

# FWA AVIATION STATIONING MITIGATION

## REUSE STUDY OF FWA'S HANGARS 2 AND 3 FORT WAINWRIGHT, ALASKA

FINAL DRAFT REPORT  
NOVEMBER 2011



FOR:  
FORT WAINWRIGHT  
CULTURAL RESOURCES





1939 photograph of the future site of Ladd Field and Fort Wainwright (photo: AK State Archives)

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## EXECUTIVE SUMMARY

Hangars 2 and 3 at Fort Wainwright, AK, are contributing elements to the Ladd Field National Historic Landmark (NHL). Both structures were constructed toward the end of World War II in 1943 and played a significant role in the wartime Lend-lease program among the United States and Russia, and in support of the Aleutian War campaign.

Originally built for use with fixed-wing aircraft, both hangars have been adapted to alternative uses as the Fort Wainwright mission has changed. Currently, both are functioning as maintenance facilities for helicopters. As the current use is relocated to another site, a new use is being sought that would continue the contribution of these assets to the mission while preserving their design character and history.

Hangars 1, 2, and 3 are the remaining historic hangars dating from the World War II era on FWA and as such, hold a particularly important role in maintaining the visual integrity of the NHL site. In addition, the structures remain viable assets on the post and per federal, DoD, and Army regulations, should be used and maintained to the maximum extent possible.

This reuse study was undertaken in compliance with a Programmatic Agreement between USAG FWA, the Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation, regarding Aviation Stationing mitigation at Fort Wainwright. The work has been carried out in consultation with post operations personnel, the Master Planning office, the Environmental and Cultural Resources personnel, and outside interested parties—the Alaska State Historic Preservation Officer (SHPO), the National Park Service (NPS), and the Tanana Yukon Historical Society (TYHS).

The criteria set forth for potential reuse of Hangars 2 and 3 are:

1. The reuse must support the mission;
2. The reuse must not place non-military personnel in harm's way;
3. The reuse must have no adverse effect on the NHL;
4. The reuse must be consistent, as closely as possible, with the Secretary of the Interior's Standards<sup>1</sup>;
5. The reuse must be economically sustainable; and,
6. The reuse must take energy conservation and sustainability into account.

Five alternative uses which meet the above criteria were addressed. The first two convert the hangars into facilities to house simulators, either Aviation Combined Arms Tactical Trainer (AVCATT) units or mobile and non-mobile simulator units. The hangars would provide an active training site for military personnel. Converting these hangars for this purpose would free up currently borrowed space in other buildings, and would provide sufficient space for expansion of simulator use. Use of the hangars for this purpose could supersede the Virtual Simulator Complex, now scheduled for long range development.

<sup>1</sup> *Secretary of the Interior's Standards for the Treatment of Historic Properties, Secretary of the Interior's Standards for Rehabilitation, National Park Service Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Standards)*

A third alternative would be to provide morale support for stationed and returning troops. This alternative would convert both hangars to training and recreational facilities limited to uniformed personnel. These facilities would focus on high-energy training—weights, cardio, boxing, combat, basketball, and running.

The fourth alternative considered is use of the hangars for indoor field training. Currently, there is no indoor field training facility at Fort Wainwright. This alternative would provide a ropes course, along with other training activities, as the training program requires.

The fifth alternative would be use of the hangars as warm storage facilities. The materials and equipment stored could vary and change, depending on immediate need.

Hangars 2 and 3 are essentially identical and because of this, any of the proposed alternatives would fit into either structure. The alternatives can be mixed or matched, depending on need. Hangar 2 can be used for AVCATT simulators, while Hangar 3 can be used for training and morale support, or warm storage. Any combination is possible.

In all cases, basic stabilization and repair to both hangars will be required before a new use is installed. This work would ensure that the assets would be available to continue serving the mission. Some structural repair is needed, along with reinforcement to meet seismic requirements. The roofs and canopies on both structures would be repaired, and the roofing replaced. Abandoned utilities would be removed, and fire protection would be upgraded to cover the complete interiors of the structures. New code-conforming fire stairs would be installed at either end of each building and new hangar doors would replace the current curtain closures at either end of each hangar, sized for hangar use and historic appearance.

The 2008 Condition Assessment of the hangars provided cost estimates for proposed uses of these World War II structures. These costs, escalated to 2010, were as follows:

• Maintenance Aircraft Hangar	=	\$23,342,363
• Layaway	=	\$1,007,858
• Warm Storage	=	\$3,273,273
• Offices (2 level in hangar bay)	=	\$20,902,889

The current 2011 Reuse Study proposes different uses, with cost estimates escalated to 2016. These mission-related uses & costs are:

• Alternative 1 – AVCATT Simulators	=	\$35,427,021
• Alternative 2 – Fixed Simulators	=	\$35,083,006
• Alternative 3 – Gymnasium	=	\$37,919,418
• Alternative 4 – Field House	=	\$36,932,709
• Alternative 5 – Field Training	=	\$35,823,887
• Alternative 6 – Warm Storage/Flex Space	=	\$32,200,522

The 2011 cost estimates require basic rehabilitation of the hangars' structure, mechanical & electrical systems, and repair of life safety deficiencies, to permit safe use of the interior by military personnel. Structural repairs were not included in the layaway or warm storage uses included in the 2008 CARP.

## INTRODUCTION

The study of reuse alternatives for Hangars 2 and 3 has been undertaken in accordance with the Programmatic Agreement among the USAG FWA, the Alaska State Historic Preservation Officer, and the Advisory Council on Historic Preservation.

Currently, both hangars are actively used as maintenance facilities. These functions are scheduled to be relocated out of the hangars in FY2014. This study considers possible new uses that would preserve the historic structures, while continuing to support the Fort Wainwright Mission.

Through discussions and interviews with post personnel, review of the historic record, and consideration of program requirements, six potential alternative uses have been identified. Use of one or both of the hangars for any combination of the following alternatives:

Alternative 1 - AVCATT Simulator Training

Alternative 2 - Fixed Simulator Training

Alternative 3 - Morale Support Gymnasium

Alternative 4 - Morale Support Field House

Alternative 5 - Field Training

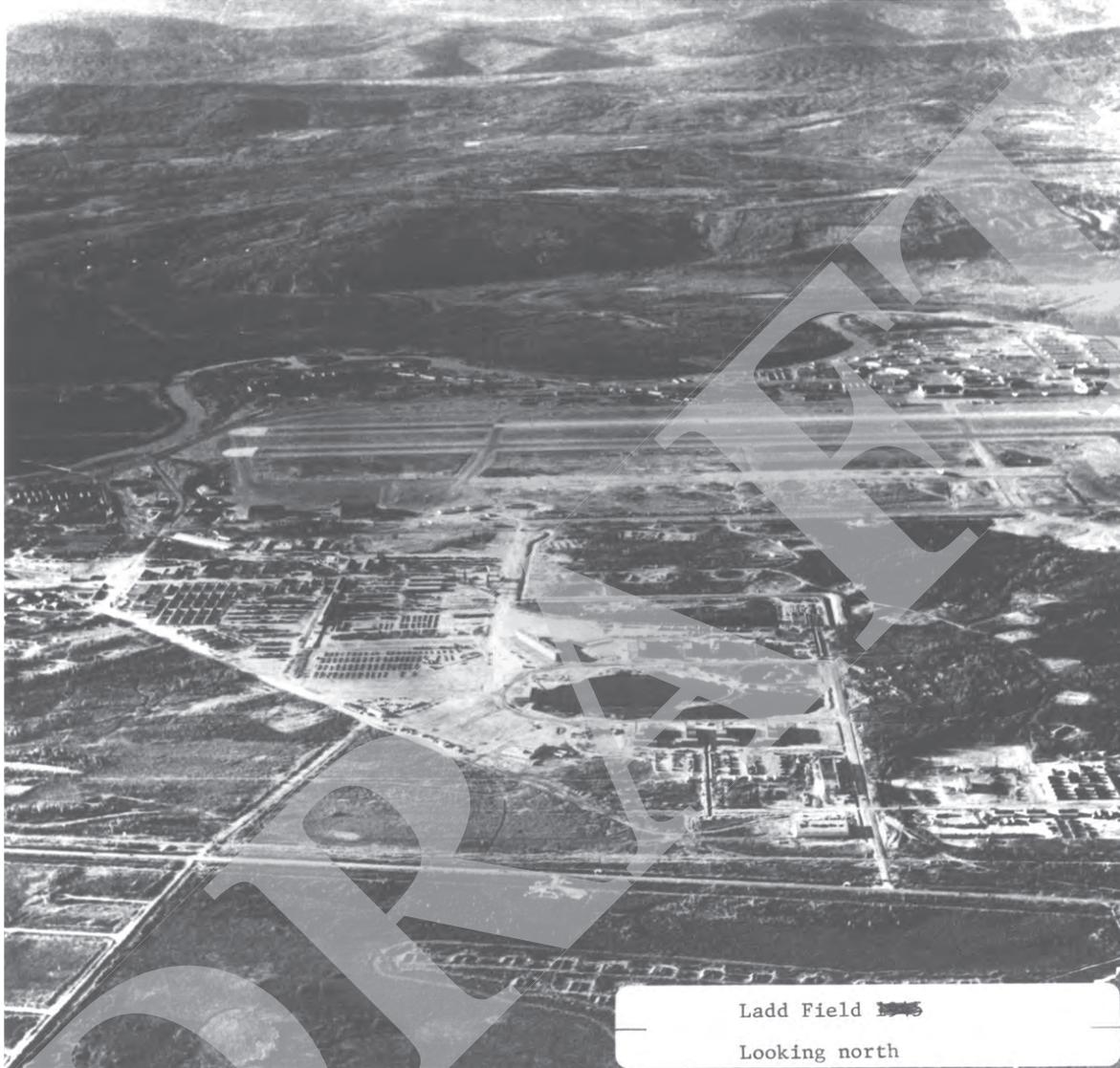
Alternative 6 - Warm Storage and Flex Space

Regardless of the future use chosen, both hangars require some repair, and an upgrade of basic services and safety standards. Deficiencies and damage to structural systems, roofing, and fire-safety must be addressed before a new use can be placed in the structures. Because the hangars are contributing elements of the Ladd Field National Historic Landmark, all of this work, along with any new construction, must be carried out in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties, and in consultation with the Alaska SHPO and National Park Service.

This report provides a historic context for the structures, a description of their condition, based on previous surveys, and descriptions of the alternatives considered, along with cost estimates for carrying out the work. In addition, the report includes an outline of the basic rehabilitation treatment that should be undertaken regardless of future use.



*View of Hangars 2 and 3 from Airfield taxiway (JCA, 2010)*



1953 aerial photograph of the Ladd Field looking north (photo: AK State Archives)

## BACKGROUND & HISTORY

Hangars 2 and 3 at Fort Wainwright have been in continuous use as aircraft hangars since they were built in 1943-44 at Ladd Field. The hangars are an integral component of the National Historic Landmark that includes the quadrangle of office buildings and Hangar 1 on North Post, and the two hangars south of the runways on South Post. They were designed by the Seattle district engineer for the U.S. Army Corps of Engineers. The hangars are Birchwood design, named after Birchwood Field in Alberta, Canada. They feature closed bowstring wood trusses which are 57' above an open hangar floor of approximately 152' north-south by 200' east-west, and which bear on timber columns. On the north & south sides of the hangar floor are 2 story side wings that are 25' deep. The hangars currently have a barrel vault shaped roof. There are four stairwell towers, one at each corner of the building.

The chronology of their major repairs and maintenance work from 1944 – 2002 includes the following:

- 1957 – New lighting fixtures, grounding conductors, hoist cables, exterior flood lights.
- 1960 – Upgrades to hangar doors: hardware & weatherstripping.
- 1961 – Add painted roof signs.
- 1968 – Roof repairs, including asphalt shingles at east-wing overhangs; add metal fascias.
- 1971 – Replace windows with smaller units; add HWBB at wing windows and new unit heaters in hangar bays.
- 1974 – Exterior stairs rebuilt with enclosures & painting; residing with corrugated metal siding; exteriors repainted; new flashings at openings; replacement of damaged siding at lower walls & stairs; replace opening trim.
- 1977 – Add dock for vans; add interior arms vault with CMU walls and concrete ceiling; demo/replace insulation and vapor barrier at exterior walls and ceilings; repair hangar doors; new interior partitions and finishes; new VAT on 2nd floors; new wing interior doors and frames; reconstruct stairs; new toilet partitions and finishes; new security screens on windows; new attic draft stops; close attic openings to hangar bays; replace steam heating in wings with HWBB; new plumbing fixtures and exhausts; replace light and power panels, all light fixtures; hangar bay lights; install new static ground system.
- 1978 – Add draft curtains at roof trusses; add new fire protection system and pumphouse.
- 1983 – Remove roof gravity ventilators; replace roof/ceiling insulation in wings; reopen attic openings to hangar.
- 1985 – Install new exterior wall insulation, vapor barrier, gyp. board (R-19); replace roofing with EPDM on 1" fiberboard at barrel roof/wings; repair interior water damage along exterior walls of wings, with new VCT flooring; replace water-damaged light fixtures.



*Above is a photograph of the current replacement window, installed in 1971. Recommendations in the 2003 "Condition Assessment/Economic Analysis" included restoration of the original window size and design. (JCA, 2010)*

- 1987 – Replace original hangar doors with present fabric doors; infill walls with man doors beside hangar doors; insulated stud walls above hangar doors; add bird screen to soffits; add corner exits; perform truss repairs; add snow melt system; asbestos abatement on accessible piping.
- 1991 – Roof repairs.
- 1993 – Replace heating system in hangar bays to glycol hydronic and new unit heaters.
- 1996 – Install new EPDM over new 7/16” OSB on main roof.
- 1998 – Screen eaves on hangar.
- 1999 – Replace/upgrade light fixtures.
- 2000 – Work on stairways.
- 2002 – Replace substation/ upgrade lighting.

In 2003, a “Condition Assessment/Economic Analysis” was performed by ECI/Hyer Inc., which examined the condition of Hangars 2, 3, and 6, and provided cost estimates for their repair and upgrade.

An “Integrated Cultural Resources Management Plan, 2001-2005, Fort Wainwright and Fort Greely (ICRMP)” was prepared, requiring the U.S. Army Alaska (USARAK) to conduct condition assessments of those buildings contributing to the Ladd Field National Historic Landmark.

In 2006-07, a second study, “Condition Assessment & Rehabilitation Plans, Hangars 2 & 3, Ladd Field National Historic Landmark, Fort Wainwright, Alaska” was conducted by Louis Berger Group Inc., in association with John Bowie Associates, Ammann & Whitney, Soils Alaska PC, and Design Alaska Inc. This study focused on structural deficiencies in Hangars 2 and 3 (Hangar 6 had been lost to fire in the intervening years between 2003 and the Fall of 2006). (Previous studies had included a “Hangar Bowstring Truss Repair” in June, 1987, and “Hangar Bowstring Truss Analysis” in October, 1987, by Loftus & Dailey Structural Engineers. The truss studies concerned the impact of the new hangar door installation on the existing trusses).

Due to a number of factors, the hangars have received minimal maintenance over the last ten years. In Spring 2001, the Memorandum of Agreement (MOA) Regarding the United States Army Alaska Demolition of Buildings in the Ladd Field National Historic Landmark was signed by the Army, NPS, SHPO, and the ACHP. This MOA included the demolition of Hangars 2 and 3. The MOA’s duration was originally 15 years, but it was terminated in September of 2006 by SHPO and NPS in response to the planning actions analyzing the proposed demolition of Hangars 2 and 3. The demolition was put on hold for a year. In 2006, planning began for the permanent stationing of aviation assets at Fort Wainwright. Again demolition of Hangars 2 and 3 were part of the Army preferred alternative to facilitate aviation stationing. With the limited maintenance funding, numerous requirements for funding, and with discussion of demolition, maintenance for Hangars 2 and 3 was deferred in favor of other critical facilities.

## LADD FIELD

*Statement of Significance paraphrased from National Historic Landmark Nomination, 2004.*

Ladd Field is nationally significant for its association with the themes of Expanding Science and Technology and the Changing Role of the United States in the World. Construction began on the military post in 1939. Located near Fairbanks, Ladd Field was the first U.S. Army airfield in Alaska and a part of the defense build-up for World War II in the territory. The military post is associated with the development of cold weather aviation technology and played a supporting role in the Aleutian Campaign of World War II in the Pacific. Ladd Field was also the Alaskan headquarters for the Alaska-Siberia (ALSIB) lend-lease route over which the United States sent thousands of military aircraft to the Soviet Union for use in the Eastern Front of the war in Europe. 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.

During the 1930s, U.S. Army Major General H.H. "Hap" Arnold identified the need to establish a cold weather test station in Alaska to experiment in adapting military planes, personnel, equipment and base facilities to operate successfully in arctic temperatures. The U.S. Government set aside 960 acres of public land for a military reservation in the Fairbanks area in March 1937. After Arnold became chief of the Army Air Corps, he persuaded the War Department to conduct a survey for a cold weather aircraft test facility in Alaska during the early summer of 1938. The U.S. Army chose a site 3.5 miles east of Fairbanks and began constructing the Cold Weather Experimental Station in Fall 1939. While construction of the airfield was in process, the facility was named Ladd Field on December 1, 1939, in honor of Major Arthur K. Ladd who 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.

Construction of the runway and buildings continued into 1941. Additional troops arrived in September 1940, followed soon after by the first B-17 Flying Fortress. Testing personnel used portable nose hangars 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, and by September the post consisted of 41 officers and 479 enlisted men. Most of the personnel were assigned to Ladd Field temporarily due to the rapid build up of military forces in other parts of Alaska. This prompted the base commander, Lt. Colonel Dale W. Gaffney, to complain to his superiors about the difficulties of mounting a testing program with limited personnel, incomplete facilities, and 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 U.S. Army disbanded the Cold Weather Testing Detachment and dispersed its personnel to other military posts in Alaska. The Eleventh Air Force took command of Ladd Field and established a depot to repair and service aircraft for the Aleutian Campaign. Several months later, the commanding general of the Army Air Forces recognized the need for further intensive cold weather testing and reactivated the Cold Weather Testing

Detachment at Ladd in July 1942. Testing continued well after the conclusion of World War II. During peak operations each winter, the Cold Weather Testing Detachment averaged 560 personnel, including as many as 52 civilian factory representatives. Activities included testing aircraft and experimenting with clothing, food, motor transportation, medical research, photography and communications. The Army Air Corps collected critical information about wing-icing, navigation, maintenance and operations, instruments and controls, radio communication, cold-weather clothing, armament, and other issues related to operating aircraft in arctic conditions. The military incorporated this data into production line requirements for all new aircraft and modification of existing aircraft, making American aircraft operations in arctic weather conditions safer.

## AIR DEPOT

American entry into World War II broadened Ladd Field's mission and resulted in a significant expansion of its facilities. After the Japanese attack on Pearl Harbor on December 7, 1941, the Army placed Ladd Field on war-time status. In May 1942, the Eleventh Air Force took over command of the post and established an air depot at Ladd Field to repair military aircraft used in defending Alaskan territory. The Sixth Air Depot Group and eight attached units, comprising 25 officers and 843 enlisted men, arrived at Ladd Field 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. After American 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 and its personnel absorbed into the Air Transport Command.

