, Britain and Russia: Their Co-operation and Conflict, 1941-1946*. Originally published 1953. New York: Johnston Reprint Corporation, 1970.

Pedrotty, Michael A. et al. *Historical and Architectural Overview of Military Air Craft Hangars: A General History, Thematic Typology, and Inventory of Aircraft Hangars Constructed on Department of Defense Installations*. United States Air Force Air Combat Command, September 1999.

Price, Kathy with the Center for the Environmental Management of Military Lands, Colorado State University. *The World War II Heritage of Ladd Field; Fairbanks, Alaska*. May 2004.

Price, Kathy and Russell H. Sakett with the Center for the Environmental Management of Military Lands. *Northern Defenders: Cold War Context of Ladd Air Force Base Fairbanks AK 1947-1961*. January 2001.

U.S. Army Construction Engineering Research Laboratory. *Historical and Architectural Overview of Military Aircraft Hangars*. September 1999.

U.S. Army Alaska. 1962. *Building Alaska with the U.S. Army, 1867–1962*. Pamphlet No. 355–5. August 1962.

U.S. Department of Defense Legacy Resource Management Program prepared in cooperation with the Alaska State Historic Preservation Officer. Draft of *The Coldest Front: Cold War Properties in Alaska*. February 1996.

USKH, Inc. 1991. Annual Truss Inspection, Fort Wainwright, Alaska. U.S. Army Air Corps. No date. Records of the Army Air Forces, File No. 686, Alaska Air Bases, Record Group 18, National Archives and Records Center, Washington, D.C.

PART IV. PROJECT INFORMATION

This project was undertaken as part of Historic American Buildings Survey documentation of Ladd Field Hangars No. 2 and 3, undertaken as mitigation under the Memorandum of Agreement between the U.S. Department of the Army and the National Park Service, Alaska Region. The two structures were originally documented in 1984-1985 as part of the HABS Ladd Field Project. The documentation of Hangar 2 at that time was comprised of a single large-format photograph, along with an Index to Photographs and Cover Sheet. This Addendum is intended to expand upon the original documentation by including additional photographs, measured drawings and this HABS written data set. A draft version of the written data was completed by contractor CH2M HILL in 2009. The draft was subsequently revised in 2013 by Mary Shanks and Jonathon Rusch, staff architectural historians for the Colorado State University Center for Environmental Management of Military Lands [CEMML]. The measured drawings and record photographs – as well as an additional edit of the written data – were undertaken by CEMML historical architect Clayton Fraser in 2014-2015.

HISTORIC AMERICAN BUILDINGS SURVEY

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LADD FIELD,
BIRCHWOOD HANGAR (STRUCTURE 3008)
Fort Wainwright
Fairbanks
Fairbanks North Star Borough
Alaska

HABS No. AK-36-M

The Black and White Photograph numbered AK-36-M-1 was transmitted previously to the Library of Congress.

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Clayton B. Fraser, Photographer, April 2014

AK–36–M—2 Overall view of Structure 3008 from Montgomery Road. View to northeast.

AK–36–M—3 Overall view of Structure 3008 from overhead boom, with Structure 3005 (HABS No. AK-36-N) in background. View to northeast.

AK–36–M—4 Overall view of Structure 3008 from overhead boom, with Structure 3005 (HABS No. AK-36-N) in background. View to southeast.

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AK–36–M—37 Interior view of second-floor office space. View to north.

AK–36–M—38 Interior view of second-floor office space. View to south.

The following 8x10 prints are enlargements from 4x5 negatives.

AK–36–N—39 Photographic copy of construction drawing, War Department, 17 January 1943 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Modified Birchwood Hangar #3. Interior Elevations and Details."

AK–36–N—40 Photographic copy of construction drawing, Office of the Engineer, 25 May 1961 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Installation: Overhead Doors in Motor Pools, Bldgs. 3005 & 3008."

AK–36–N—41 Photographic copy of construction drawing, U.S. Army Engineer District, Alaska, Corps of Engineers, 1 June 1970 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Rehabilitate 3 Birchwood Hangars, Bldgs. 2085, 3005 & 3008 – Elevations and Details."

AK–36–N—42 Photographic copy of construction drawing, U.S. Army Engineer District, Alaska, Corps of Engineers, 25 May 1972 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Repair Siding, Birchwood Hangars – Elevations, Details & Notes."

AK–36–N—43 Photographic copy of construction drawing, U.S. Army Engineer District, Alaska, Corps of Engineers, 22 May 1975 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Repair Three Hangars – Sections."

AK–36–N—44 Photographic copy of construction drawing, U.S. Army Engineer District, Alaska, Corps of Engineers, 22 May 1975 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Repair Three Hangars – Sections and Details."

AK–36–N—45 Photographic copy of construction drawing, U.S. Army Engineer District, Alaska, Corps of Engineers, 22 May 1975 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Repair Three Hangars – Stair Details."

AK–36–N—46 Photographic copy of construction drawing, Alaska District, Corps of Engineers, 5 January 1977 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Fire Protection Systems, 3 Hangar – Typical Hangar Draft Curtains."