## 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 United States to the Soviet Union. The Lend-Lease Act of March 1941 authorized the president to sell, lease, or lend arms, munitions, food and other defense articles to any country whose defense he deemed vital to the defense of the United States. The program, which ultimately cost \$42 billion, was designed to assist Great Britain. After Germany invaded the Soviet Union in June 1941, President Roosevelt extended the program to include the Soviet Union. Routes for ferrying American aircraft to Russia 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, leaving the Alaska-Siberia (ALSIB) route as the most feasible alternative. Soviet Premier Joseph Stalin opposed the Alaska-Siberia route as he did not want American bases in Siberia, and he did not want to offend Japan. In July 1942, as Russia's military situation deteriorated, Stalin agreed to the route and the Americans agreed not to build bases or have its pilots fly in Siberia.

The United States and Canada adapted a series of airfields constructed between 1940 and 1942 for the aircraft ferrying operation. The portion of the route that crossed Canada and Alaska was called the Northwest Ferry Route and included eight airfields in Canada and six airfields in Alaska. 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. Ladd Field was the most significant base on the route because it was where Americans turned over the airplanes to the Soviets. Pilots of the Seventh Ferrying Group, Air Transport Command (ATC), flew the aircraft from Montana to Ladd Field. Ground personnel from this group provided support at airfields along the way.

The first 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 American and Soviet personnel, and serviced and repaired if necessary. Soviet pilots flew the aircraft to Nome for refueling and repairs before crossing the Bering Strait and Siberia. 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 new 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 operation.



*B-25 and P-39 aircraft at Ladd Field, ca 1942 part of the lend-lease program between the U.S. and Russia (photo: AK State Archives)*

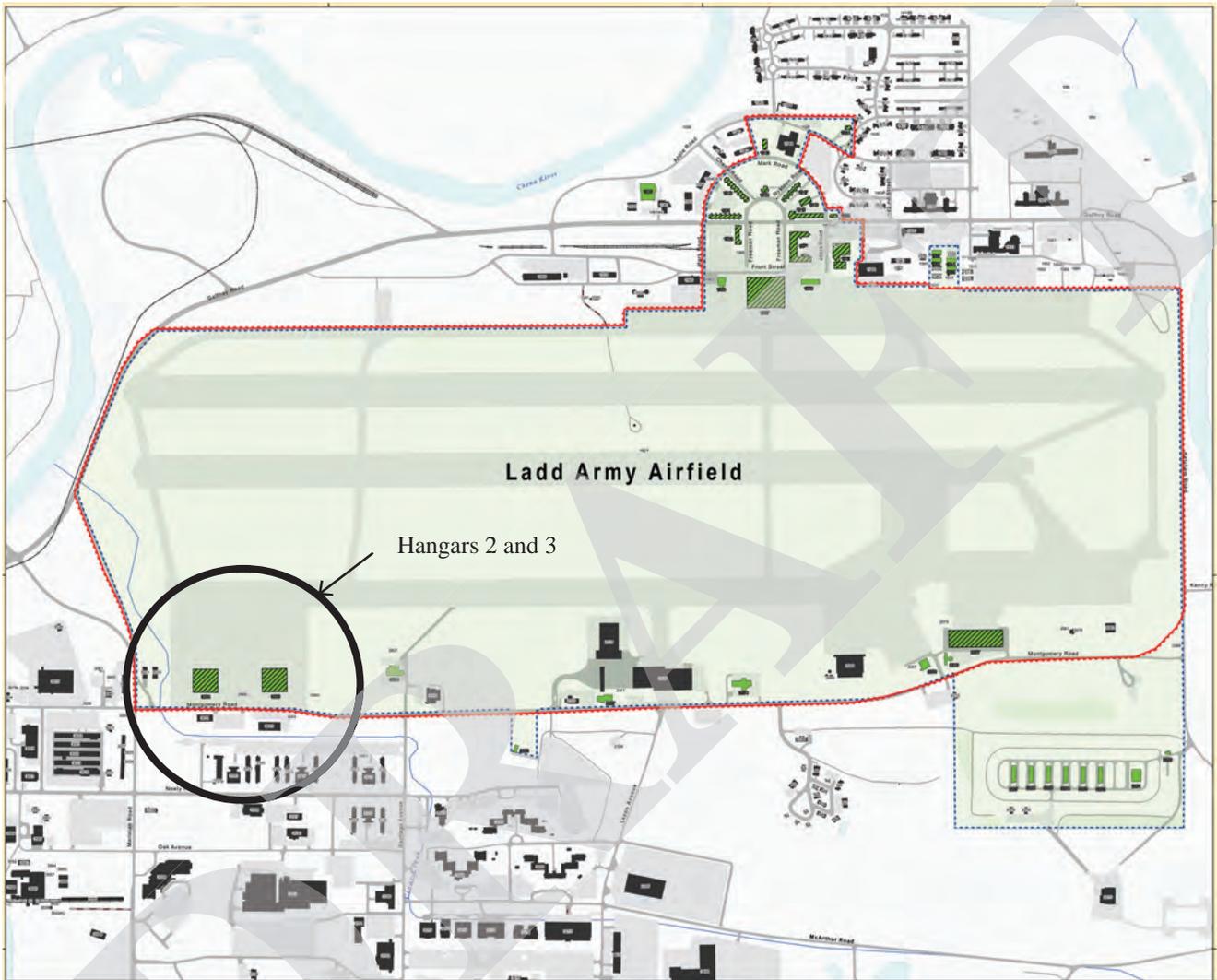
The ATC took command of Ladd Field, including the cold weather testing program and air depot functions, on September 30, 1943. The activities of other ATC airfields in Alaska were directed from Ladd Field. The exigencies of war and lend-lease operations took precedence over cold weather testing and many of Ladd Field's original facilities were used for lend-lease operations. The number of lend-lease aircraft flown through Alaska to the Soviet Union increased from 150 planes in 1942, to 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 monthly over the route continued to increase, totalling 3,164 planes 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 United States had delivered 7,930 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. American aircraft delivered over this route helped the Soviets stop the German invasion of Russia and contributed to the Soviet victory on the eastern front in Europe.

Throughout the war, many important officials from the United States and the Soviet Union traveled the ALSIB route on diplomatic and military missions. Ladd Field played host to many of these dignitaries as they stopped for layovers or meetings in Fairbanks during their travels. Distinguished Soviet visitors to Ladd Field included Ambassador Andrei Gromyko and Foreign Minister Vyacheslav M. Molotov. High ranking American officials who visited the post included Wendell L. Wilkie, Vice President Henry A. Wallace, and special presidential envoy Joseph E. Davies.

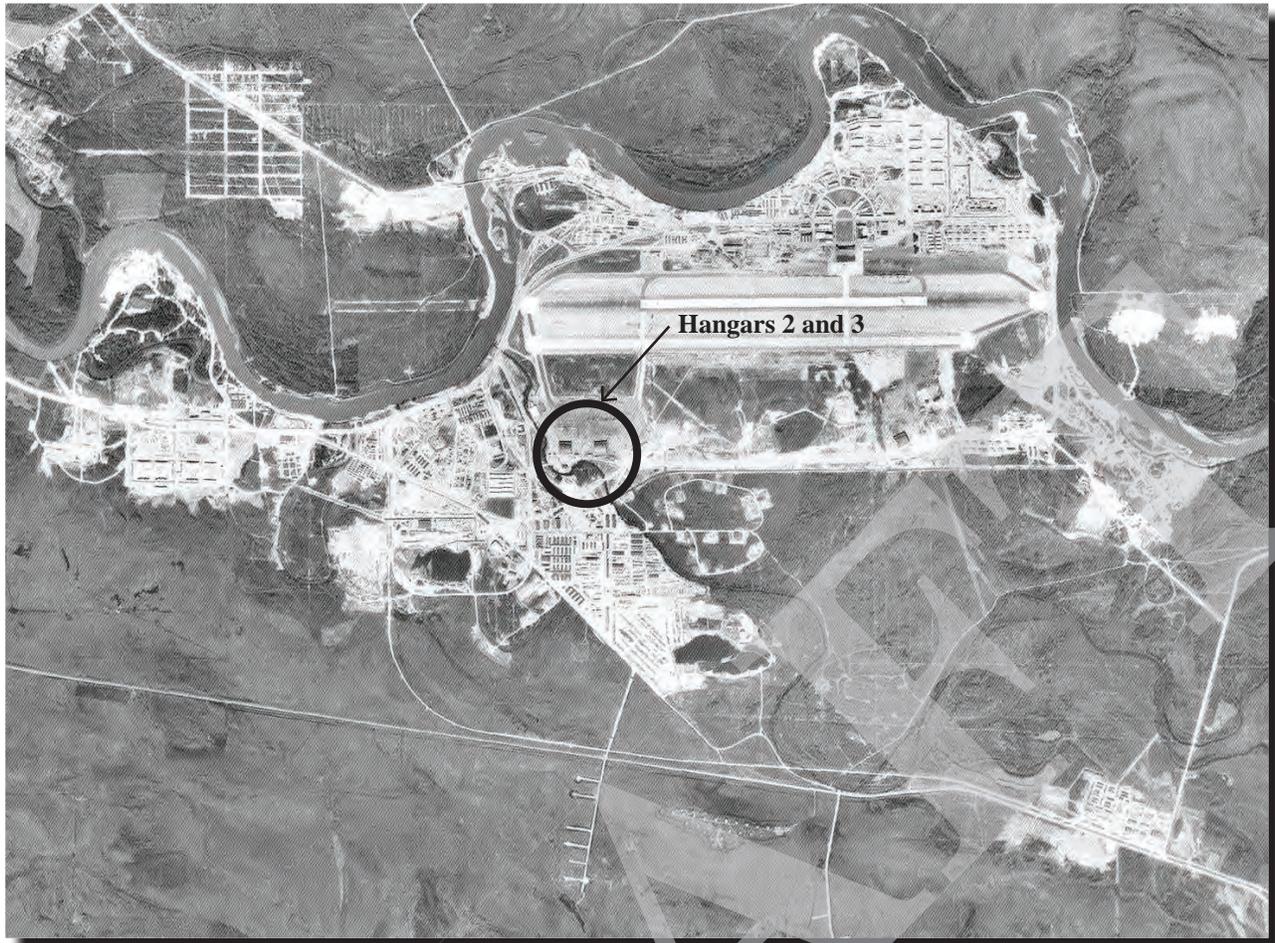
## CONCLUSION

In 1947, Ladd Field became a U.S. Air Force base. The facility was transferred to the Army in 1961 and renamed Fort Jonathan M. Wainwright in honor of the General who led the defense of the Bataan Peninsula at the beginning of World War II. Ladd Field, which is located on Fort Wainwright, is still part of an active Army installation.

The thirty-four buildings and three structures in the historic district that retain integrity from the 1940-1945 period affirm Ladd Field's national significance as a cold weather aviation test facility, its contribution as a support base for the Aleutian Campaign of the War in the Pacific, and its role as the most significant base on the Alaska-Siberia route of the lend-lease program.



Ladd Field NHL boundaries in RED, the Cold War Historic District boundaries are hatched in GREEN. Ladd Field NHL contributing buildings are shown in GREEN.



1948 Aerial of Ladd Field showing location of Hangars 2 and 3 at the bottom left, south of the runway (photo: AK State Archives)



East Elevation of Hangar 2 showing original sliding doors (HABS Photo, 1986)



West Elevation of Hangar 3 showing original sliding doors (HABS Photo, 1986)

## HANGARS 2 AND 3

### CURRENT CONDITIONS

Hangars 2 and 3 were both built in 1943 using the same construction plans. They are both bowstring truss designs, referring to the large wood bow-truss that clear-spans across the full open area of the hangar. This was a popular design for hangars, taking advantage of the unique structural capabilities of a truss, while providing positive roof slopes; especially useful in a climate with heavy snowfall. The bowstring truss roof gives the hangars an iconic form that contributes to the visual character of the Ladd Field National Historic Landmark.

They are moderate sized hangars, 201 feet x 202 feet, with a clear interior open space of approximately 150 feet x the full length of the structure. On the North and South sides of the open space are sub-structures 25 feet deep x the length of the hangar. These “wings” are two stories tall, and are divided into spaces that house offices, classrooms, conference rooms, and operations support.

The overall condition of both hangars is fair, with some deterioration to roofs and some structural members. The exterior walls of the structures are covered with vertical metal siding, which were placed over the original wood siding shortly after construction. The outside walls are made up of 2 x 6 wood framing, 1 x 6 diagonal sheathing, wood siding, and then the vertical metal siding, all of which are in fair to good condition. The interior long walls of the hangars are covered with horizontal 1 x wood boards, painted white. The end (opening) walls of the structures have recently been covered with gypsum board, which is unfinished. The access ends of the hangars were originally made up of full width and height horizontal rolling doors. These have been replaced with smaller “curtain” type pull up doors. The rolling doors were supported in a small roof projections referred to as overhangs. These are typical of bowstring hangars, converting the arched roof form of the roof into a rectangular, which accommodates the hangar doors. These projections also contain exit stairs at each corner of the hangar.



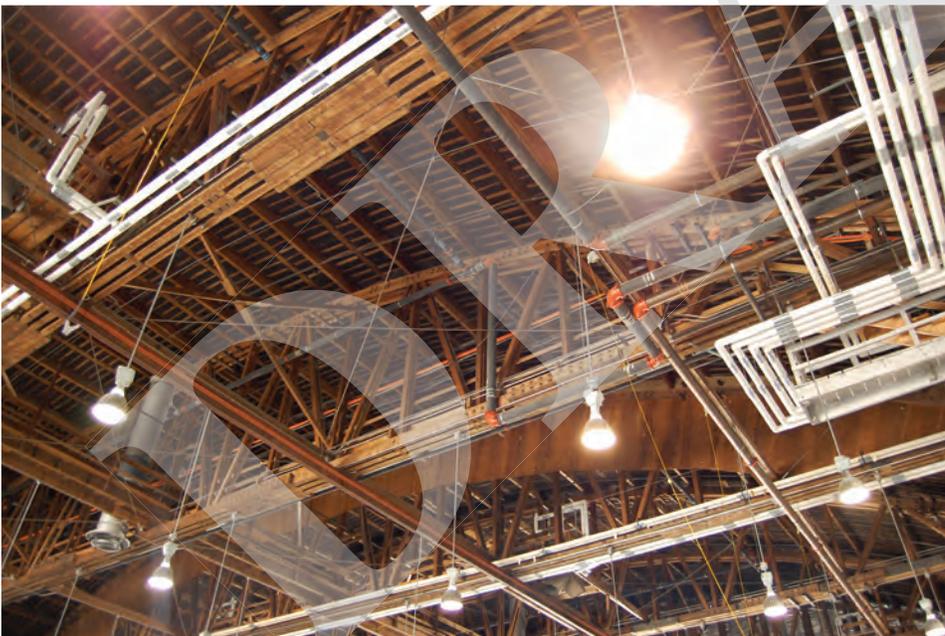
*Hangar 2 showing the original door opening size, and the 1986 curtain door centered in the original opening. The image also shows the “eyebrows over the door opening, and the enclosed exit stairs at either side of the structure. (JCA, 2010)*

The first level floors of the hangars are concrete, and the upper floors in the wings are covered in vinyl tile in a majority of the spaces. Wall finishes in the offices and support spaces is generally painted gypsum board. Ceilings are suspended acoustic tile, with fluorescent lighting.

In the open bay the wood walls are painted, and the ceiling exposed to the structural frame. The space is illuminated with suspended lights.



*Hangar 3 interior showing unfinished end walls, painted side walls, open ceiling and suspended lighting (JCA, 2010)*

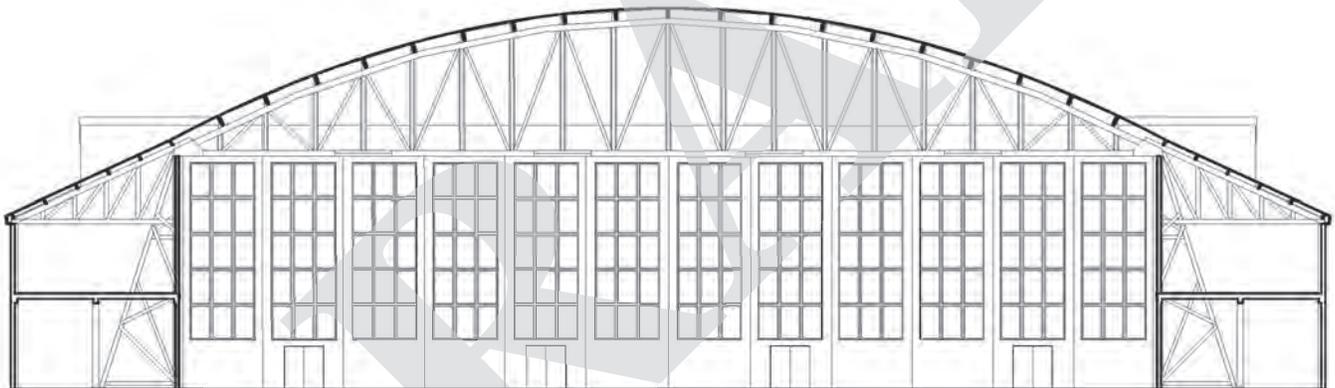


*Hangar 3 interior showing bowstring truss structural system, exposed roof purlins, and suspended lighting and piping. (JCA, 2010)*

The structural system of the hangars is simply a series of wood columns, 25 feet apart, running the length of the hangar, supporting the bowstring trusses. The trusses clear span the open bay. The wings on either side of the open bay are conventional construction, with wood stud walls, and wood floor framing. The roofs of the wings are supported by framing that is a continuation of the bowstring roof surface.

To withstand the lateral forces created by the long open span, the supporting columns are braced with wood, as shown in the illustration below. These buttresses are, for the most part, intact, and integrated into the partitioning of the first and second floor offices. In some cases, portions of the buttresses have been removed to accommodate changes in uses in the wings. In addition, the columns are braced laterally with 45 degree cross-bracing occurring every other or every third bay, and extending from the top of the column to its base. In some cases this bracing has been cut away to allow the insertion of doors.

The columns are in good condition, with no reported deterioration, but the compromised buttresses and bracing require restoration. The bowstring trusses have some deterioration. The 2006-07 deficiency assessment of the hangars reported a series of deficiencies to the wood members and connectors. These do not rise to the level of threatening structural failure, but require corrective action.



*Cross section of the hangars showing the distinctive structural bowstring truss. Note lateral bracing supporting the trusses projecting into the wings. Illustration shows the form of the original rolling doors. (HABS 1985)*



*Interior view of Hangar 3 showing the lateral cross-bracing between supporting columns on far wall. (JCA, 2010)*

The roofs over the structures are covered with a Ethylene Propylene Diene Monomer (EPDM) roofing membrane, which has outlived its useful life. There are many areas of wear and deterioration in the membrane which have allowed moisture penetration into the wood sheathing and roof framing. The resulting deterioration was most evident at the overhangs on either end of the hangars. Replacement of the overhangs will require replication of the original design, replacement of deteriorated framing materials and sheathing, using fire-retardant treated lumber, and the installation of new roofing.



*Photograph of overhang on Hangar 3 showing significant deterioration of roof covering, wood framing, and fascia. The overhangs have recently been removed and the roof area protected. (DA, 2011)*



*Elevation of Hangar 3 showing the wide expanse of EPDM roofing, and the intact overhangs. (JCA, 2010)*

## FIRE DAMAGE

On Feb. 17, 2011 a fire occurred at the west end of Hangar 2, at the junction of the roof and wall. A contractor was removing the overhang roofs and existing wood exit stairs at the west end of the building at the time. The fire was extinguished by local fire departments, and sprinklers below the trusses activated to prevent further spread of the fire. A structural damage report was requested by DPW and performed by Design Alaska structural engineers. (A copy of that report is attached as an Appendix). Truss #1 and the adjacent roof decking and purlins were damaged, and will require repairs. Replacement of damaged members with new material similar to the original materials was recommended.



*Photograph of the west elevation of Hangar 2 showing fire damage to the upper wall and roof. (DA, 2011)*



*Detailed image of fire damage area showing charred wood studs and roof framing. (DA, 2011)*

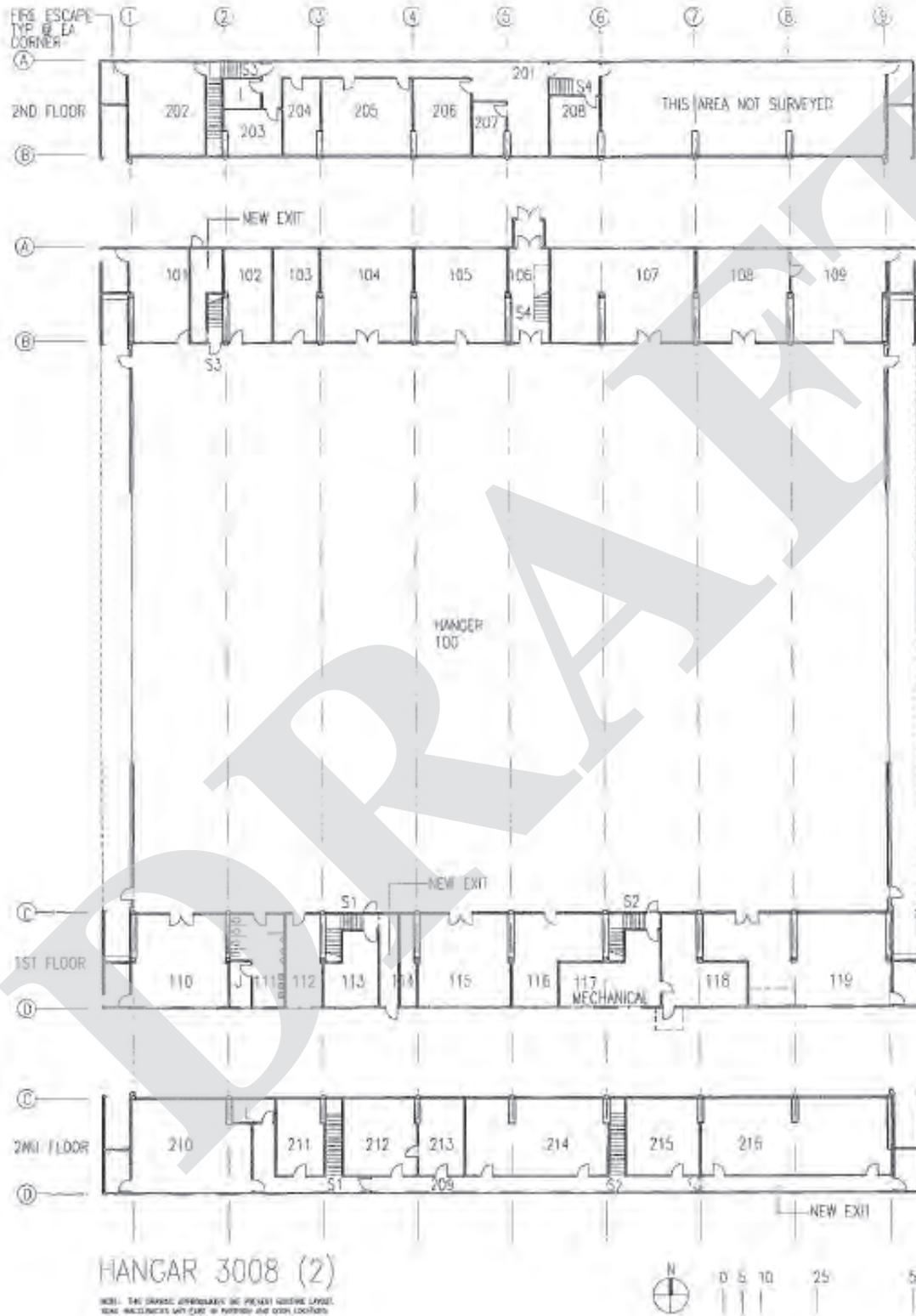


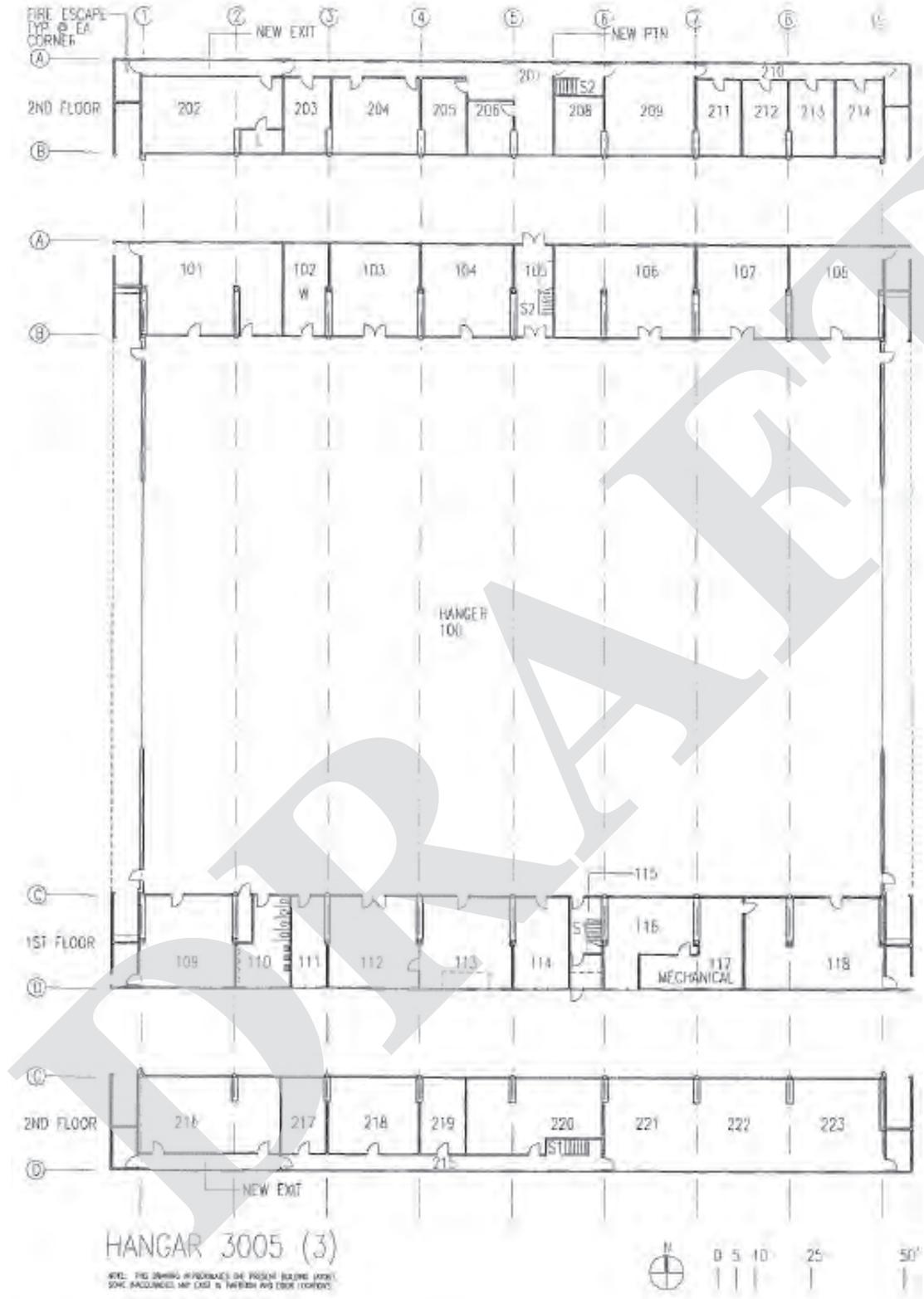
Northwest corner of Hangar 2 showing fire damage and stripped wall that enclosed exit stairs. (DA, 2011)



Exit stair which was in the process of being removed when fire occurred. Typical stair that was located at each corner of Hangar 2 and 3. (DA, 2011)

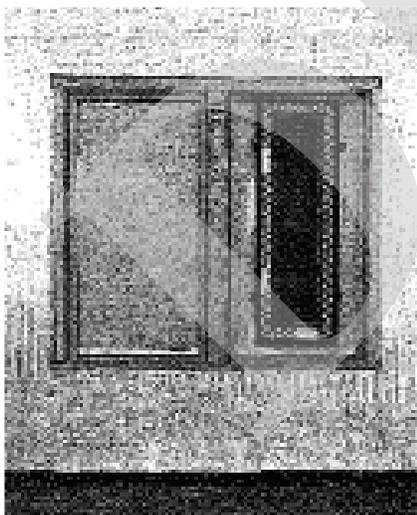
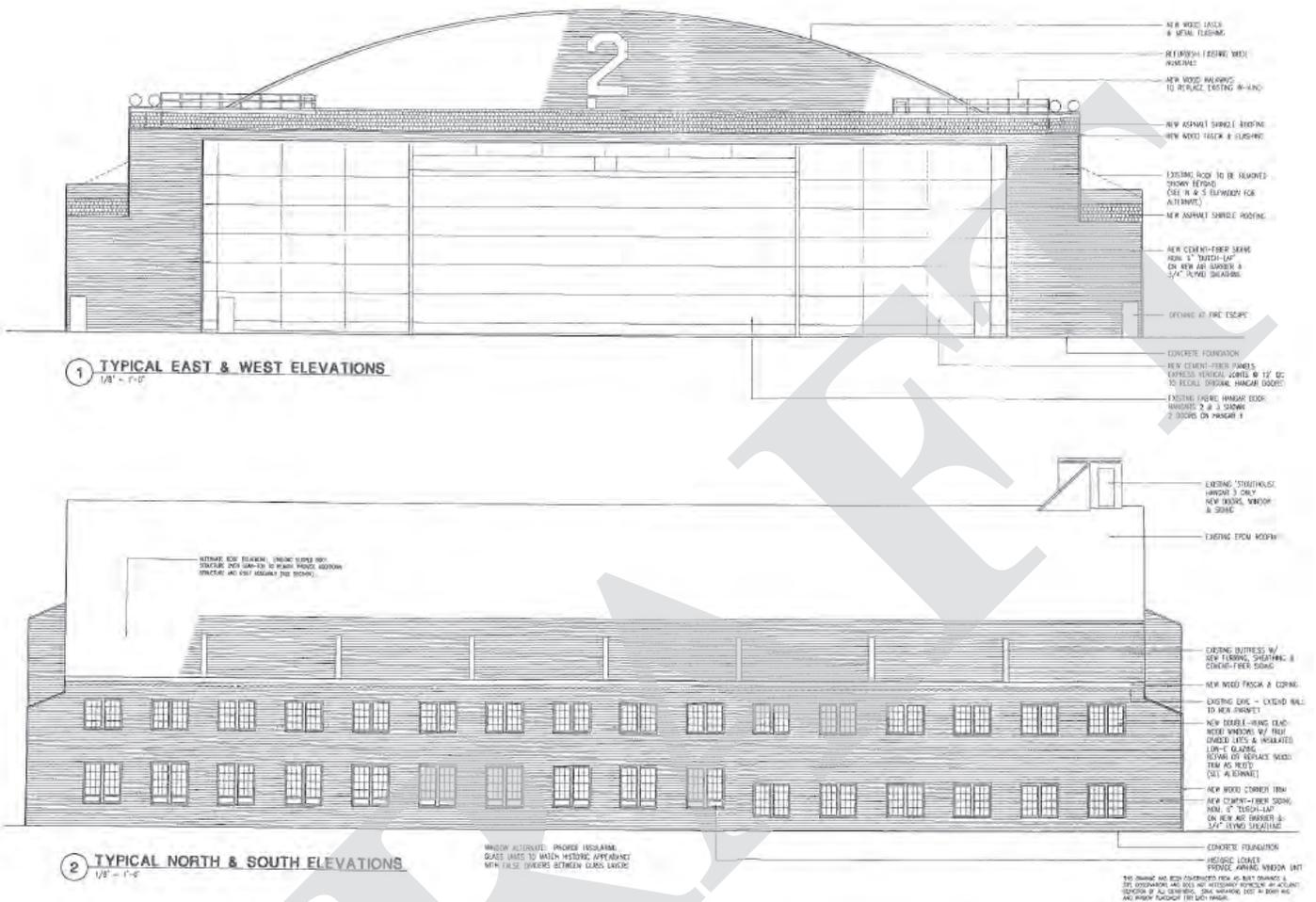
# HANGARS 2 AND 3 FLOOR PLANS (HABS 1985)





HANGAR 3005 (3)

NOTE: THE SHOWN DIMENSIONS ARE FROM EXISTING WORK. SOME DIMENSIONS MAY VARY IN FIELD AND END CONDITIONS.



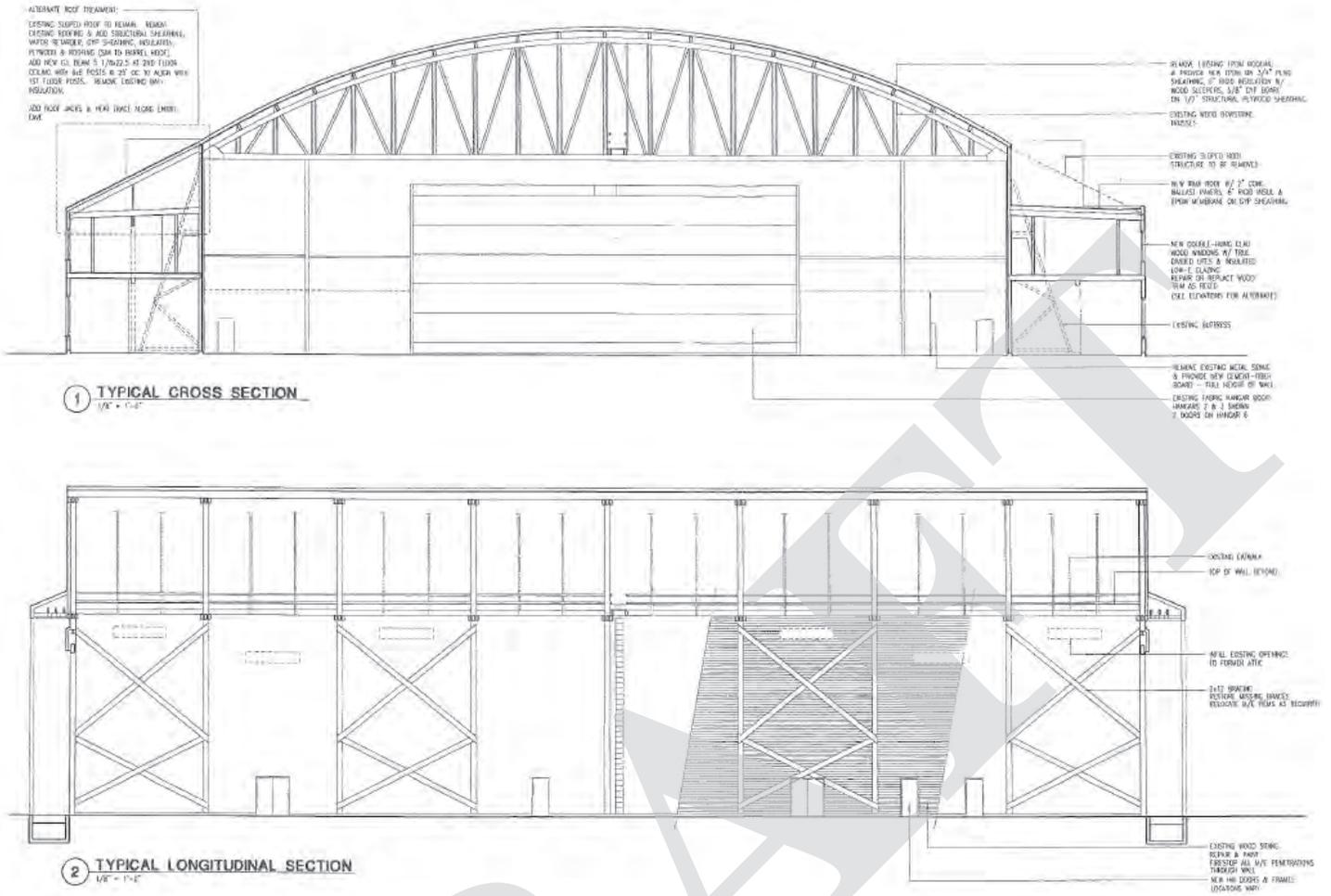
Original window design showing 1971 reduction in size. (ECI/Hyer, 2003)



Image of further reduction in window size. (JCA, 2010)



Current windows from hangar interior. (JCA, 2010)

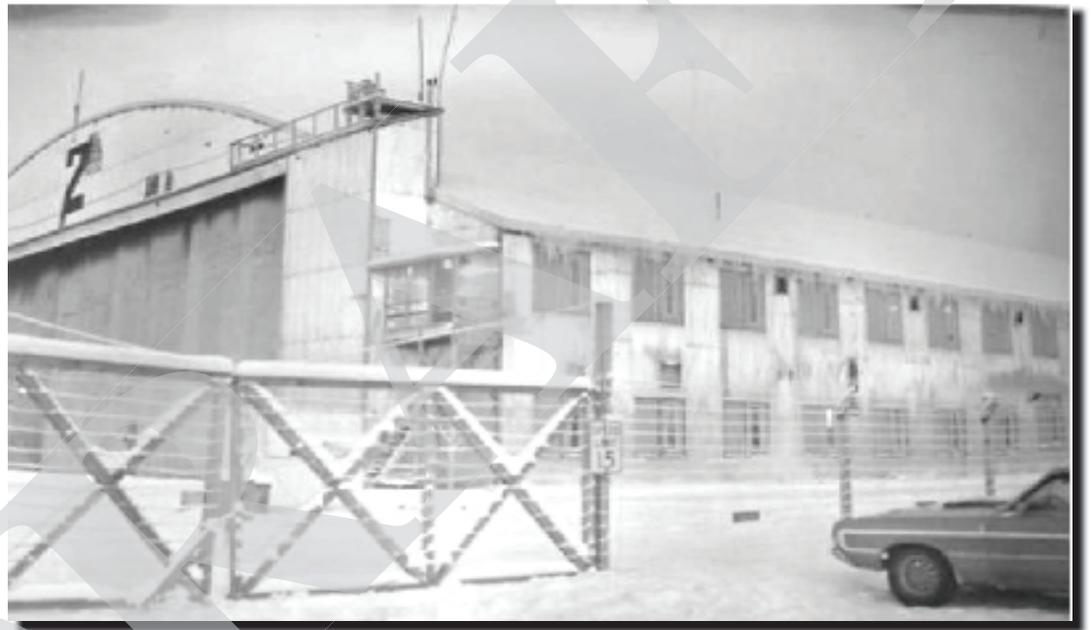


Note the location of the wood cross-bracing between columns on the interior of the hangars. In some instances the bracing has been cut and sections removed. Although there has been no obvious structural damage as a result of this action, rehabilitation of the hangars would included replacement of the missing or damaged bracing. In instances where conflicts occur between functional needs and the wood bracing, such as where door openings exceed the space allowed, an alternative structural bracing may be available, such as the sue of tension cables.