AK–36–N—47 Photographic copy of construction drawing, Alaska District, Corps of Engineers, 31 July 1987 (original print located at U.S. Army Garrison, Fort Wainwright, Directorate of Public Works). "Repair Doors – Original Construction."

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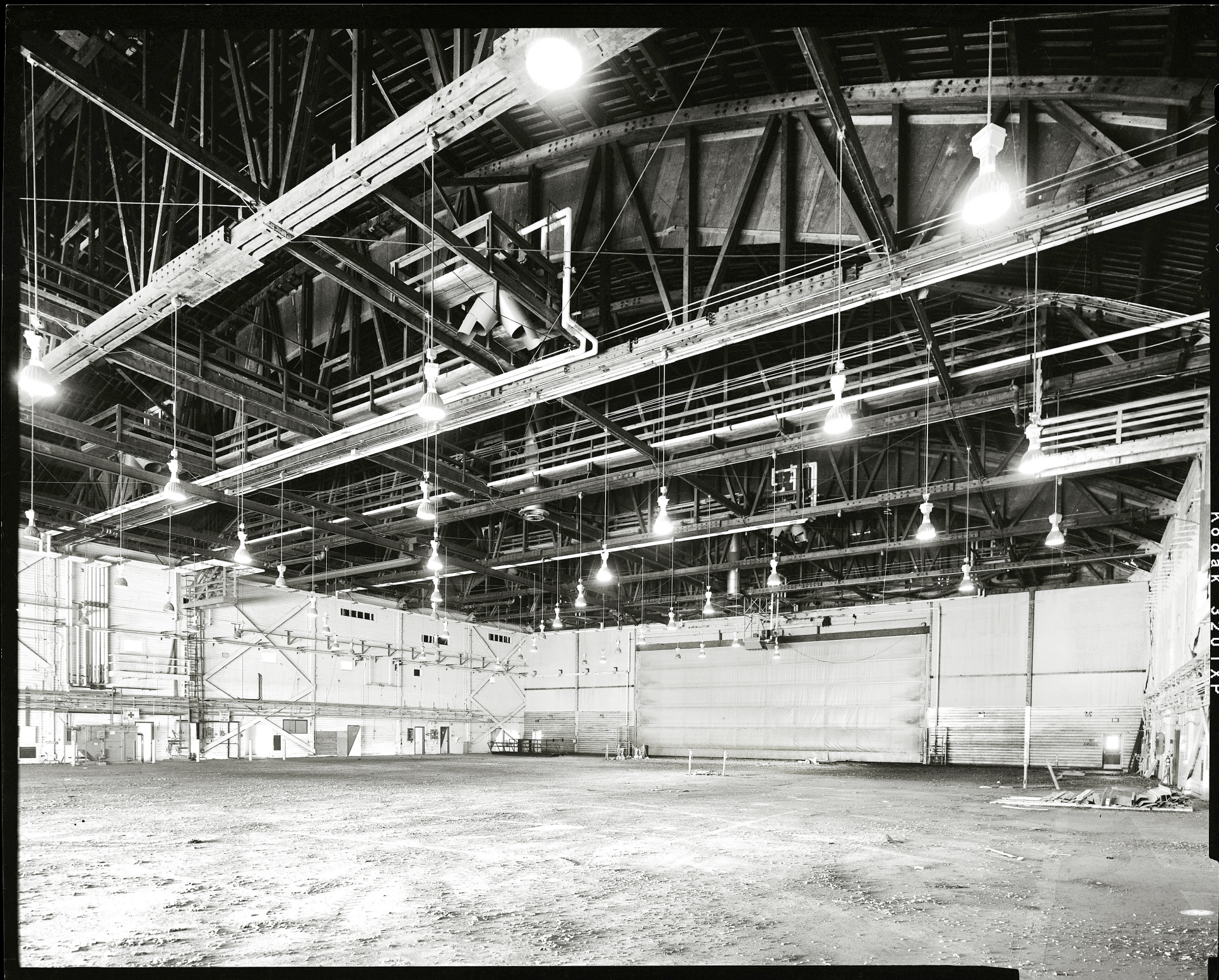
WARNING
ENTRY PROHIBITED
FOR ACCESS
CALL 361-3316
Kodak 320TXP

2
Kodak 320TXP

Kodak 320TXP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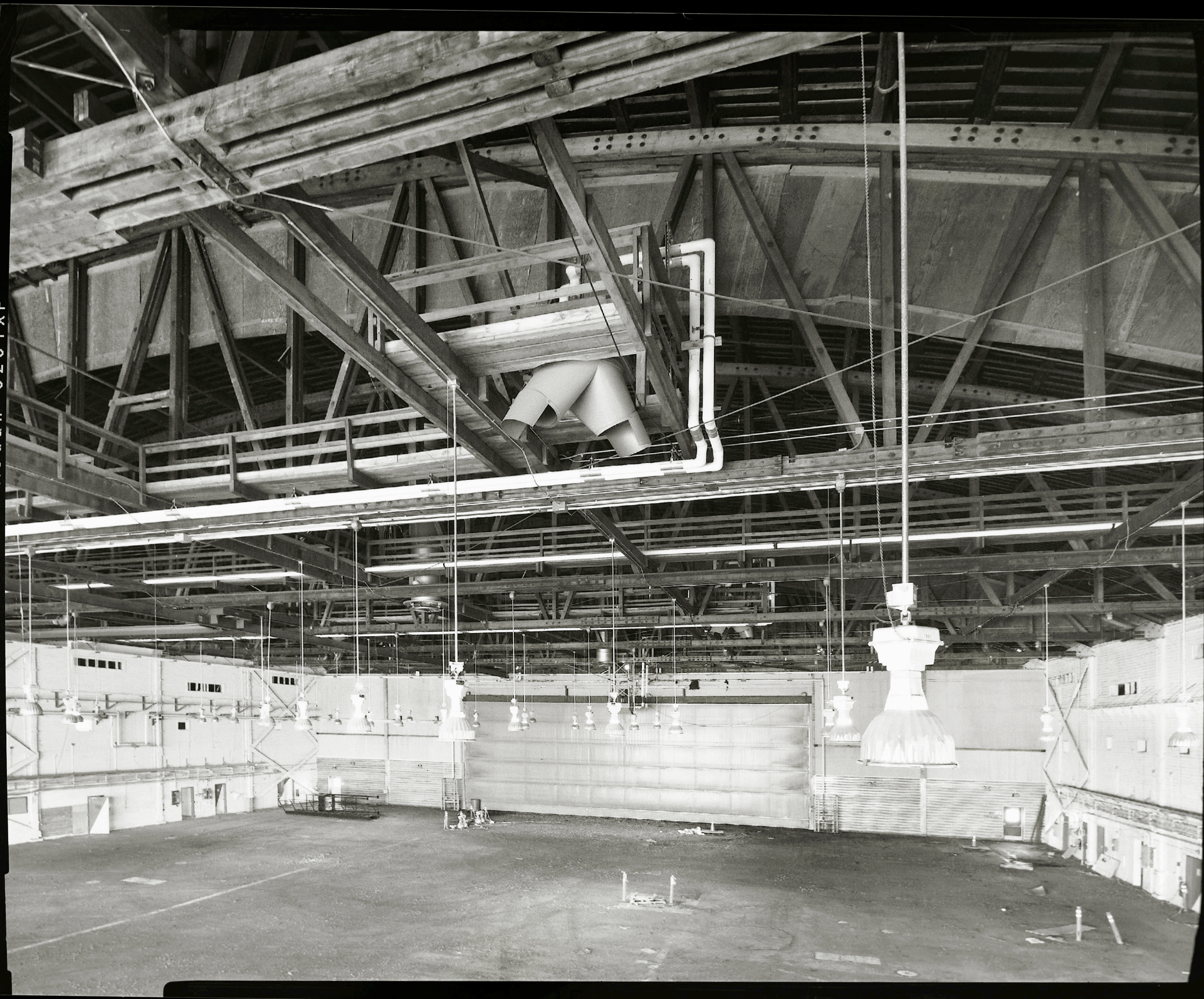
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