## BASIC REHABILITATION

Both Hangars 2 and 3 have been in continuous use since their construction, with minor modifications being undertaken to adapt to a changing mission, and to address wear and tear on the building fabric and systems. Currently, neither hangar would meet current code requirements in a number of areas, and both structures show some degree of deterioration, especially on the building roofs and exterior.

Before a new use is installed in either of the hangars some repairs and improvements will be required. These would be intended to bring the structures into code compliance, improve life-safety conditions, and to correct damage and deficiencies. Once completed, both hangars would be a usable “shell” in which new functions can be fit. This work would be undertaken in a manner that does not interfere with any required, use-specific changes.

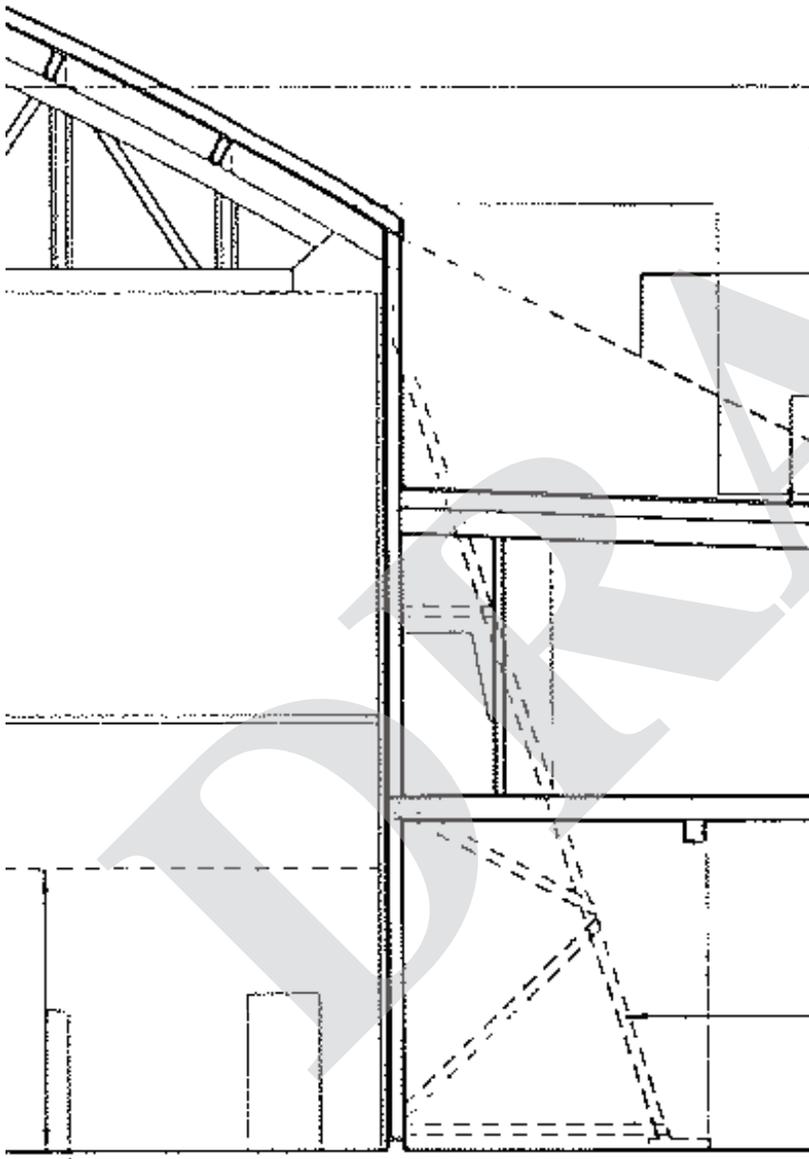


1975 image of Southwest corner of Hangar 2 showing original window openings, exterior fire stairs, and original rolling doors. (Unknown, 1975)



2010 image of Hangar 2 showing the reduced replacement hangar curtain door, the exit stairs enclosed, and the reduced size window replacements. Also, POV parking is now directly adjacent to the Hangar (JCA, 2010).

Prior to any consideration of reusing either of the hangars some basic repairs and upgrading will be required. Deficiencies and deterioration have been identified in some structural elements of the hangars. The bowstring trusses that span the full open area of the hangars are supported on wood columns and buttresses. These columns and buttresses are cross-braced to provide lateral stability. In some cases, the buttresses and cross-bracing have been removed or damaged. Original cross-bracing remains between the truss supports. The missing buttress components and cross-bracing must be replaced, and the damaged cross-bracing repaired to match the original.



*1985 HABS drawing of hangar section showing column and buttress.*



2010 photograph of the interior of Hangar 3 showing wood cross-bracing at the first bay, far wall. The cross-bracing did not occur at each bay. In some situations the lower cross brace was cut or removed to accommodate the installation of doors (JCA, 2010).



2010 interior image of Hangar 3 showing the wood bowstring trusses, and the roof structure, with purlins and sub-purlins supporting the roofing. The large rail running from the center left of the picture down to the right support a hoist, no longer in use. Visible are vertical ducts and a condensing unit in the lower right center supported by the bottom cord of the trusses. The gray piping is part of the fire suppression system, and the white pipes are part of the heating supply (JCA, 2010).

In 2006-7 an analysis was undertaken to identify deficiencies in each of the hangars. This work built on earlier condition assessments done on in 1987 and 2003. Each analysis looked at the structural integrity of the hanger trusses, the condition of the exterior and interior finishes in the buildings, the moisture protection systems protecting the structures, and systems failures.

From the 1987 “Hangar Bowstring Truss Repair” study done by Loftus & Dailey, Inc., through the latest investigations, questions have been raised regarding the level of weight and stress being imposed on the bowstring truss system in each of the hangars. Isolated failures and deficiencies have been noted. A number of steps have been taken to correct the structural issues, including a cessation of using the trusses to support mechanical lifts.

In addition to concerns over the integrity of the trusses, other identified deficiencies are listed below. Basic Rehabilitation of the hangars would include stabilization of the hangar structural system, plus correction of all of these items.

### **Priority 1 — Life Safety (Required for All Reuse Alternatives)**

1. Exit Stairs: Install code-compliant fire stairs at either end of building, each quadrant. (Note: this work is in progress in spring, 2011.)
2. Draft Curtains: Install non-combustible draft curtains between wood trusses.
3. Structural Repairs: Repair damaged and missing structural members: trusses, purlins, tension rods, columns, intercolumn bracing, and buttress web members, including seismic upgrades to structural system and foundation treatment. Provide safe access ladders to catwalks.
4. Fire Walls: Repair two-hour rated fire walls as required between hangar bays & side bays, and install rated attic louvers into side bays. Install rated doors & frames in fire separation walls. Install code-compliant finish hardware on fire and exit doors.
5. Fire Hydrants: New fire hydrants required with proper capacities to serve the hangars.
6. Sprinkler System: Extend sprinkler system into attics over side bays. Replace existing deluge type hangar bay sprinkler system. Upgrade or replace fire pumps in Bldg. 2011, which serve both hangars.
7. Fire Alarm System: Upgrade or replace existing system.
8. Exit & Emergency Lighting: Replace with code-compliant systems.

### **Priority 2 — Building Code (Required as applicable to Reuse Alternative)**

9. Restrooms: Repair damaged ceramic tile floors, walls, & equipment. Provide one accessible restroom for men & one for women on main floor, as applicable to Alternative. (Alternatives 3,4 only)
10. HVAC System: Install new HVAC systems in side bays and hangar bays, with DDC control system, as applicable to Alternative. (Alternatives 3,4 only)
11. Electrical System: Replace electrical main panelboard and distribution system. (Alternatives 1,2,3,4 only)
12. Lighting System: Upgrade or replace lighting system in hangar bays and side bays, including exterior lights, as applicable to Alternative. (Alternatives 3,4 only)

**Priority 3 — Energy Conservation (Required for all Reuse Alternatives)**

13. Roofing: Install new roofing assembly over hangar bays, with new EPDM (or TPO/PVC) roofing assembly above, and new insulation and vapor retarder below. (Obtain IBC Section 3407 mitigated exception for lack of Class A/B fire rating.)
14. Building Insulation: Replace all insulation in attics over side bays.
15. Hangar Doors: Replace with energy-efficient doors, in appropriate door configuration for Reuse Alternative.

**Priority 4 — General Preservation & Maintenance (Required for Reuse Alternatives as noted)**

16. Roofing: Replace roof assemblies over side bays, with associated eave flashings. Replace roofing and fascias on entry canopies. Reconstruct original overhangs at hangar doors with new roofing materials & structure, in order to protect hangar doors from weather, and provide access to exterior lights & comm. equipment. (All Alternatives)
17. Exterior Man Doors: Replace all deteriorated doors/ frames. Provide at-grade access to building interior. (All Alternatives)
18. Signage: Restore building identification numbers above the hangar doors (2,3). (All Alternatives)
19. Parking: Relocate on-grade parking to meet ATRP requirements for standoff distances from hangars. (Fencing at airfield currently in place.) (All Alternatives)
20. Windows: Replace all exterior windows with energy-efficient units, in configurations appropriate to original openings. (All Alternatives)
21. Floor Slabs: Provide new floor drain system via new topping slab & drainage piping. Repair cracked concrete floor slabs in side bay areas. (Alternatives 3,4 only)
22. Utilities Systems: Cap abandoned utilities and fill in unused service pits. Upgrade or replace aged existing domestic water, compressed air, waste, and vent piping, and plumbing fixtures. (Alternatives 3,4 only)
23. Communications Systems: Relocate rack-mounted telecommunications equipment into locked fire-rated environments. (Not included – Future Work)
24. Exterior Walls: Repair exterior walls to provide continuous vapor barriers, and to restore their historic appearance. Include repairs to gypsum board in side bays, especially at buttress wraps, and repairs to vapor retarder & insulation at exterior walls. (Not included - Future Work)
25. Hazardous Materials: Remediate remaining lead-based paint (LBP), asbestos, or other hazardous materials. (Not included – To be determined)

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## ALTERNATIVES USES

A series of new uses are being considered for Hangars 2 and 3 because both structures have been identified as contributing elements to the Ladd Field NHL. The preservation of these iconic buildings is critical to maintaining the design and physical integrity of the NHL. In addition, reuse of the hangars would be consistent with federal, DoD, and DOA policy and regulation.

Through consultation with FWA staff, the following criteria were developed for potential reuse of Hangars 2 and 3:

1. The reuse must support the Fort Wainwright mission;
2. The reuse must not place non-military personnel in harms way;
3. The reuse must have no adverse effect on the NHL;
4. The reuse must be consistent, as closely as possible, with the Secretary of the Interior's Standards<sup>1</sup>;
5. The reuse must be economically sustainable; and,
6. The reuse must take energy conservation and sustainability into account.

Five basic alternatives were developed that would meet the criteria. Each would have different effects on the hangars and the NHL, but none would be adverse. Another alternative, an expansion of Alternative 3—Training and Morale Support, was considered, but not developed. This alternative would add a natatorium in the space between the hangars. This natatorium would house a full size (50 meter x 25 meter) swimming pool and support facilities. The alternative would also include enclosed corridors connecting each hangar with the pool complex.

Although possible to do, this alternative would add a substantial structure into the NHL. The natatorium would fill the space between the buildings, destroying the historic relationship between the structures and eliminating the current access to the airfield. In addition, the required additions onto both hangars would be considered adverse effects.

While the visual effects on both of the hangars and the NHL could be minimized with the use of glass structures, their use would not be feasible in the Fort Wainwright climate. The heat loss through the use of a glass structure would be excessive, and both snow loads and seismic design requirements would make the structure impractical. An earlier assessment of this alternative envisioned the facility serving the larger Ft. Wainwright community, taking the place of a planned future recreational complex. This would introduce non-military personnel in close proximity to an active flight line and operations, which would be inappropriate. The estimate for this alternative ranged between \$50-\$100 million.

The goal of the alternative uses considered was to meet the program criteria listed above, and be economically feasible, while meeting federal laws and DoD and Army regulations. Each would extend the useful life of these historic assets.

<sup>1</sup> Secretary of the Interior's Standards for the Treatment of Historic Properties, Secretary of the Interior's Standards for Rehabilitation, National Park Service Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Standards)



*Image showing AVCAIT simulator in route (EMI Technologies, 2006).*



*Image showing AVCAIT simulator in use (EMI Technologies, 2006).*

# ALTERNATIVE 1— AVCATT SIMULATOR TRAINING

## PROGRAM REQUIREMENTS

Once the basic rehabilitation of the hangars is complete, the reuse of one or both of the hangars to house AVCATT simulators would have no adverse effect on the structure, and would require the least amount of work for an active use of the space. Currently, there is one AVCATT simulator located on-site. In discussions with post personnel, the likelihood of acquiring more, similar simulators appears to be high.

Although, in theory, these simulators are designed to function in all weather conditions, the severe temperatures at Fort Wainwright require housing the units in conditioned space. Currently, one AVCATT unit is temporarily located in the Pallet Processing Facility (PPF). Each simulator is made up of two 53' long x 8' wide trailers. This configuration allows the simulators to be transported over roadways, and driven into place, detached from their tractors, secured, and connected. (Future simulators may comprise three trailer units).

The simulator unit is essentially self contained, with its own HVAC, and electric distribution system. The outside services needed for operation is limited to electric service and a water supply.

The limitations of the AVCATT units include a high level of noise generated by exhaust motors, well above OSHA standards, and requirements for fresh make-up air for the air conditioning, and exhaust. These issues become concerns once the unit is contained in a building.

## TREATMENT REQUIREMENTS

Hangars 2 and 3 have enough open space to accommodate eight AVCATT, or similar trailer simulators. The units can be driven into the hangars from either the east or west end, and driven directly out. To accommodate the AVCATT units the interior air of the hangar will be conditioned to meet the minimal temperature requirements of the simulators. Electrical, computer, and water connections would be installed above a wide-spaced metal ceiling grid, using quick disconnects to service the simulator units. This system will provide flexibility in locating the simulators, and also in the type of units that can be accommodated.

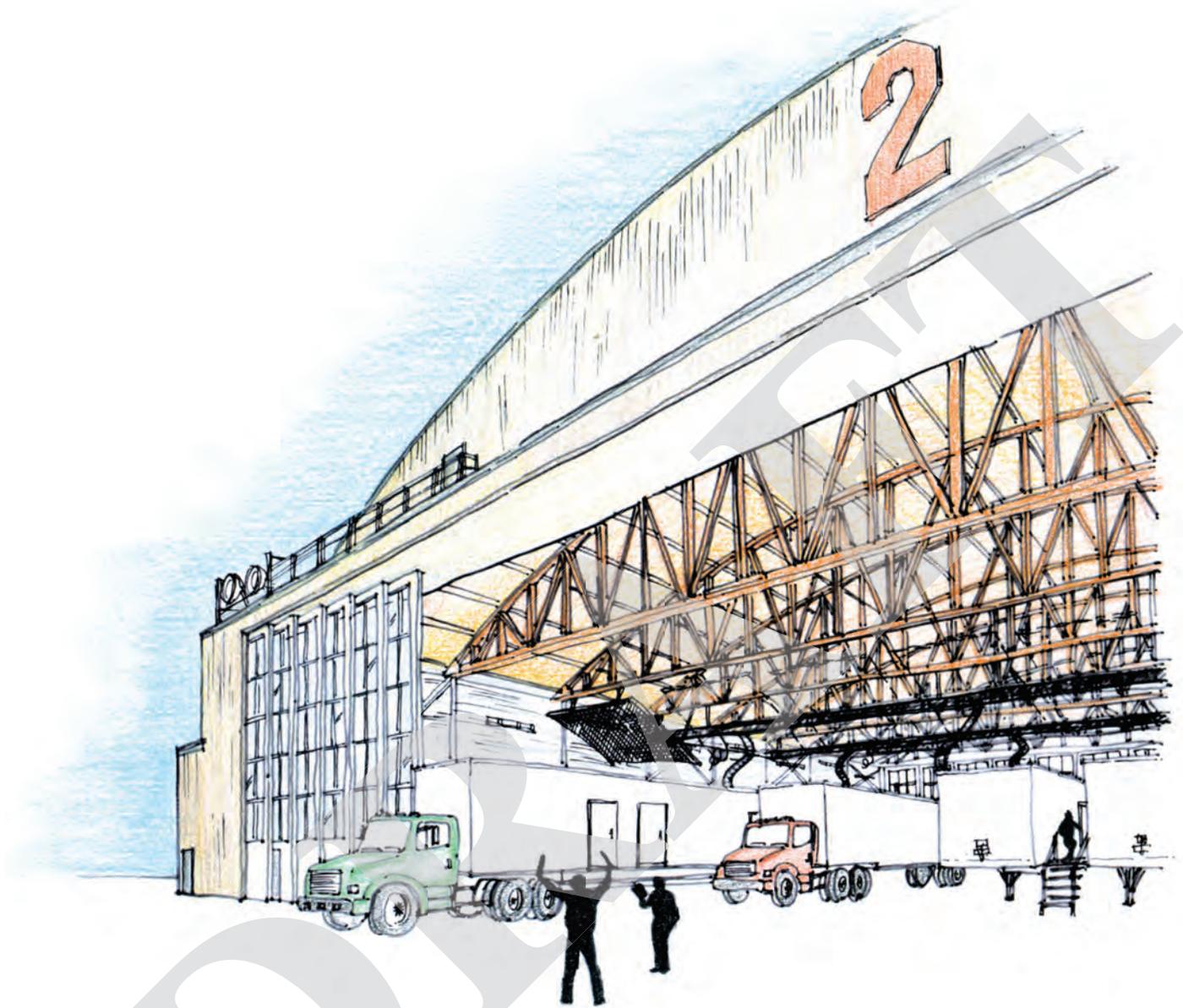
Acoustic panels will be suspended above the units at the source point of noise, along with exhaust hoods connected directly to the generator units. Make up air will come from the general conditioned air in the hangar.

In this alternative, the adjacent first level space in the hangar wings will be rehabilitated for use as support for the simulator program, providing administrative office space, technical support, and mechanical space. Second floor space will provide conference room, training rooms, and office space. New bathrooms, locker rooms, and lounge areas would be provided.

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## ALTERNATIVE 1— AVCATT SIMULATOR TRAINING



### AVCATT SIMULATOR TRAINING

- *Eight Mobile AVCATT units in 30,000 square feet open space*
- *First Floor Wings used for support functions, mechanical, and computer operations*
- *Second Floor Wings used for training classrooms, conference rooms, and operations support*

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## ALTERNATIVE 2— FIXED SIMULATOR TRAINING

### PROGRAM REQUIREMENTS

Alternative 2 is the use of one or both of the hangars to house fixed mobile and non-mobile simulators. This alternative would have minimal impact on the hangars, but would require additional work to accommodate the requirements of the simulators.

The motion and non-motion simulators currently used at Fort Wainwright vary in type and size. There are numerous simulator units in operation at the post, all located in borrowed space in different buildings. The current Fort Wainwright Master Plan calls for construction of an independent simulator building in the out years, beyond FY2017.