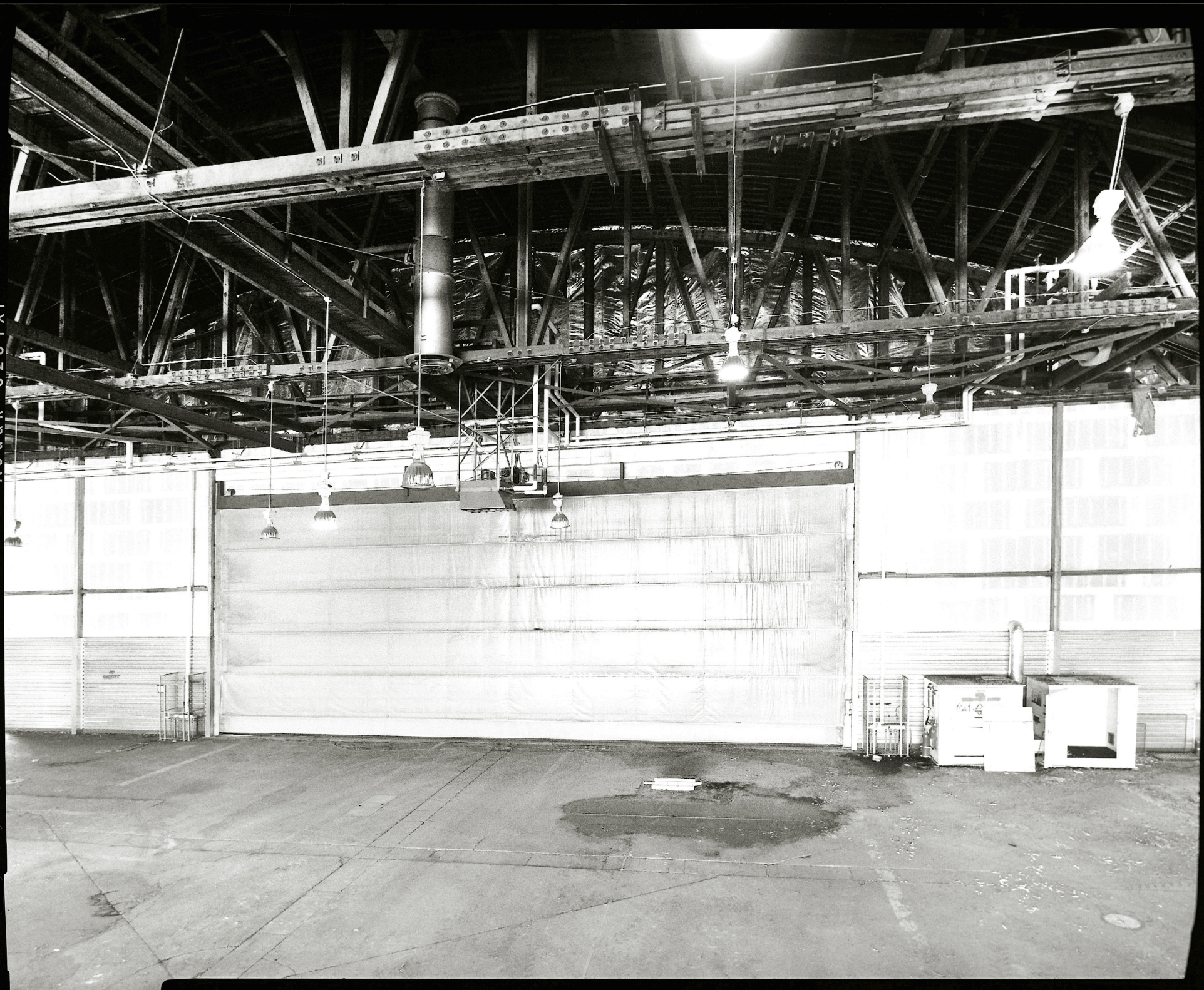
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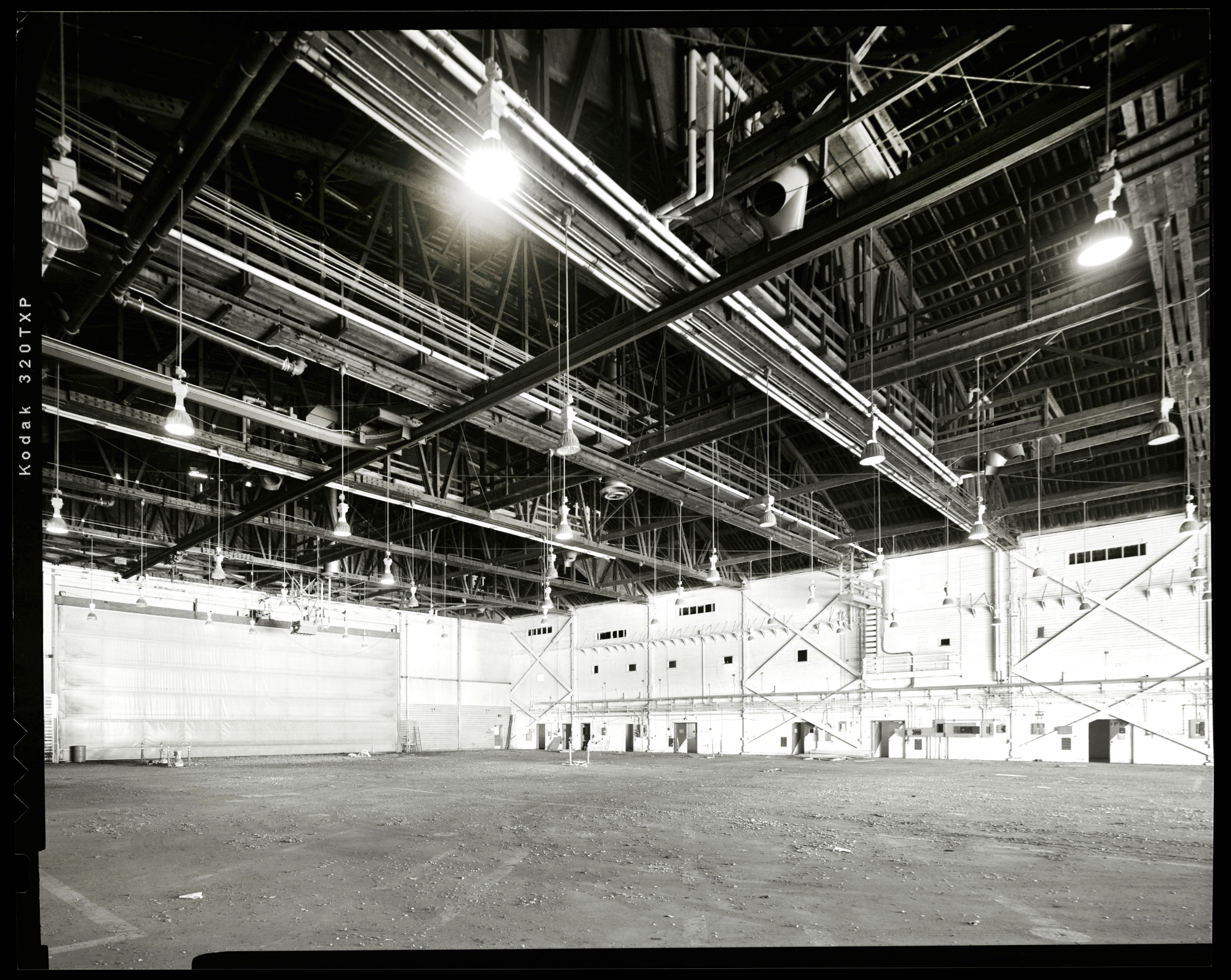
Kodak 320TXP