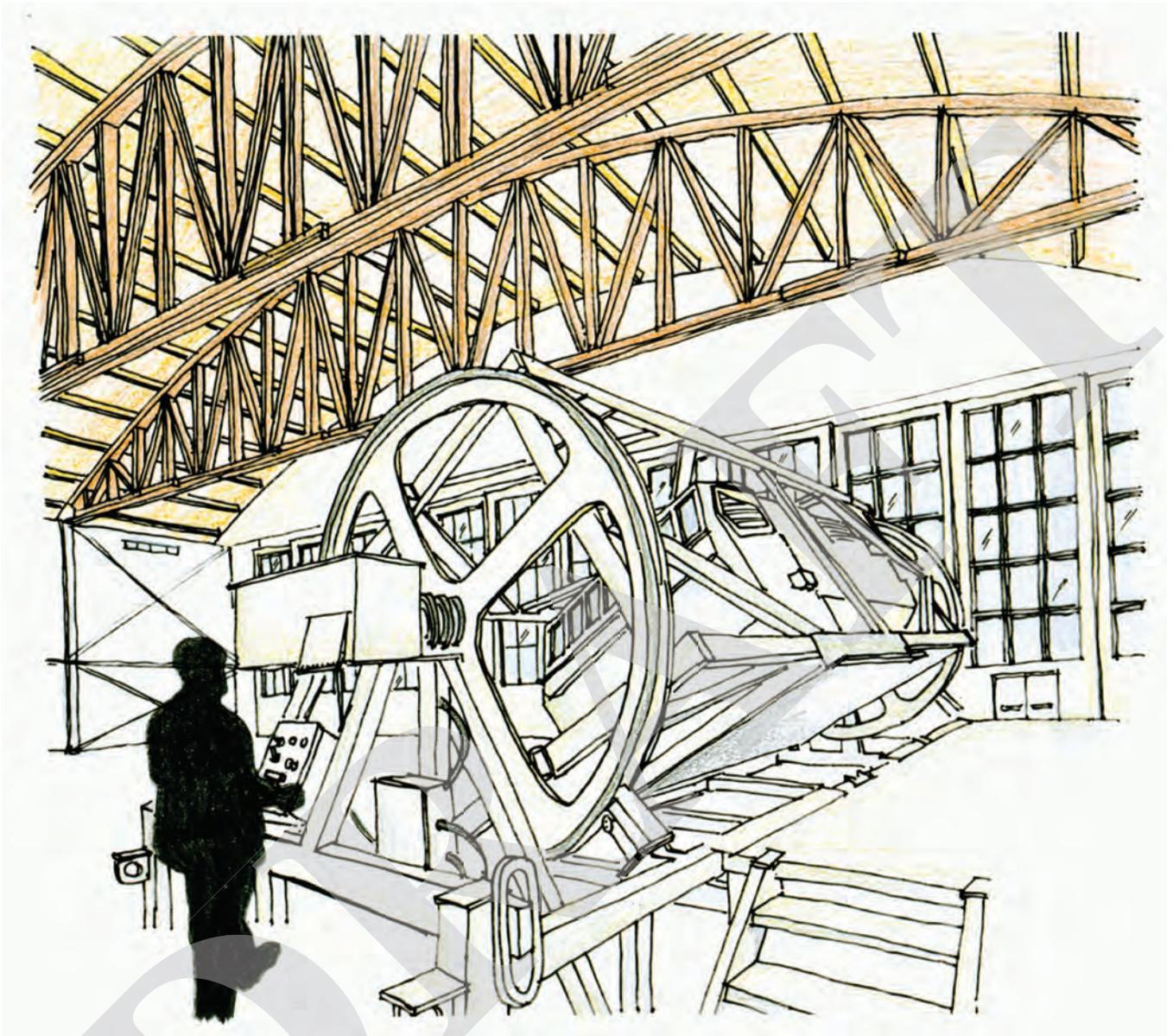
### TREATMENT REQUIREMENTS

Each of the hangars can contain approximately sixteen simulators, each located on 20' x 20' platform. None of these simulators is self-contained, all requiring a conditioned and humidity controlled environment in which to function. To accommodate those requirements, the air in each hangar will be conditioned, but stratified at twenty feet above the hangar floor. Heat generated by the simulators will be allowed to rise above the twenty foot level, and will be exhausted at the attic level.

Utility and computer service to each simulator will be provided through quick disconnects, fed from above. Acoustic controls will be provided by floating clouds, suspended from a wide-spaced ceiling grid. Lighting control will be provided for each type of simulator, as required.

These types of simulators require external computer support. This will be installed in rehabilitated first floor space in the hangar wings. Additional space in the first floor wings will include technical support for the units.

Under Alternative 2, the second floor wing space will be rehabilitated to provide conference rooms and classrooms, administrative space and support.



## ALTERNATIVE 2— FIXED SIMULATOR TRAINING



### **SIMULATOR TRAINING**

- *Sixteen Mobile & Non-Mobile Simulators in 30,000 square feet open space*
- *First Floor Wings used for support functions, mechanical, and computer operations*
- *Second Floor Wings used for training classrooms, conference rooms, and operations support*

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## ALTERNATIVE 3— MORALE SUPPORT GYMNASIUM

### PROGRAM REQUIREMENTS

Alternative 3 is designed to support the training and morale of the troops at Fort Wainwright through the installation of active training and recreational facilities in both hangars. Although this alternative would require the most work on the structures, it would preserve the character and integrity of the hangars, and have no adverse effect on the resource.

Under Alternative 3, the facility would be aimed at active, uniformed troops, and would not be open to dependents or civilian personnel. The activities provided would include boxing, basketball, racquetball, volleyball, and similar intense activities.

New locker rooms, showers, and toilet rooms would be provided for both male and female troops on the first level, along with most of the activities. The second floor spaces would be devoted to classrooms and less energy-intensive activities, including table tennis, and martial arts training.

This alternative would provide a venue for young unaccompanied personnel to engage in very active diversions in a contained environment. The proximity of the hangars to the barracks allows easy access to the site.

### TREATMENT REQUIREMENTS

Once the basic minimum treatment has been completed on the buildings, new glass enclosures would be built in Hangar 2 to provide a series of racquetball courts on the north side of the space for the Gymnasium. These will be installed within the bays of the structural system, and will project out into the hangar open space. Resilient gym flooring would be placed over the remaining concrete floor to provide a suitable surface for playing courts. Hangar 3 would require installation of a three lane running track and turf field over the existing concrete floor.

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## ALTERNATIVE 3— MORALE SUPPORT GYMNASIUM



### MORALE SUPPORT - GYMNASIUM

- *Three Interchangeable Basketball and Volleyball Courts and Two Boxing Rings in 30,000 square feet open space*
- *Three Racquetball Courts recessed into structural bays*
- *First Floor Wings used for support functions, mechanical, and computer operations*
- *Second Floor Wings used for training classrooms, conference rooms, multi-purpose rooms, and operations support*

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## **ALTERNATIVE 4— MORALE SUPPORT FIELD HOUSE**

### **PROGRAM REQUIREMENTS**

Alternative 4 is designed to support the training and morale of the troops at Fort Wainwright through the installation of active training and recreational facilities in both hangars. Although this alternative would require the most work on the structures, it would preserve the character and integrity of the hangars, and have no adverse effect on the resource.

Under Alternative 4, the facility would be aimed at active, uniformed troops, and would not be open to dependents or civilian personnel. The activities provided would include weight and cardio training, track, and similar intense activities.

New locker rooms, showers, and toilet rooms would be provided for both male and female troops on the first level, along with most of the activities. The second floor spaces would be devoted to classrooms and less energy-intense activities, including table tennis, and martial arts training.

This alternative would provide a venue for young unaccompanied personnel to engage in very active diversions in a contained environment. The proximity of the hangars to the barracks allows easy access to the site.

### **TREATMENT REQUIREMENTS**

Once the basic minimum treatment has been completed on the buildings, installation of a three lane running track and turf field over the existing concrete floor would be required.

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## ALTERNATIVE 4— MORALE SUPPORT FIELD HOUSE



### MORALE SUPPORT - FIELD HOUSE

- *Three lane Running Track & Multi-Purpose Track & Field in 30,000 square feet open space*
- *First Floor Wings used for Cardio Training, Weight Training, and mechanical operations*
- *Second Floor Wings used for training classrooms, conference rooms, multi-purpose rooms, and operations support*

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## ALTERNATIVE 5 — FIELD TRAINING

### PROGRAM REQUIREMENTS

Alternative 5 would use one or both hangars to create an indoor field training facility that could provide 24/7 use, twelve months a year, regardless of weather conditions. A complete ropes course could fit within the open space of a single hangar. Other, training specific activities could be installed in the other hangar, as the training program dictates.

The wings on the first floor could be refitted to provide locker and shower facilities, and administrative support for the training. The second floor would include classrooms, meeting and conference rooms, specialized training rooms, and mechanical support.

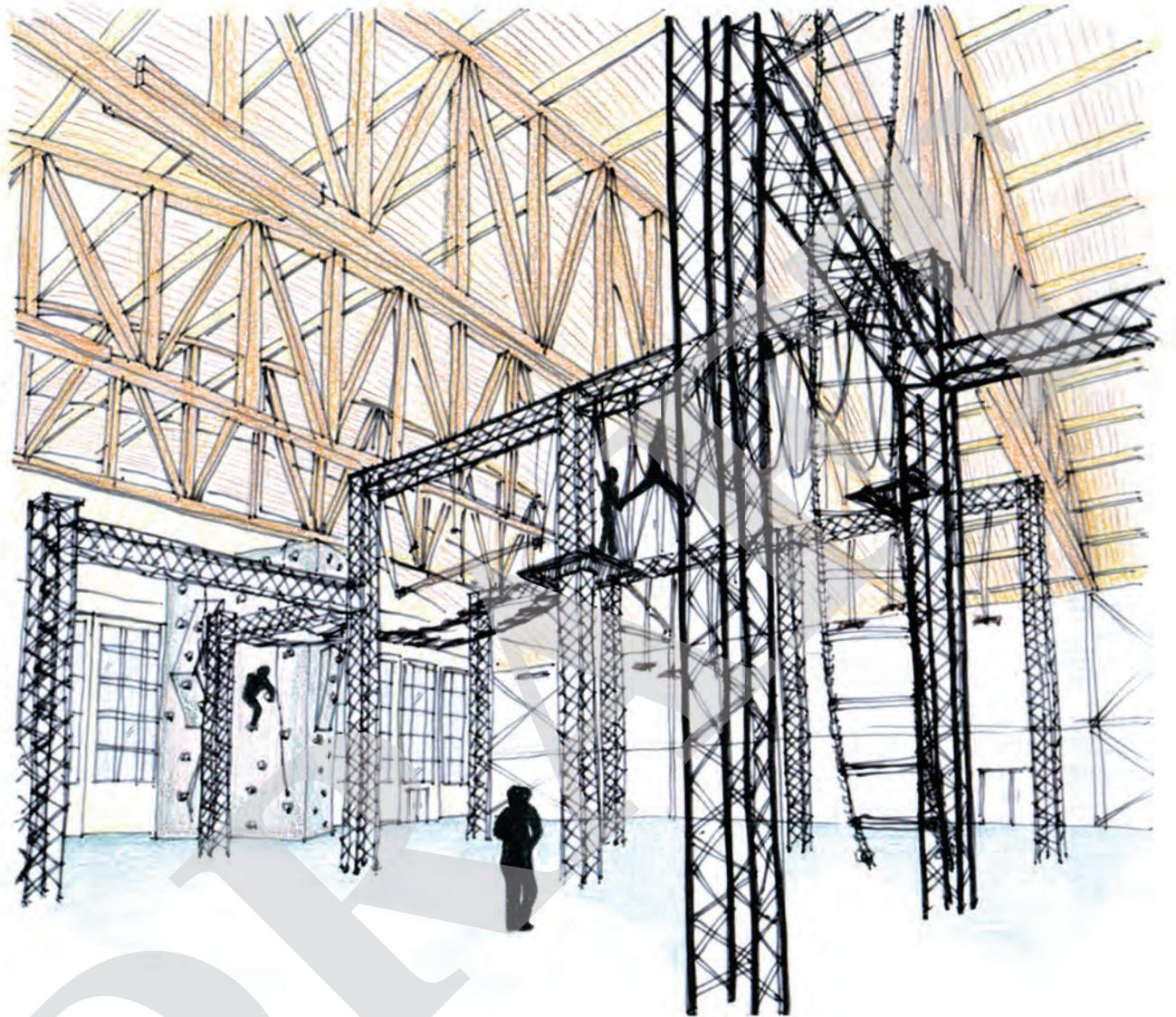
### TREATMENT REQUIREMENTS

After completion of the basic rehabilitation on the hangars, the field training alternative would add a ropes course structure, sitting on the existing concrete floor. The structure would be self-supporting and free standing. Each ropes course is custom designed to ensure that the user's program requirements are met. The size and complexity of the course varies based on needs.

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## ALTERNATIVE 5 — FIELD TRAINING



### FIELD TRAINING

- *Ropes Course and Climbing Walls in 30,000 square feet open space*
- *First Floor Wings used for Cardio Training, Weight Training, and mechanical operations*
- *Second Floor Wings used for training classrooms, conference rooms, multi-purpose rooms, and operations support*

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## ALTERNATIVE 6— WARM STORAGE AND FLEX SPACE

### PROGRAM REQUIREMENTS

Conex containers are currently stored outside Hangars 2 and 3 and various locations around the post. Alternative 6 provides the opportunity for these containers to be consolidated and stored in the open space of one or both of the hangars and still allow easy access for shipping. Hangar wings would be used for secure storage and mechanical systems. The hangars would also be available for overflow of other activities by reorganization of the storage.

### TREATMENT REQUIREMENTS

Implementation of this alternative will take little work. Current functions in the hangars would be removed, and the basic rehabilitation would be undertaken. The temperature in the hangars would be kept above freezing, and active ventilation would be maintained to prevent deterioration of materials.



*Conex containers currently stored outside of Hangar 3. Similar units are stored on the west side of Hangar 2 and at various locations around the post. Conex units could be stored in each hangar, and still allow easy access for shipping (JCA, 2010).*

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# COST ESTIMATE

## OUTLINE OF ESTIMATES

Cost estimates have been prepared for each Reuse Alternative, using local labor & materials costs derived from cost estimates for similar recent construction projects, current R.S. Means construction cost data, and the cost estimates & categories included in the January 2008 "Condition Assessment & Rehabilitation Plans, Hangars 2 & 3, by the Louis Berger Group/Design Alaska.

None of the Reuse Alternatives proposed in our current report will utilize the hangars as helicopter maintenance hangars, which have strict DOD UFC & ETL requirements. Using the hangars for simulators, physical activities/training, or storage, as proposed by the Reuse Alternatives, means they will have different occupancies & code requirements than those required for helicopter maintenance use.

Each Alternative cost estimate has 3 parts:

1. Project Construction Cost Estimate page, showing the direct architectural costs, subcontractor costs, general contractor markups, general conditions costs, estimating contingency and escalation from 2011-2016.
2. Basic Rehabilitation Cost Estimate pages. These costs apply to all Alternatives. This estimate has two pages, showing architectural direct material & labor costs, applicable markups (regional factor, freight, overtime, & complexity), and general contractor's markup on direct materials & labor costs.
3. Alternative Cost Estimate pages. These costs show the line items of architectural work required for this specific alternative. Again, similar to the Basic Rehabilitation Cost Estimate, applicable markups and the general contractor's markup are applied to these material & labor costs.
4. An additional cost is estimated, beyond these cost estimates, for the repair of fire damage and incomplete stair tower reconstruction on Hangar No. 2 only. It is presented as an additional cost, as it may be contracted separately and prior to the commencement of Reuse Alternative work.

## DISCUSSION OF 2011 ALTERNATIVE COSTS

Alternative 1 = AVCATT Simulator Training, & Alternative 2 = Fixed Simulator Training

*Civil:* repaving & drainage, no fencing, any required hydrant work.

*Structural:* Structural repairs, including missing bracing, and foundation treatment.

*Mechanical/Fire Protection:* New hangar bay, side bay, & attic fire suppression systems; new HVAC & plumbing systems.

*Electrical:* New lighting & electrical distribution systems; upgrade fire alarm system; new exit & emergency lighting; new power & communication systems; new electrical feeder for AVCATT units.

*Architectural:* Basic Rehab - energy efficient envelope; concrete topping slabs; new fire & exit doors & stair upgrades; upgrade fire walls; new hangar doors; new windows; new EPDM roofing; new canopy roofing; rated attic louvers & relites into hangar; renovated restrooms. Alternative 1 costs - upgrade concrete slab for simulators; interior signage; renovate side bays.

Alternative 3 = Morale Support - Gymnasium

*Civil:* Same as Alternative 1-2.

*Structural:* Same as Alternative 1-2.

*Mechanical/Fire Protection:* Same as Alternative 1-2.

*Electrical:* Same as Alternative 1-2; new activity area services.

*Architectural:* Same Basic Rehab costs, plus Alternative 3 costs - new concrete topping slabs, handrails on interior exit stairs; racquetball court floors & walls, restroom finishes & fixtures, flooring in activity areas, repaint interior walls, locker room finishes & equipment, interior signage.

**Alternative 4 = Morale Support – Field House***Civil:* Same as Alternative 1-2.*Structural:* Same as Alternative 1-2.*Mechanical/Fire Protection:* Same as Alternative 3A.*Electrical:* Same as Alternative 3A.*Architectural:* Same Basic Rehab costs, plus Alternative 3B costs – synthetic floors, track, & turf; new locker rooms - finishes & equipment.**Alternative 5 = Field Training***Civil:* Same as Alternative 1-2.*Structural:* Same as Alternative 1-2.*Mechanical/Fire Protection:* Same as Alternative 3-4.*Electrical:* Same as Alternative 3-4.*Architectural:* Same Basic Rehab costs, plus Alternative 4 costs – synthetic athletic flooring; new locker room finishes & equipment. Ropes course & climbing wall NIC (FF&E – separate procurement & budget line item).**Alternative 6 = Warm Storage & Flex Space***Civil:* Same as Alternative 1-2.*Structural:* Same as Alternative 1-2.*Mechanical/Fire Protection:* Same as Alternative 1-2.*Electrical:* Same as Alternative 1-2, without new electrical feeder.*Architectural:* Same Basic Rehab costs, & renovate side bays for support use.**SUMMARY OF 2011 ALTERNATIVE COST ESTIMATES**

<i>Proposed Use</i>	<i>Arch. Basic Rehab Cost</i>	<i>Arch. Altern. Cost</i>	<i>S/C Cost &amp; Markup</i>	<i>GenCond. Markup</i>	<i>Estimating Contingency</i>	<i>Escalation To 2016</i>	<i>Total Altern. Cost</i>
AVCATT Simulators (Altern.1)	\$10,505,341	\$267,329	\$19,842,902	\$2,976,435	\$7,986,768	\$4,620,916	\$35,427,021
Fixed Simulators (Altern.2)	\$10,505,341	\$267,329	\$19,650,217	\$2,947,533	\$7,909,212	\$4,576,044	\$35,083,006
Gymnasium (Altern.3)	\$10,505,341	\$1,519,580	\$21,238,909	\$3,185,836	\$8,548,661	\$4,946,011	\$37,919,418
Field House (Altern.4)	\$10,505,341	\$1,428,070	\$20,686,248	\$3,102,937	\$8,326,215	\$4,817,310	\$36,932,709
Field Training (Altern.5)	\$10,505,341	\$909,092	\$20,065,189	\$3,009,778	\$8,076,239	\$4,672,681	\$35,823,887
Warm Storage (Altern.6)	\$10,505,341	\$255,892	\$18,035,719	\$2,705,358	\$7,259,377	\$4,200,068	\$32,200,522

**SUMMARY OF CARP 2008 COST ESTIMATES**

<i>Proposed Use</i>	<i>Arch. Direct Cost</i>	<i>S/C Cost &amp; Markup</i>	<i>Gen. Cond. Markup</i>	<i>Estimating Contingency</i>	<i>Escalation Thru 2010</i>	<i>Total Cost (2008 Report)</i>
Maint. Hangar (Tab 10)	\$6,211,207	\$6,863,000	\$1,961,131	\$5,262,368	\$3,044,656	\$23,342,363
Layaway (Tab 11)	\$297,132	\$267,376	\$84,676	\$227,214	\$131,460	\$1,007,858
Warm Storage (Tab 12A)	\$237,891	\$1,595,491	\$275,007	\$737,936	\$426,949	\$3,273,273
Offices (Tab 12B)	\$3,403,321	\$8,304,522	\$1,756,176	\$4,712,406	\$2,726,464	\$20,902,889

Note: If escalated to 2016 at 3% per year, to match the Reuse Alternatives cost estimates, an additional 15% escalation would be added to these costs.