Kodak 320TXP

Kodak 320TXP

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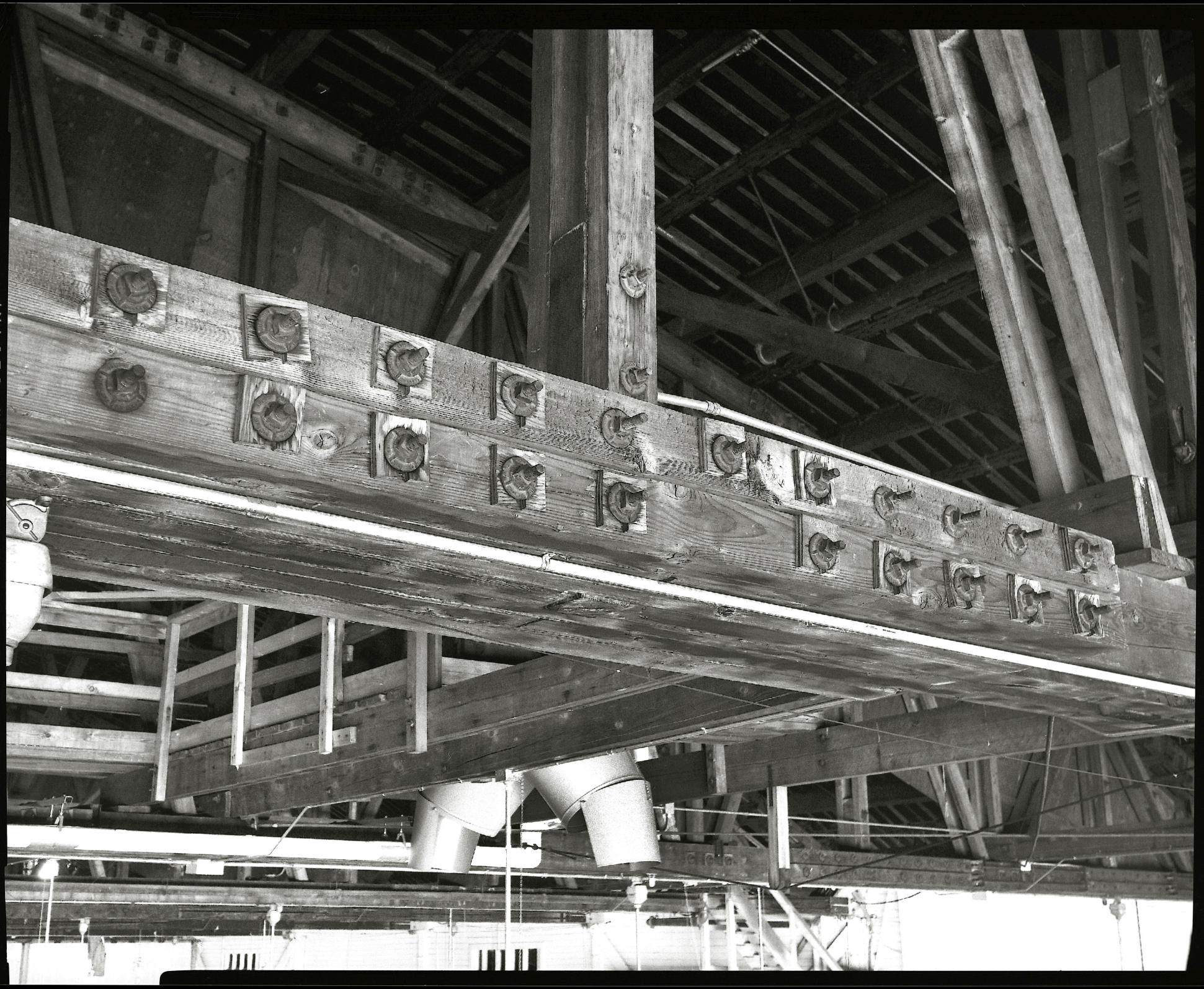
Kodak 320TXP


Kodak 320TXP

SPILL KIT
Kodak 320TXP

EXIT
Kodak 320TXP

06301
OWENS CORNING
FOAMULAR® 250
Energy-Saving, Moisture-Resistant XPS Insulation
Aislamiento XPS resistente a la humedad y reductor del consumo de energía
OZONE PROTECTION
Kodak 320TXP