# COST ESTIMATE

## ALTERNATIVE 1 - AVCATT SIMULATOR TRAINING



### PROJECT CONSTRUCTION COST ESTIMATE

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: SUMMARY - BASE BID

15-Oct-11

Prepared by: JMM

DESCRIPTION	QUANTITY	UNIT	LABOR			TOTAL
GENERAL CONTRACTOR		COST	HRS/UNIT	LABOR RATE	LABOR COST	
ARCHITECTURAL BASIC REHAB TOTAL						\$10,505,341
ARCHITECTURAL ALTERN 1 TOTAL						\$267,329
<b>SUBCONTRACTOR WORK</b>						
HAZ MAT CONTRACTOR		\$113,924				\$113,924
CIVIL SITE WORK CONTRACTOR		\$1,806,746				\$1,806,746
STRUCTURAL CONTRACTORS		\$1,850,000				\$1,850,000
MECHANICAL CONTRACTOR & FIRE PROTECTION CONTRACTOR		\$2,501,008				\$2,501,008
ELECTRICAL CONTRACTOR		\$1,973,987				\$1,973,987
GEN.CONTRACTOR OHMARKUP	10.0%				\$8,245,665	\$824,567
<b>SUBTOTAL</b>						\$19,842,902
GENERAL CONDITIONS	15.0%					\$2,976,435
<b>SUBTOTAL</b>						\$22,819,337
ESTIMATING CONTINGENCY	35.0%					\$7,986,768
<b>SUBTOTAL</b>						<b>\$30,806,105</b>
ESCALATION-CONSTR.COST	15.0%	TO 2016				\$4,620,916
<b>TOTAL CONSTRUCTION COST</b>						<b>\$35,427,021</b>

**BASE BID (PER HANGER) \$35,427,021**

**+ FIRE & STAIR TOWER REPAIRS (HANGAR 2 ONLY) \$1,190,000**

#### NOTES REGARDING THE PREPARATION OF THIS COST ESTIMATE

THIS ESTIMATE IS PREPARED USING CURRENT CONSTRUCTION COSTS & ASSUMES WILL RECEIVE AN OPEN COMPETITIVE BID.

THIS ESTIMATE DOES NOT CONTAIN AN ALLOWANCE FOR NEGOTIATED NON-COMPETITIVE CONTRACTS.

THIS ESTIMATE HAS AN ESCALATION ALLOWANCE.

THIS ESTIMATE DOES NOT HAVE AN ALLOWANCE TO TREAT / REMOVE ANY HAZARDOUS MATERIALS OR CONTAMINATED SOIL.

THIS ESTIMATE DOES NOT INCLUDE ANY PLAN CHECK FEES CHARGED BY THE STATE OF ALASKA OR ANY OTHER ENTITY CLAIMING JURISDICTION OVER THE WORK PAID DIRECTLY BY THE OWNER.

THIS ESTIMATE DOES NOT INCLUDE THE A/E FEES, SHOP EQUIPMENT OR COSTS FOR ANY WORK NOT INDICATED.

THIS ESTIMATE IS BASED ON A NORMAL WORK WEEK WITH SOME PROVISIONS FOR OVERTIME.

ESTIMATING CONTINGENCY - AN ALLOWANCE FOR CONSTRUCTION DOCUMENT REQUIREMENTS THAT ARE NOT INCLUDED

EITHER THE 2011 R.S. MEANS FACILITIES CONSTRUCTION COST DATA MANUAL, THE 2011 R.S. MEANS ASSEMBLIES COST DATA MANUAL, OR PAST HISTORICAL DATA HAVE BEEN USED AS RESOURCES TO COMPILE THIS ESTIMATE.



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR						
DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$21,107	\$2,135,504	56727	\$4,565,146	\$6,721,757
REGIONAL FACTOR (MEANS)	10.0%		\$213,550			\$213,550
FREIGHT	10.0%		\$213,550			\$213,550
OVERTIME	12.5%				\$570,643	\$570,643
COMPLEXITY	15.0%				\$684,772	\$684,772
<b>SUBTOTAL</b>		<b>\$21,107</b>	<b>\$2,562,605</b>		<b>\$5,820,561</b>	<b>\$8,404,273</b>
CONTRACTORS OVERHEAD	15.0%					\$1,260,641
CONTRACTORS PROFIT	10.0%					\$840,427
<b>SUBTOTAL</b>						<b>\$10,505,341</b>
<b>ARCHITECTURAL CONTRACT TOTAL</b>						<b>\$ 10,505,341</b>

DIRECT COSTS BY CSI DIVISIONS

**DIVISION 2 - SITE WORK**

**BUILDING**

demo finishes to studs-ext. walls	40,200	sf	0.00	0	0.000	0	.040	1	1608	\$73.72	118,546	3	\$118,546
demo walls- interior	5,000	sf	0.00	0	0.000	0	.040	1	200	\$73.72	14,745	3	\$14,745
demo roof epdm	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof recovery board	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof insul. (below deck)	44,880	sf	0.00	0	0.000	0	.013	1	583	\$73.72	43,013	1	\$43,013
demo metal siding	32,850	lf	0.00	0	0.000	0	.030	1	986	\$73.72	72,654	2	\$72,654
demo metal flashing	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo wood fascia	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo concrete - support bays	5,000	sf	0.00	0	0.600	3,000	.050	1	250	\$73.72	18,431	4	\$21,431
demo concrete curbs at ext.dr.s	1	ls	0.00	0	550.000	550	18.000	1	18	\$73.72	1,327	1877	\$1,877
demo mortar.conc.-restrooms	450	sf	0.00	0	0.600	270	.210	1	95	\$73.72	6,967	16	\$7,237
excavate restroom floors	50	bcy	1.40	70	0.000	0	2.660	1	133	\$73.72	9,805	198	\$9,875
demo entry canopy roof	3	ea	0.00	0	760.000	2,280	.035	1	0	\$73.72	8	763	\$2,288
demo int.wall finish- support bays	12,500	sf	0.00	0	0.000	0	.160	1	2000	\$73.72	147,446	12	\$147,446
demo tile	20,000	lf	0.00	0	0.000	0	.020	1	400	\$73.72	29,489	1	\$29,489
demo carpet	10,000	sf	0.00	0	0.000	0	.025	1	250	\$73.72	18,431	2	\$18,431
demo ceramic tile-floor	988	ls	0.00	0	0.000	0	.042	1	41	\$73.72	3,059	3	\$3,059
demo ceramic tile-wall	1,480	ea	0.00	0	0.000	0	.042	1	62	\$73.72	4,583	3	\$4,583
demo exterior drs & frames	16	ea	0.00	0	0.000	0	1.460	1	23	\$73.72	1,722	108	\$1,722
demo interior drs & frames	70	ea	0.00	0	0.000	0	1.500	1	105	\$73.72	7,741	111	\$7,741
demo hangar drs & frames(26'x72')	1,950	sf	1.10	2,145	0.000	0	.140	1	273	\$73.72	20,126	11	\$22,271
demo exterior windows	63	ea	0.00	0	0.000	0	1.500	1	95	\$73.72	6,967	111	\$6,967
demo interior relites	14	ea	0.00	0	0.000	0	.500	1	7	\$73.72	516	37	\$516
remove interior stair handrails	150	lf	0.00	0	0.000	0	.200	1	30	\$73.72	2,212	15	\$2,212
<b>SUBTOTAL</b>					\$2,215	\$6,100			9891		\$763,404		\$771,719

**DIVISION 3 - CONCRETE**

concrete floor- hangar-2" topping	30,400	sf	0.01	304	2.500	76,000	.022	1	669	\$79.38	53,092	4	\$129,396
concrete floor- 1st flr RRs/Lockrms	988	sf	0.01	10	2.500	2,470	.022	1	22	\$79.38	1,725	4	\$4,205
concrete floor- support bays-6"	5,000	sf	0.01	50	2.500	12,500	.022	1	110	\$79.38	8,732	4	\$21,282
<b>SUBTOTAL</b>				\$364		\$90,970			801		\$63,549		\$154,883

**DIVISION 5 - METAL**

floor exp.jts. (exist.jts.)	800	lf	0.01	8	25.000	20,000	.211	1	169	\$79.38	13,400	42	\$33,408
hangar dr.ext.rf.platforms-rebuild	240	sf	0.00	0	15.000	3,600	.010	1	2	\$79.39	191	16	\$3,791
hangar dr.ext.rf.guardrail-rebuild	184	lf	0.00	0	32.000	5,888	.200	1	37	\$79.39	2,921	48	\$8,809
stairs interior handrails- repair	140	lf	0.00	0	32.000	4,480	.200	1	28	\$79.39	2,223	48	\$6,703
catwalks - platforms - repair	2,500	sf	0.00	0	22.000	55,000	.010	1	25	\$79.39	1,985	23	\$56,985
catwalks- structure - repair	2,500	sf	0.00	0	28.000	70,000	.025	1	63	\$79.39	4,962	30	\$74,962
catwalks - guardrails - repair	200	lf	0.00	0	32.000	6,400	.200	1	40	\$79.39	3,176	48	\$9,576
catwalks - ladders/stairs	150	risers	0.00	0	250.000	37,500	.050	1	8	\$79.39	595	254	\$38,095
misc. connections	1	ls	0.00	0	2500.000	2,500	.000	1	0	\$79.39	0	2500	\$2,500
<b>SUBTOTAL</b>				\$8		\$205,368			371		\$29,452		\$234,828

**DIVISION 7 - THERMAL AND MOISTURE**

EPDM roof - hangar-R90	24,880	sf	0.00	0	8.150	202,772	.351	1	8733	\$86.43	754,795	38	\$957,567
EPDM roof - support bays-R90	20,000	sf	0.00	0	8.150	163,000	.351	1	7020	\$86.43	606,748	38	\$769,748
waterprfg/insul./flashing- wall base	3,200	sf	0.00	0	0.400	1,280	.400	1	1280	\$79.39	101,616	32	\$102,896



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE			LABOR COST
roof fascia	1,500	lf	0.00	0	2.260	3,390	.016	1	24	\$86.43	2,074	4	\$5,464
metal flashing	1,500	lf	0.00	0	2.100	3,150	.016	1	24	\$86.43	2,074	3	\$5,224
conc.flr.moisture barrier- hangar	30,400	sf	0.00	0	1.600	48,640	.030	1	912	\$79.38	72,398	4	\$121,038
conc.flr.moisture barrier- supp.bays	50,400	sf	0.00	0	1.600	80,640	.030	1	1512	\$79.38	120,028	4	\$200,668
new framing (hangar dr.overhang)	1	ls	0.00	0	5000.000	5,000	250.000	1	250	\$79.38	19,846	24846	\$24,846
new sheathing (hangar dr.overhang)	600	sf	0.00	0	1.260	756	.020	1	12	\$79.38	953	3	\$1,709
bird screen (hangar dr.overhang)	1,200	sf	0.00	0	0.300	360	.260	1	312	\$79.38	24,768	21	\$25,128
metal roof (hangar dr.overhang)	1,200	sf	0.00	0	3.500	4,200	.350	1	420	\$86.43	36,301	34	\$40,501
entry canopy roofs	3	ea	0.00	0	800.000	2,400	15.000	1	45	\$86.43	3,889	2096	\$6,289
snow guards	2,400	lf	0.00	0	2.600	6,240	.060	1	144	\$86.43	12,446	8	\$18,686
new insulated mtl.wall panels-R49	32,850	sf	0.00	0	25.000	821,250	.060	1	1971	\$79.39	156,473	30	\$977,723
new wall batts-R21	32,850	sf	0.00	0	0.360	11,826	.350	1	11498	\$79.39	912,758	28	\$924,584
<b>SUBTOTAL</b>				\$0		\$1,354,904			34156		\$2,827,167		\$4,182,071
<b>DIVISION 8 - DOORS &amp; WINDOWS</b>													
ADA barrier free entrances	10	ea	0.00	0	1000.000	10,000	32.000	1	320	\$79.39	25,404	3540	\$35,404
doors- ext.insul.-drs.,fr.,hardware	16	ea	0.00	0	1800.000	28,800	3.000	1	48	\$79.39	3,811	2038	\$32,611
doors- hangar int.-drs.,fr.,hdwre	22	ea	0.00	0	1325.000	29,150	3.000	1	66	\$79.39	5,240	1563	\$34,390
doors- nonrated supp.spaces int.	22	ea	0.00	0	1200.000	26,400	2.000	1	44	\$79.39	3,493	1359	\$29,893
doors- rated supp.spaces int.	26	ea	0.00	0	1500.000	39,000	2.000	1	52	\$79.39	4,128	1659	\$43,128
replace hangar doors (26'x75')	3,900	sf	0.00	0	28.000	109,200	.090	1	351	\$79.39	27,865	35	\$137,065
ext. insulated access drs., frames	16	ea	0.00	0	410.000	6,560	.900	1	14	\$79.39	1,143	481	\$7,703
new energy efficient windows	63	ea	0.00	0	800.000	50,400	.900	1	57	\$79.39	4,501	871	\$54,901
new relites to hangar from sidebays	192	sf	0.00	0	22.500	4,320	.178	1	34	\$79.39	2,713	37	\$7,033
<b>SUBTOTAL</b>				\$0		\$303,830			986		\$78,298		\$382,128
<b>DIVISION 9 - FINISHES</b>													
upgrade hangar walls to 2 hr.rated	26,752	sf	0.00	0	2.600	69,555	.120	1	3210	\$79.39	254,853	12	\$324,408
upgrade int.walls occup.separation	1,650	sf	0.00	0	0.800	1,320	.700	1	1155	\$79.39	91,693	56	\$93,013
upgrade ext.walls support bays	20,100	sf	0.00	0	2.700	54,270	.090	1	1809	\$79.39	143,612	10	\$197,882
vapor retarder - roof	44,880	sf	0.00	0	0.032	1,436	.003	1	135	\$79.39	10,689	0	\$12,125
vapor retarder - exterior walls	32,850	sf	0.00	0	0.032	1,051	.003	1	99	\$79.39	7,824	0	\$8,875
replace improperly framed walls	1	ls	0.00	0	5500.000	5,500	255.000	1	255	\$79.39	20,244	25744	\$25,744
floor clean and prep	70,400	sf	0.00	0	0.026	1,830	.009	1	634	\$71.36	45,217	1	\$47,047
rubber base	3,950	sf	0.00	0	0.470	1,857	.035	1	138	\$71.36	9,866	3	\$11,723
int.exit stair rubber tile	200	sf	0.00	0	5.000	1,000	.065	1	13	\$71.36	928	10	\$1,928
seal concrete - hangar floor	30,400	sf	0.00	0	0.070	2,128	.004	1	122	\$79.38	9,653	0	\$11,781
epoxy paint concrete- support bays	19,550	sf	0.00	0	0.026	508	.066	1	1290	\$71.36	92,082	5	\$92,590
paint ceilings - support bays	20,000	sf	0.00	0	0.030	600	.015	1	300	\$69.29	20,788	1	\$21,388
patch, prep walls for finish	1	ls	0	0	4100.000	4,100	125.000	1	125	\$69.29	8,662	12762	\$12,762
paint walls up to 12'- support bays	39,500	sf	0.00	0	0.011	435	.022	1	869	\$69.29	60,216	2	\$60,650
paint walls above 12'- hangar	14,820	sf	1.00	14,820	0.014	207	.015	1	222	\$69.29	15,404	2	\$30,431
repaint large hangar numbers	400	sf	1.00	400	0.014	6	.015	1	6	\$69.29	416	2	\$821
hangar draft curtains	3,300	sf	1.00	3,300	5.800	19,140	.030	1	99	\$79.39	7,859	9	\$30,299
<b>SUBTOTAL</b>				\$18,520		\$164,943			10480		\$800,004		\$983,467
<b>DIVISION 10 - SPECIALTIES</b>													
interior signs	50	ea	0.00	0	80.000	4,000	.600	1	30	\$79.39	2,382	128	\$6,382
window blinds	63	ea	0.00	0	3.000	189	.015	1	1	\$79.39	75	4	\$264
fire extinguishers	20	ea	0.00	0	260.000	5,200	.550	1	11	\$74.06	815	301	\$6,015
<b>SUBTOTAL</b>				\$0		\$9,389			42		\$3,271		\$12,660
<b>TOTAL DIRECT COST</b>				\$21,107		\$2,135,504			56727		\$4,565,146		\$6,721,757



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: ARCHITECTURAL - ALTERNATIVE 1

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR											
DESCRIPTION	%	EQUIPMENT COSTS		MATERIAL COSTS		LABOR HOURS			LABOR COSTS	MATERIAL & LABOR	
TOTAL DIRECT COST, MATL & LAB			\$0		\$76,154		1335.97		\$96,062		\$172,216
REGIONAL FACTOR (MEANS)	10.0%				\$7,615						\$7,615
FREIGHT	10.0%				\$7,615						\$7,615
OVERTIME	12.5%								\$12,008		\$12,008
COMPLEXITY	15.0%								\$14,409		\$14,409
<b>SUBTOTAL</b>			\$0		\$91,385				\$122,479		\$213,864
CONTRACTORS OVERHEAD	15.0%										\$32,080
CONTRACTORS PROFIT	10.0%										\$21,386
<b>SUBTOTAL</b>											\$267,329
<b>ARCHITECTURAL CONTRACT TOTAL</b>											<b>\$ 267,329</b>

DIRECT COSTS BY CSI DIVISIONS													
<b>DIVISION 9 - FINISHES</b>													
ceramic tile - floor 2 colors	988.0	sf	0.00	0	6.60	6,521	.088	1	86.94	\$70.16	6,100	13	\$12,620
ceramic tile - wall 2 colors, 4' w'scot	650.0	sf	0.00	0	4.900	3,185	.075	1	48.75	\$70.16	3,420	10.16	\$6,605
VCT - 2nd floor, static dissipative	1,000.0	sf	0.00	0	2.600	2,600	.550	1	550.00	\$71.36	39,251	41.85	\$41,851
carpet tiles - 2nd floor, 26 oz., 18x18	10,000.0	sf	0.00	0	5.100	51,000	.054	1	540.00	\$71.36	38,537	8.95	\$89,537
<b>SUBTOTAL</b>					\$0	\$63,306			1225.69		\$87,307		\$150,613
<b>DIVISION 10 - SPECIALTIES</b>													
toilet partitions	10.0	ea	0.00	0	325.00	3,250	2.300	1	23.00	\$79.39	1,826	508	\$5,076
privacy screens	10.0	ea	0.00	0	165.000	1,650	2.100	1	21.00	\$79.39	1,667	331.71	\$3,317
grab bars	10.0	ea	0.00	0	51.000	510	2.000	1	20.00	\$79.39	1,588	209.78	\$2,098
undercounter lav piping protection	8.0	ea	0.00	0	100.000	800	2.000	1	16.00	\$79.39	1,270	258.78	\$2,070
soap dispensers	8.0	ea	0.00	0	66.000	528	.800	1	6.40	\$79.39	508	129.51	\$1,036
toilet tissue dispensers	10.0	ea	0.00	0	85.000	850	1.000	1	10.00	\$79.39	794	164.39	\$1,644
paper towel dispensers	8.0	ea	0.00	0	155.000	1,240	.800	1	6.40	\$79.39	508	218.51	\$1,748
waste receptacles	4.0	ea	0.00	0	185.000	740	.800	1	3.20	\$79.39	254	248.51	\$994
full mirrors	4.0	ea	0.00	0	750.000	3,000	.800	1	3.20	\$79.39	254	813.51	\$3,254
sanitary napkin dispenser	1.0	ea	0.00	0	140.000	140	.530	1	0.54	\$79.39	43	182.87	\$183
sanitary napkin disposal	1.0	ea	0.00	0	140.000	140	.530	1	0.54	\$79.39	43	182.87	\$183
<b>SUBTOTAL</b>					\$0	\$12,848			110.28		\$8,755		\$21,603
<b>TOTAL DIRECT COST</b>					\$0	\$76,154			1335.97		\$96,062		\$172,216



**HAZMAT REMOVAL COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HAZARDOUS MATERIALS - PER HANGAR

PREPARED BY: WAP  
 FOR: LLT

10/20/2011

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE		
TOTAL DIRECT COST, MATL & LAB				\$0		\$9,781			840		\$62,195.66	\$71,977
REGIONAL FACTOR			10.00%	\$0	\$0.10	\$978						\$978
FREIGHT			10.00%	\$0	\$0.00	\$0						\$0
OVER TIME - SOME COMPLEXITY										12.50%	\$7,774.46	\$7,774
										15.00%	\$9,329.35	\$9,329
<b>SUBTOTAL</b>				\$0		\$10,759					\$62,195.66	\$90,059
<b>CONTRACTOR OVER HEAD</b>	15.0%											\$13,509
<b>SUBTOTAL</b>												\$103,568
<b>CONTRACTOR PROFIT</b>	10.0%											\$10,357
<b>SUBTOTAL</b>												\$113,924
<b>CIVIL CONTRACT TOTAL</b>												\$113,924

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE			LABOR COST
<b>DIRECT COSTS BY CSI DIVISIONS</b>													
<b>DIVISION 2 - SITE WORK</b>													
<b>02088 ACM ABATEMENT</b>													
<b>CLASS 1 ACM REMOVAL</b>													
TSI PIPE INSULATION	250	LF			\$1.00	\$250	0.750	1	187.50	\$74.06	\$13,887	\$56.55	\$14,137
Mastic - Wall	255	SF			\$1.50	\$383	0.100	1	25.50	\$74.06	\$1,889	\$8.91	\$2,271
AIR MONITORING	1	EACH			\$150.00	\$150	11.000	1	11.00	\$74.06	\$815	\$964.71	\$965
<b>CLASS II ACM REMOVAL</b>													
Vinyl Asbestos Tile + Mastic	4,800	SF			\$0.75	\$3,600	0.040	1	192.00	\$74.06	\$14,220	\$3.71	\$17,820
Asbestos Wrapped Wiring	1,000	LF			\$0.65	\$650	0.033	1	33.00	\$74.06	\$2,444	\$3.09	\$3,094
PREPARE ABATEMENT WORK PLANS	1	LS			\$350.00	\$350					\$0	\$350.00	\$350
					\$0	\$0							
<b>CLEARANCE AIR MONITORING</b>	1	EACH			\$150.00	\$150	10.000	1	10.00	\$74.06	\$741	\$890.65	\$891
<b>MOB/DEMOB</b>	1	EACH			\$1,000.00	\$1,000						\$1,000.00	\$1,000
<b>LANDFILL DISPOSAL (ACM TONS)</b>	3	each			\$600.00	\$1,800						\$600.00	\$1,800
<b>SUBTOTAL</b>				\$0		\$8,333			459.00		\$33,996		\$42,328
<b>LEAD BASE PAINT REMOVAL</b>													
Paint on Concrete Floors	300	sf			\$1.50	\$450	0.750	1	225.00	\$74.06	\$16,665	\$57.05	\$17,115
Paint on Trim / Windows / Doors	905	lf			\$0.75	\$679	0.150	1	135.75	\$74.06	\$10,054	\$11.86	\$10,733
<b>SUBTOTAL</b>				\$0		\$1,129			360.75	\$74.06	\$26,719		\$27,848
Fluorescent Bulbs	180	ea			\$0	\$180	8.000	1	8.00	\$74.06	\$593	\$4.29	\$773
Lead Acid Batteries	10	ea			\$0	\$100	4.000	1	4.00	\$74.06	\$296	\$39.63	\$396
High Intensity Lighting (Bays)	40	ea			\$1.00	\$40	8.000	1	8.00	\$74.06	\$593	\$15.81	\$633
<b>SUBTOTAL</b>				\$0		\$320			20.00		\$1,481		\$1,801
<b>DIRECT COST</b>				\$0		\$9,781			839.75		\$62,196		\$71,977



**CIVIL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGERS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: CIVIL CONSTRUCTION ESTIMATE- ALL ALTS WITH POV PARKING

PREPARED BY: LLT

10/19/2011

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB			\$141,620.84		\$806,909.00			3,622		\$290,755.37		\$1,239,285
REGIONAL FACTOR		10.00%	\$14,162.08		\$0.10	\$80,690.90						\$94,853
FREIGHT		10.00%	\$14,162.08		\$0.00	\$0.00						\$14,162
OVER TIME - SOME COMPLEXITY									12.50%	\$36,344.42		\$36,344
									15.00%	\$43,613.31		\$43,613
<b>SUBTOTAL</b>			\$169,945.01		\$887,599.90					\$290,755.37		\$1,428,258
<b>CONTRACTOR OVER HEAD</b>	15.0%											\$214,239
<b>SUBTOTAL</b>												\$1,642,497
<b>CONTRACTOR PROFIT</b>	10.0%											\$164,250
<b>SUBTOTAL</b>												\$1,806,746
<b>CIVIL CONTRACT TOTAL</b>												\$1,806,746

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR		
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE			LABOR COST	
<b>DIRECT COSTS BY CSI DIVISIONS</b>													
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>													
TRAFFIC CONTROL + MAINT.	90 DAY			\$200.00	\$18,000.00							\$200.00	\$18,000
PERMANENT CONSTRUCTION SIGNING	1 SGN-DY	\$3.50	\$3.50	\$0.00	\$0.00	0.001	1	0.00	\$79.39	\$0.08		\$3.58	\$4
FIELD OFFICE	3 Months	\$350.00	\$1,050.00	\$0.00	\$0.00					\$0.00		\$350.00	\$1,050
MOB/DEMOB	2 Each	\$1,000.00	\$2,000.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00		\$1,000.00	\$2,000
SUPERINTENDENT	90 DAY	\$90.20	\$8,118.00	\$0.00	\$0.00	8.000	1	720.00	\$79.39	\$57,159.04		\$725.30	\$65,277
<b>SUBTOTAL</b>			\$11,171.50		\$18,000.00			720.00		\$57,159.12			\$86,331
<b>DIVISION 2 - SITE WORK</b>													
<b>02200 - SITE DEMOLITION</b>													
9 YARD DUMP, DRIVER INCLUDED	630 HR	\$60.00	\$37,800.00	\$0.00	\$0.00	0.000	1	0.00	\$76.64	\$0.00		\$60.00	\$37,800
DUMPSTER PICK	40 EA	\$90.00	\$3,600.00	\$0.00	\$0.00	0.000	1	0.00	\$93.91	\$0.00		\$90.00	\$3,600
DUMPSTER RENTAL	120 DAY	\$60.00	\$7,200.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00		\$60.00	\$7,200
HAUL MTRL OUT	230 TRIP	\$30.00	\$6,900.00	\$0.00	\$0.00	0.500	1	115.00	\$83.54	\$9,606.56		\$71.77	\$16,507
REMOVE AND RESET HYDRANT	4 Each	\$237.00	\$948.00	\$0.00	\$0.00	4.000	1	20.00	\$77.87	\$1,557.46		\$626.37	\$2,505
<b>SUBTOTAL</b>			\$56,448.00		\$0.00			135.00		\$11,164.02			\$67,612
<b>02300 EARTHWORK</b>													
02310-AREA GRADING	7,538 SY	\$0.28	\$2,110.64		\$0.00	0.010	1	75.38	\$82.97	\$6,253.93		\$1.11	\$8,365
STRUCTURAL FILL, COMPACT, IN-PLACE	1,000 CY	\$1.00	\$1,000.00	\$8.00	\$8,000.00	0.060	1	60.00	\$79.88	\$4,793.07		\$13.79	\$13,793
LOADING, 5CY, LOADER	2,513 CY	\$0.35	\$879.55	\$0.00	\$0.00	0.800	1	2010.40	\$82.97	\$166,793.72		\$66.72	\$167,673
COMPATION, VIBRATING ROLLER, RIDING, 2 X	1,000 CY	\$0.16	\$160.00	\$0.00	\$0.00	0.006	1	6.00	\$82.97	\$497.79		\$63.48	\$63,483
REMOVE 14" CONCRETE	2,513 CY	\$25.00	\$62,825.00	\$0.00	\$0.00		1						
<b>SUBTOTAL</b>			\$66,975.19		\$8,000.00			2151.78		\$178,338.52			\$253,314
<b>02580- ELECTRICAL STRUCTURES</b>													
HEADBOLT HTR. OUT, WOOD POST ONLY	12 EA	\$14.00	\$168.00	\$27.00	\$324.00	0.500	1	6.00	\$73.72	\$442.34		\$77.86	\$934
NEW LIGHT POLE BASE	8 EA			\$500.00	\$4,000.00				\$73.72			\$500.00	\$4,000
GROUNDING POINTS/ TIE-DOWNS	4 EA	\$50.00	\$200.00	\$200.00	\$800.00	1.000	1	4.00	\$73.72	\$294.89		\$323.72	\$1,295
CONDUIT TRENCHING, BEDDING, BACKFILL	350 LF	\$1.16	\$406.00	\$0.63	\$220.50	0.017	1	5.95	\$76.80	\$456.98		\$3.10	\$1,083
<b>SUBTOTAL</b>			\$774.00		\$5,344.50			15.95		\$1,194.21			\$7,313
PIPE TRENCHING AND BACKFILL	125 CY	\$1.87	\$233.75	\$0.00	\$0.00	0.035	1	4.38	\$82.97	\$362.97		\$4.77	\$597
CATCH BASIN	1 EA	\$118.00	\$118.00	\$1,500.00	\$1,500.00	15.000	1	15.00	\$76.80	\$1,152.06		\$2,770.06	\$2,770
3/4" GALV. THAW PIPE	210 LF	\$1.22	\$256.20	\$8.00	\$1,680.00	0.024	1	5.04	\$75.26	\$379.33		\$11.03	\$2,316
<b>SUBTOTAL</b>			\$607.95		\$3,180.00			24.42		\$1,894.36			\$5,682
<b>02750-CONCRETE PAVEMENT</b>													
EXPANSION JOINTS (BACKER ROD W/SEAL)	2,100 LF	\$0.00	\$0.00	\$1.10	\$2,310.00	0.036	1	75.60	\$54.63	\$4,130.03		\$3.07	\$6,440
TRANSVERSE SAWCUTS	2,100 LF	\$0.31	\$651.00	\$0.34	\$714.00	0.100	1	210.00	\$73.72	\$15,481.80		\$8.02	\$16,847
CONCRETE PAVEMENT, 14" THICK	7,540 SY	\$0.40	\$3,016.00	\$100.00	\$754,000.00	0.029	1	218.66	\$76.70	\$16,771.98		\$102.62	\$773,788
PARKING PAINT STRIPING, 4" (POV)	870 LF	\$0.02	\$17.40	\$0.25	\$217.50	0.030	1	26.10	\$74.21	\$1,936.86		\$2.50	\$2,172
<b>SUBTOTAL</b>			\$3,684.40		\$757,241.50			530.36		\$38,320.67			\$799,247
<b>02800-SITE IMPROVEMENTS</b>													
LANDSCAPING BOULDERS	35 EA	\$50.00	\$1,750.00	\$300.00	\$10,500.00	0.500	1	17.50	\$73.72	\$1,290.15		\$386.86	\$13,540
24" R1-1. STOP	2 EA	\$7.70	\$15.40	\$65.00	\$130.00	0.457	1	0.91	\$77.78	\$71.09		\$108.24	\$216
PST SIGN POST	1 EA	\$4.00	\$4.00	\$65.00	\$65.00	0.229	1	0.23	\$51.23	\$11.73		\$80.73	\$81
BOLLARDS	16 EA	\$11.90	\$190.40	\$278.00	\$4,448.00	1.600	1	25.60	\$51.23	\$1,311.49		\$371.87	\$5,950
<b>SUBTOTAL</b>			\$1,959.80		\$15,143.00			44.24		\$2,684.46			\$19,787
<b>COLUMN TOTALS:</b>			\$141,620.84		\$806,909.00			3621.75		\$290,755.37			\$1,239,285



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: AVCATT SIMULATOR TRAINING

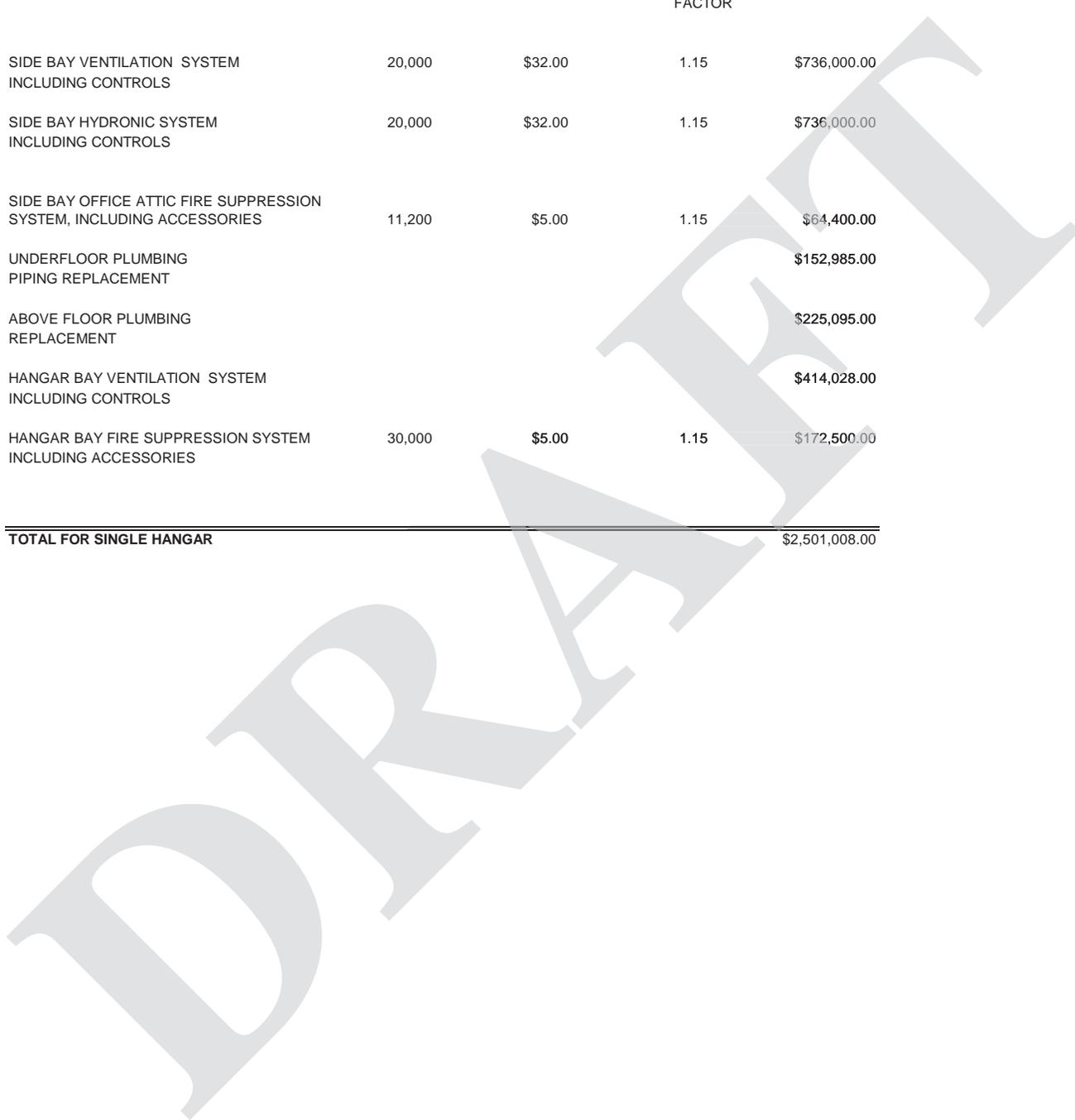
PREPARED BY: RJR  
 FOR: JMM

19-Oct-11

**MECHANICAL ESTIMATE SUMMARY**

SQUARE FOOTAGE COSTS:	SQ.FT	COST/SQ.FT	ESCALATION FACTOR	TOTAL
SIDE BAY VENTILATION SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY HYDRONIC SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY OFFICE ATTIC FIRE SUPPRESSION SYSTEM, INCLUDING ACCESSORIES	11,200	\$5.00	1.15	\$64,400.00
UNDERFLOOR PLUMBING PIPING REPLACEMENT				\$152,985.00
ABOVE FLOOR PLUMBING REPLACEMENT				\$225,095.00
HANGAR BAY VENTILATION SYSTEM INCLUDING CONTROLS				\$414,028.00
HANGAR BAY FIRE SUPPRESSION SYSTEM INCLUDING ACCESSORIES	30,000	\$5.00	1.15	\$172,500.00
<b>TOTAL FOR SINGLE HANGAR</b>				<b>\$2,501,008.00</b>

**TOTAL FOR SINGLE HANGAR** \$2,501,008.00





**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: UNDERFLOOR PIPING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$45,750			722.60		\$49,240		\$94,990
REGIONAL FACTOR (MEANS)	10.0%				\$4,575							\$4,575
FREIGHT	10.0%				\$4,575							\$4,575
OVERTIME	12.5%									\$6,155		\$6,155
COMPLEXITY	15.0%									\$7,386		\$7,386
<b>SUBTOTAL</b>			\$0		\$54,900					\$62,781		\$117,680
CONTRACTORS OVERHEAD	15.0%											\$17,652
CONTRACTORS PROFIT	15.0%											\$17,652
<b>SUBTOTAL</b>												\$152,985
<b>MECHANICAL CONTRACT TOTAL</b>											<b>\$152,985</b>	

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>WASTE &amp; VENT SYSTEM</b>												
<b>PIPING</b>												
4" CAST IRON	600 Lin.Ft	\$0	\$0	\$16.33	\$9,800	0.29	1	174.60	\$69.06	\$12,057	36.4	\$21,857
FITTINGS	1 Elbow/20'		\$0	\$1.13	\$677	0.40	1	12.00	\$69.06	\$829		\$1,506
TRENCH DRAIN	200 Lin.Ft	\$0	\$0	\$96	\$19,200	1.00	1	200	\$67.82	\$13,565	163.8	\$32,765
CONCRETE DEMO	2800 Sq.Ft	\$0	\$0	\$0.24	\$672	0.06	1	168	\$67.82	\$11,395	4.3	\$12,067
CONCRETE PATCH & TRENCH	2800 Each	\$0	\$0	\$5.5	\$15,400	0.06	1	168	\$67.82	\$11,395	9.6	\$26,795
<b>COLUMN TOTALS:</b>			<b>\$0</b>		<b>\$45,750</b>			<b>722.60</b>		<b>\$49,240</b>		<b>\$94,990</b>