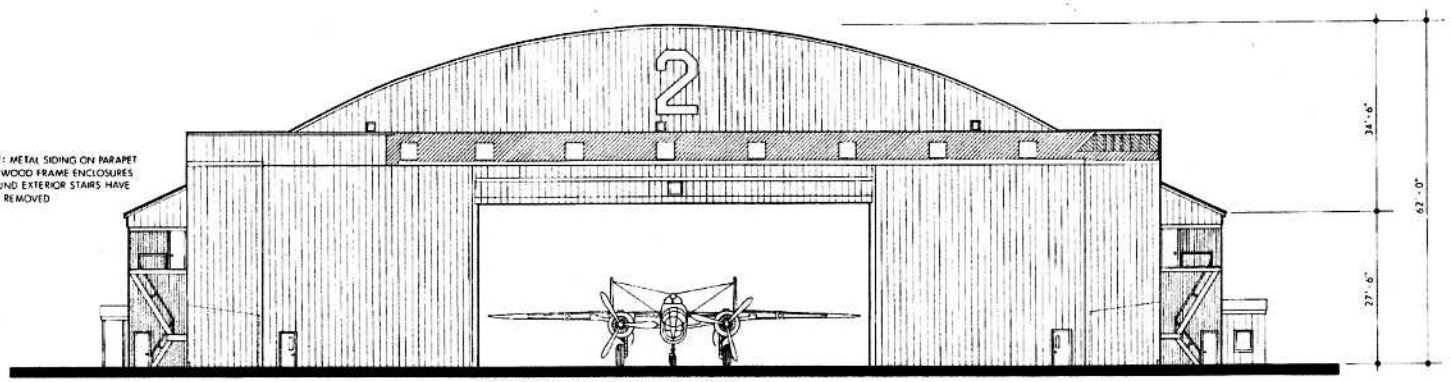
Kodak 320TXP

DANGER
S H

Kodak 320TXP

EXIT
static
Kodak 320TXP

NOTE: METAL SIDING ON PARAPET AND WOOD FRAME ENCLOSURES AROUND EXTERIOR STAIRS HAVE BEEN REMOVED

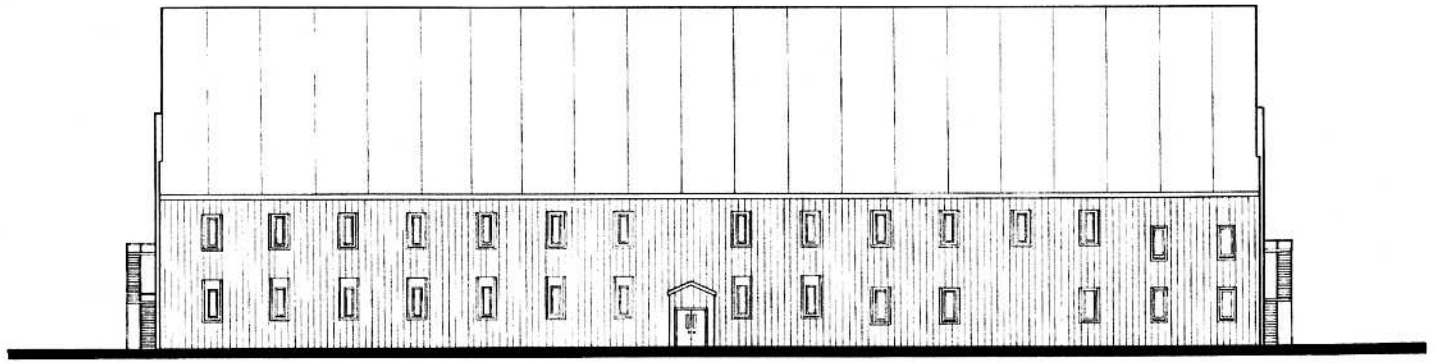


NORTH AMERICAN B-25C MITCHELL BOMBER SHOWN

EAST ELEVATION

SCALE: 3/32" = 1'-0"

MATERIALS: ROOF: EPDM (ETHYLENE PROPYLENE DIENE MONOMER) RUBBER SHEET ROOFING
WALLS: VERTICAL-RIB CORRUGATED ALUMINUM SHEET SIDING
DOORS: ROLL-DOWN FABRIC CURTAIN HANGAR DOORS; STEEL SLAB PEDESTRIAN DOORS IN HOLLOW METAL FRAMES
WINDOWS: VINYL-CLAD FIXED-LIGHT REPLACEMENT UNITS



NORTH ELEVATION

SCALE: 3/32" = 1'-0"

NOTE: LADD FIELD BIRCHWOOD HANGAR 2 (HABS No. AK-36-M) AND BIRCHWOOD HANGAR 3 (HABS No. AK-36-N) WERE BUILT IDENTICALLY AND, WITH THE EXCEPTION OF RELATIVELY MINOR ALTERATIONS, REMAIN IDENTICAL. FOR ADDITIONAL GENERAL VIEWS AND DETAILS, SEE DRAWINGS FOR HABS No. AK-36-N.

0 5 10 20 30 40 FEET
0 1 2 3 4 5 10 METERS

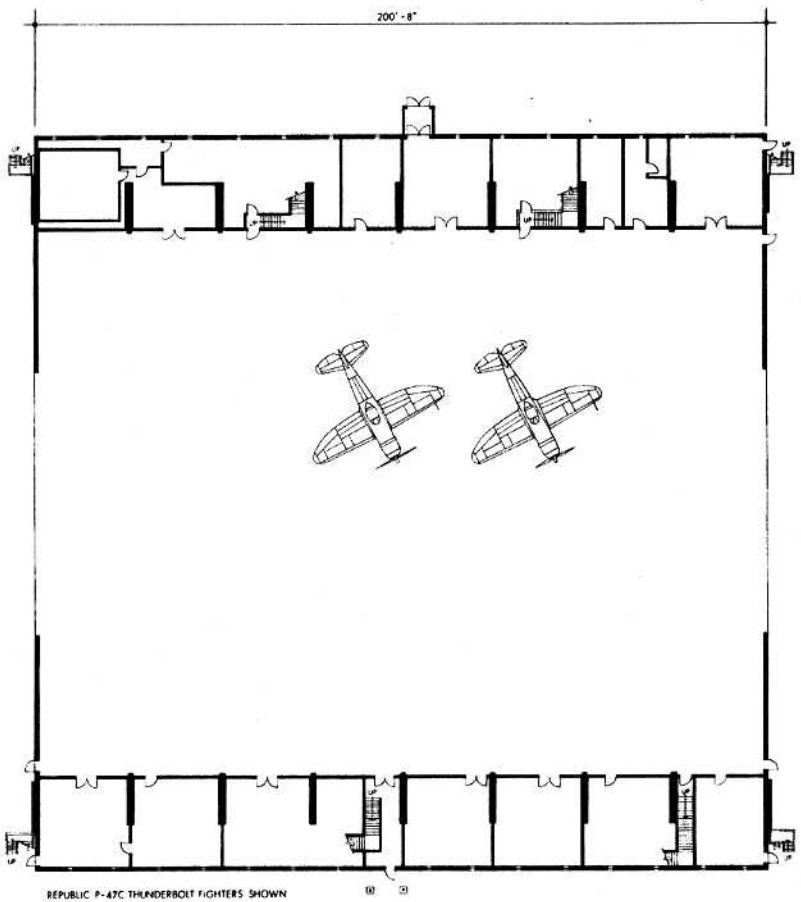
DRAWN BY CLAYTON/B. FRASER 2015

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

LADD FIELD - BIRCHWOOD HANGAR
FORT WAINWRIGHT FAIRBANKS NORTH STAR BOROUGH ALASKA

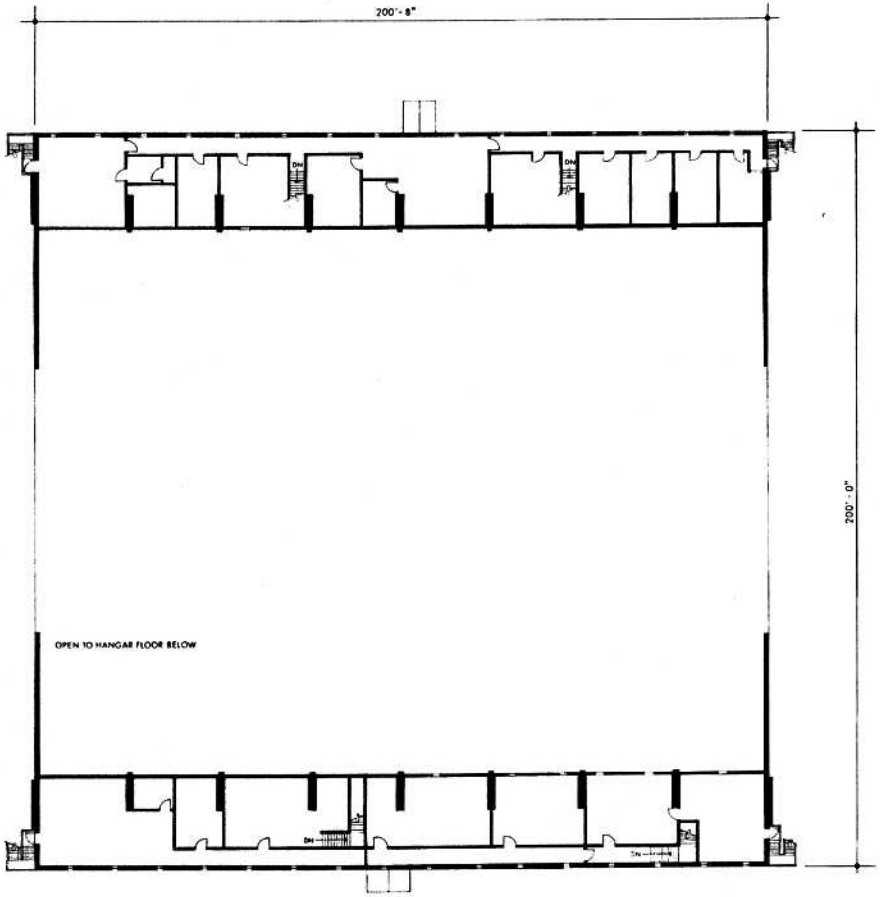
SURVEY NO AK-36-M

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET OF SHEETS



FIRST FLOOR PLAN

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



SECOND FLOOR PLAN

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

0 5 10 20 30 40 50 FEET

0 5 10 15 METERS

LADD FIELD - BIRCHWOOD HANGAR

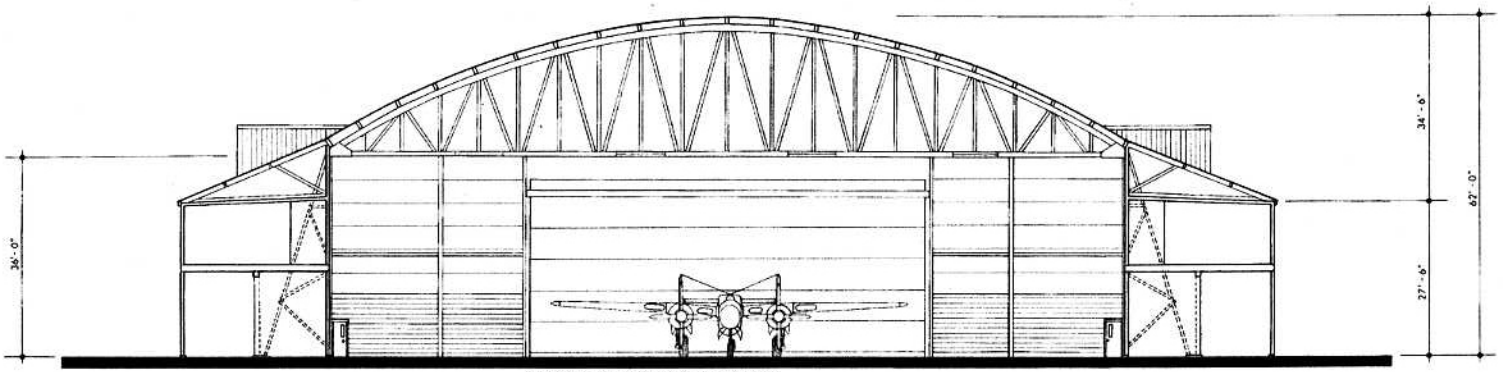
FORT WAINWRIGHT FAIRBANKS FAIRBANKS NORTH STAR BOROUGH ALASKA

SURVEY NO AK-36-M

HISTORIC AMERICAN BUILDINGS SURVEY SHEET OF SHEETS

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

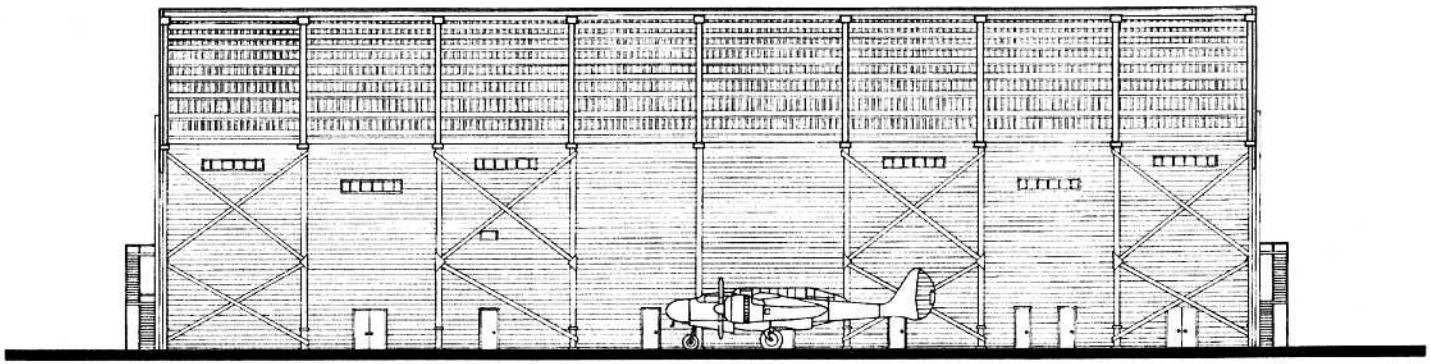
DRAWN BY: CLAYTON B. FRASER 2015



NORTHRUP P-61B BLACK WIDOW FIGHTER SHOWN

TRANSVERSE SECTION

SCALE: 3/32"=1'-0"



NORTHRUP P-61B BLACK WIDOW FIGHTER SHOWN

LONGITUDINAL SECTION

SCALE: 3/32"=1'-0"

NOTE: LADD FIELD BIRCHWOOD HANGAR 2 (HABS No. AK-36-M) AND BIRCHWOOD HANGAR 3 (HABS No. AK-36-N) WERE BUILT IDENTICALLY AND, WITH THE EXCEPTION RELATIVELY MINOR ALTERATIONS, REMAIN IDENTICAL. FOR ADDITIONAL GENERAL VIEWS AND DETAILS, SEE DRAWINGS FOR HABS No. AK-36-N.

0 5 10 20 30 40 FEET

0 1 2 3 4 5 10 METERS

DRAWN BY: CLAYTON B. FRASER 2015

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

LADD FIELD - BIRCHWOOD HANGAR
FORT WAINWRIGHT FAIRBANKS NORTH STAR BOROUGH ALASKA

SURVEY NO. AK-36-M

HISTORIC AMERICAN BUILDINGS SURVEY
SHEET OF SHEETS