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: ABOVE GRADE PLUMBING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$37,887			1,460.47		\$100,145		\$138,032
REGIONAL FACTOR (MEANS)	10.0%				\$3,789							\$3,789
FREIGHT	10.0%				\$3,789							\$3,789
OVERTIME	12.5%									\$12,518		\$12,518
COMPLEXITY	15.0%									\$15,022		\$15,022
SUBTOTAL			\$0		\$45,464					\$127,685		\$173,150
CONTRACTORS OVERHEAD	15.0%											\$25,972
CONTRACTORS PROFIT	15.0%											\$25,972
SUBTOTAL												\$225,095
MECHANICAL CONTRACT TOTAL												\$225,095

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>PLUMBING FIXTURES</b>												
TANK, WALL, 1 PIECE	3 Each	\$0	\$0	\$579.84	\$1,740	10.20	3	91.80	\$69.06	\$6,339	2693.0	\$8,079
FLUSH VALVE, WALL	4 Each	\$0	\$0	\$410.45	\$1,642	13.40	3	160.80	\$69.06	\$11,104	3186.5	\$12,746
WALL HUNG LAV	4 Each	\$0	\$0	\$853.47	\$3,414	12.00	3	144.00	\$69.06	\$9,944	3339.5	\$13,358
SERVICE, FLOOR, STONE	2 Each	\$0	\$0	\$650.20	\$1,300	16.30	3	97.80	\$69.06	\$6,754	4027.0	\$8,054
WALL SS, SINGLE COOLER	2 Each	\$0	\$0	\$963.57	\$1,927	10.00	3	60.00	\$69.06	\$4,143	3035.3	\$6,071
SHOWER	2 Each	\$0	\$0	\$865.19	\$1,730	16.00	3	96.00	\$69.06	\$6,629	4179.9	\$8,360
7360 BT EYEWASH, SS	1 Each	\$0	\$0	\$183.72	\$184	8.00	2	16.00	\$69.06	\$1,105	1288.6	\$1,289
8300 SHOWER/EYEWASH, SS	4 Each	\$0	\$0	\$658.02	\$2,632	8.00	2	64.00	\$69.06	\$4,420	1762.9	\$7,052
9202 TEMPERING VALVE	2 Each	\$0	\$0	\$1,710.00	\$3,420	4.00	2	16.00	\$69.06	\$1,105	2262.4	\$4,525
TEMPERING VALVE PANEL	2 Each	\$0	\$0	\$510.00	\$1,020	2.00	2	8.00	\$69.06	\$552	786.2	\$1,572
<b>DOMESTIC WATER MAINS</b>												
1" TYPE 'L' COPPER	200 Lin.Ft	\$0	\$0	\$5.88	\$1,176	0.12	1	23.60	\$69.06	\$1,630	14.0	\$2,806
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$41	0.50	1	5.00	\$69.06	\$345		\$386
2" TYPE 'L' COPPER	150 Lin.Ft	\$0	\$0	\$16.64	\$2,496	0.19	1	28.50	\$69.06	\$1,968	29.8	\$4,464
FITTINGS:	1 Elbow/20'	\$0	\$0	\$17.33	\$130	0.73	1	5.45	\$69.06	\$377		\$507
2 1/2" GALV. STEEL	200 Lin.Ft	\$0	\$0	\$18.40	\$3,679	0.26	1	51.60	\$69.06	\$3,563	36.2	\$7,242
FITTINGS:	1 Elbow/20'	\$0	\$0	\$12.68	\$127	0.89	1	8.89	\$69.06	\$614		\$741
<b>COMPRESSED AIR PIPING</b>												
3/4" BLACK STEEL	480 Lin.Ft	\$0	\$0	\$2.73	\$1,310	0.13	1	62.88	\$69.06	\$4,342	11.8	\$5,653
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.11	\$99	0.57	1	13.70	\$69.06	\$946		\$1,045
2" BLACK STEEL	550 Lin.Ft	\$0	\$0	\$8.32	\$4,576	0.25	1	137.50	\$69.06	\$9,495	25.6	\$14,071
FITTINGS:	1 Elbow/20'	\$0	\$0	\$14.56	\$400	0.89	1	24.48	\$69.06	\$1,690		\$2,091
<b>FIXTURE PIPING</b>												
3/4" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$4.11	\$1,233	0.11	3	94.50	\$69.06	\$6,526	25.9	\$7,759
FITTINGS:	1 Elbow/20'	\$0	\$0	\$1.62	\$24	0.42	1	6.32	\$69.06	\$436		\$460
1" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$5.88	\$1,764	0.12	3	106.20	\$69.06	\$7,334	30.3	\$9,098
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$61	0.50	1	7.50	\$69.06	\$518		\$579
<b>INSULATION - HYDRONIC SYSTEM</b>												
1" CW INSULATION	200 Lin.Ft	\$0	\$0	\$1.20	\$240	0.08	2	32	\$63.60	\$2,035	11.4	\$2,275
FITTINGS:	15% Allow	\$0	\$0	\$36	\$36		1	5	\$63.60	\$305		\$341
2" CW INSULATION	250 Lin.Ft	\$0	\$0	\$2.77	\$693	0.09	2	45	\$63.60	\$2,862	14.2	\$3,555
FITTINGS:	15% Allow	\$0	\$0	\$104	\$104		1	7	\$63.60	\$429		\$533
2 1/2" CW INSULATION	200 Lin.Ft	\$0	\$0	\$3.00	\$600	0.09	2	36	\$63.60	\$2,290	14.4	\$2,890
FITTINGS:	15% Allow	\$0	\$0	\$90	\$90		1	5	\$63.60	\$343		\$433
<b>COLUMN TOTALS:</b>			\$0		\$37,887			1460.47		\$100,145		\$138,032



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HANGAR BAY VENTILATION

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR						
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$87,606			2,491.14		\$167,338		\$254,944
REGIONAL FACTOR (MEANS)	10.0%				\$8,761							\$8,761
FREIGHT	10.0%				\$8,761							\$8,761
OVERTIME	12.5%									\$20,917		\$20,917
COMPLEXITY	15.0%									\$25,101		\$25,101
<b>SUBTOTAL</b>			\$0		\$105,127					\$213,357		\$318,483
CONTRACTORS OVERHEAD	15.0%											\$47,772
CONTRACTORS PROFIT	15.0%											\$47,772
<b>SUBTOTAL</b>												\$414,028
<b>MECHANICAL CONTRACT TOTAL</b>												<b>\$414,028</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR						
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>EQUIPMENT</b>												
16,000 CFM SUPPLY FAN	2 Each	\$0	\$0	\$23000	\$46,000	200.00	1	400	\$67.82	\$27,130	36564.9	\$73,130
8,000 CFM PROPELLER FAN	4 Each	\$0	\$0	\$2700	\$10,800	30.00	1	120	\$67.82	\$8,139	4734.7	\$18,939
ELECTRICAL CONNECTION	6 Each	\$0	\$0	\$500	\$3,000	30.00	1	180	\$67.82	\$12,208	2534.7	\$15,208
18" SUPPLY FAN PLATFORM	2 Each	\$0	\$0	\$500	\$1,000	40.00	1	80	\$67.82	\$5,426	3213.0	\$6,426
<b>PIPING</b>												
2" TYPE 'L' COPPER	240 Lin.Ft	\$0	\$0	\$15.71	\$3,771	0.19	1	45.60	\$69.06	\$3,149	28.8	\$6,920
FITTINGS	1 Elbow/20'	\$0	\$0	\$0.95	\$227	0.40	1	4.80	\$69.06	\$331		\$559
3" BLACK STEEL	600 Lin.Ft	\$0	\$0	\$14.50	\$8,697	0.37	1	223.20	\$69.06	\$15,413	40.2	\$24,110
FITTINGS	1 Elbow/20'	\$0	\$0	\$26.65	\$800	2.30	1	69.00	\$69.06	\$4,765		\$5,564
2" HYDRONIC INSULATION	240 Lin.Ft	\$0	\$0	\$2.77	\$665	0.09	1	22	\$63.60	\$1,374	8.5	\$2,039
FITTINGS	15% Allow	\$0	\$0		\$100			3	\$63.60	\$206		\$306
3" HYDRONIC INSULATION	600 Lin.Ft	\$0	\$0	\$3.54	\$2,124	0.10	1	60	\$63.60	\$3,816	9.9	\$5,940
FITTINGS	15% Allow	\$0	\$0		\$319			9	\$63.60	\$572		\$891
<b>DUCTWORK</b>												
36" dia.	400 Lin.Ft	\$0	\$0	\$7.75	\$3,100	1.55	1	620	\$67.82	\$42,051	112.9	\$45,151
110" SEMI-PERIMETER	80 Lin.Ft	\$0	\$0	\$33.67	\$2,693	3.13	1	250	\$67.82	\$16,963	245.7	\$19,656
2" RIGID INSULATION	1500 Sq.Ft	\$0	\$0	\$1.26	\$1,890	0.13	2	390	\$63.60	\$24,804	17.8	\$26,694
12"X48" SUPPLY REGISTERS	20 Each	\$0	\$0	\$121	\$2,420	0.73	1	15	\$67.82	\$990	170.5	\$3,410
<b>COLUMN TOTALS:</b>			\$0		\$87,606			2491.14		\$167,338		\$254,944



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: AVCAAT SIMULATOR TRAINING

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	TOTAL UNITS	LABOR HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.						\$683,078		7,713.0		\$595,683		\$1,278,761	
REGIONAL FACTOR (MEANS)	10.0%					\$68,308						\$68,308	
FREIGHT	10.0%					\$68,308						\$68,308	
OVERTIME	12.5%									\$74,460		\$74,460	
COMPLEXITY	15.0%									\$89,353		\$89,353	
SUBTOTAL						\$819,693				\$759,496		\$1,579,190	
CONTRACTOR'S OVERHEAD	15.0%											\$236,878	
CONTRACTOR'S PROFIT	10.0%											\$157,919	
SUBTOTAL												\$1,973,987	
ELECTRICAL CONTRACT TOTAL												\$1,973,987	

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No.	UNITS	UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/UNIT	TOTAL UNITS	LABOR HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>CONDUIT - E.M.T.</b>													
1/2" E.M.T.	18,105	Lin.Ft	\$0	\$0	\$0.87	\$15,831	4.5	100	814.7	\$77.30	\$62,978	\$6.97	\$78,809
FITTINGS & ASSEMBLY	100%	Matl	\$0	\$0		\$15,831	50%	Lab	407.4	\$77.30	\$31,489		\$47,320
3/4" E.M.T.	2,716	Lin.Ft	\$0	\$0	\$1.76	\$4,791	5.0	100	135.8	\$77.30	\$10,496	\$11.17	\$15,288
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$7,187	75%	Lab	101.8	\$77.30	\$7,872		\$15,059
1 1/4" E.M.T.	200	Lin.Ft	\$0	\$0	\$4.60	\$919	6.2	100	12.4	\$77.30	\$959	\$19.87	\$1,878
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$1,379	75%	Lab	9.3	\$77.30	\$719		\$2,097
<b>CONDUIT - FLEX</b>													
1/2" FLEX	100	Lin.Ft	\$0	\$0	\$0.98	\$98	4.0	100	4.0	\$77.30	\$309	\$6.11	\$407
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$49	50%	Lab	2.0	\$77.30	\$155		\$204
3/4" LIQ. TIGHT	100	Lin.Ft	\$0	\$0	\$4.17	\$417	5.0	100	5.0	\$77.30	\$387	\$12.05	\$804
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$209	50%	Lab	2.5	\$77.30	\$193		\$402
<b>CONDUIT - R.S.C.</b>													
2" R.S.C.	200	Lin.Ft	\$0	\$0	\$17.06	\$3,412	11.0	100	22.0	\$77.30	\$1,701	\$25.56	\$5,112
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$1,706	40%	Lab	8.8	\$77.30	\$680	\$11.93	\$2,386
3" R.S.C.	500	Lin.Ft	\$0	\$0	\$17.06	\$8,529	20.0	100	100.0	\$77.30	\$7,730	\$32.52	\$16,259
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$4,264	40%	Lab	40.0	\$77.30	\$3,092	\$14.71	\$7,356
<b>CONDUCTORS</b>													
12 AWG THHN	68,905	Lin.Ft	\$0	\$0	\$0.34	\$23,458	6.0	1000	413.4	\$77.30	\$31,958	\$0.80	\$55,416
10 AWG THHN	10,336	Lin.Ft	\$0	\$0	\$0.54	\$5,563	7.0	1000	72.4	\$77.30	\$5,593	\$1.08	\$11,156
4/0 AWG THHN	3,000	Lin.Ft	\$0	\$0	\$12.28	\$36,829	29.0	1000	87.0	\$77.30	\$6,725	\$14.52	\$43,554
500 MCM XHHW	2,000	Lin.Ft	\$0	\$0	\$32.90	\$65,798	48.0	1000	96.0	\$77.30	\$7,421	\$36.61	\$73,218
<b>MULTI-OULET ASSEMBLY</b>													
WIREMOLD 3000	600	Lin.Ft	\$0	\$0	\$3.50	\$2,100	0.5	1	300.0	\$77.30	\$23,190	\$42.15	\$25,290
<b>RECEPTACLES</b>													
DUPLEX RECEPTACLE	480	Each	\$0	\$0	\$8.00	\$3,840	1.5	1	720.0	\$77.30	\$55,656	\$123.95	\$59,496
QUAD RECEPTACLE	40	Each	\$0	\$0	\$15.00	\$600	1.5	1	60.0	\$77.30	\$4,638	\$130.95	\$5,238
GFI RECEPTACLE	24	Each	\$0	\$0	\$25.00	\$600	1.5	1	36.0	\$77.30	\$2,783	\$140.95	\$3,383
WP GFCI RECEPTACLE	12	Each	\$0	\$0	\$45.00	\$540	1.5	1	18.0	\$77.30	\$1,391	\$160.95	\$1,931
<b>LIGHTING</b>													
TYPE 'A1'	38	Each	\$0	\$0	\$120.00	\$4,560	1.5	1	57.0	\$77.30	\$4,406	\$235.95	\$8,966
TYPE 'A2'	215	Each	\$0	\$0	\$130.00	\$27,950	1.5	1	322.5	\$77.30	\$24,929	\$245.95	\$52,879
TYPE 'C2'	18	Each	\$0	\$0	\$100.00	\$1,800	1.5	1	27.0	\$77.30	\$2,087	\$215.95	\$3,887
TYPE 'EX'	48	Each	\$0	\$0	\$85.00	\$4,080	1.5	1	72.0	\$77.30	\$5,566	\$200.95	\$9,646
TYPE 'I4'	32	Each	\$0	\$0	\$1,200.00	\$38,400	3.0	1	96.0	\$77.30	\$7,421	\$1,431.90	\$45,821
EXTERIOR LIGHTING	1	L.S.	\$0	\$0	\$20,000.00	\$20,000	400.0	1	400.0	\$77.30	\$30,920	\$50,920.00	\$50,920
<b>MOTORS</b>													
SINGLE PH MOTOR CONN.	12	Each	\$0	\$0	\$27.00	\$324	1.0	1	12.0	\$77.30	\$928	\$104.30	\$1,252
30A TT SWITCH	12	Each	\$0	\$0	\$35.00	\$420	1.5	1	18.0	\$77.30	\$1,391	\$150.94	\$1,811
THREE PH MOTOR CONN.	8	Each	\$0	\$0	\$15.00	\$120	2.0	1	16.0	\$77.30	\$1,237	\$169.60	\$1,357
COMB STARTER	8	Each	\$0	\$0	\$675.00	\$5,400	6.0	1	48.0	\$77.30	\$3,710	\$1,138.80	\$9,110
<b>DISTRIBUTION PANELBOARDS</b>													
NEW DIST PNL '480V 1200A'	1	Each	\$0	\$0	\$17,910.80	\$17,911	24.0	1	24.0	\$77.30	\$1,855	\$19,766	\$19,766
NEW DIST PNL '208V 800A'	8	Each	\$0	\$0	\$11,604.00	\$92,832	24.0	1	192.0	\$77.30	\$14,842	\$13,459	\$107,674



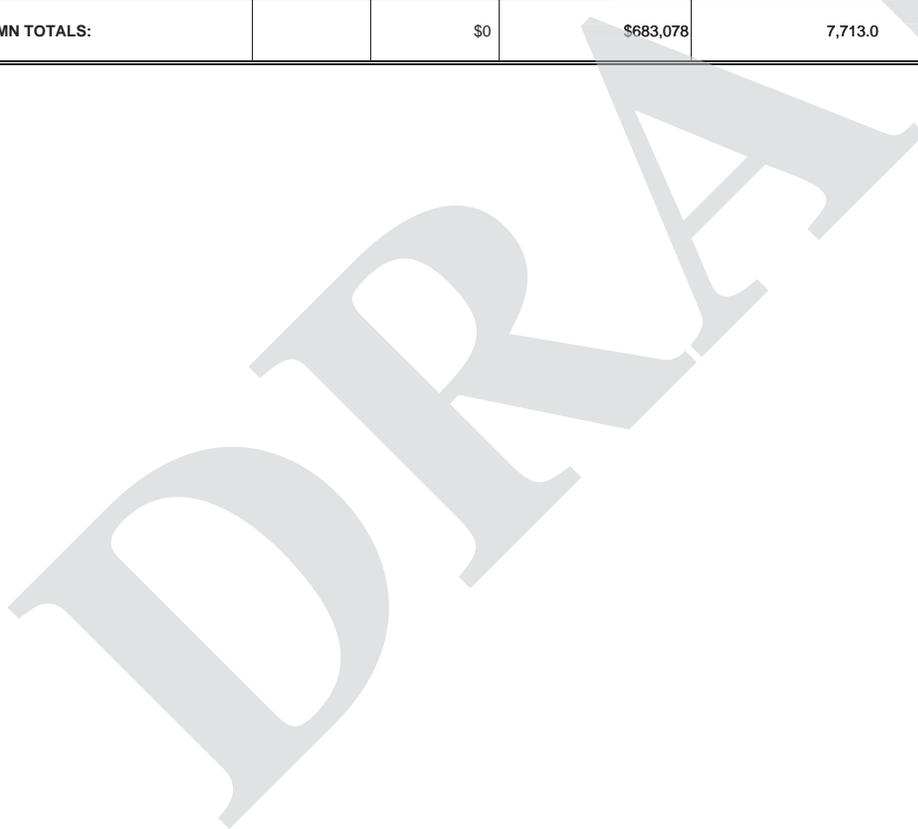
**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 1  
 DESCRIPTION: AVCATT SIMULATOR TRAINING

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR				TOTAL		
	ELECTRICAL CONTRACTOR	No. UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	TOTAL UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>BRANCH CIRCUIT PANELBOARDS</b>													
NEW BRANCH PNL '208V 225A'	4	Each	\$0	\$0	\$2,520.48	\$10,082	24.0	1	96.0	\$77.30	\$7,421	\$4,376	\$17,503
NEW BRANCH PNL '480V 100A'	2	Each	\$0	\$0	\$3,719.20	\$7,438	24.0	1	48.0	\$77.30	\$3,710	\$5,574	\$11,149
<b>TRANSFORMERS</b>													
300 kVA 480V-208Y/120V	8	Each	\$0	\$0	\$16,754.40	\$134,035	16.0	1	128.0	\$77.30	\$9,894	\$17,991.20	\$143,930
<b>FIRE ALARM AND MNS</b>													
FIRE ALARM SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
MNS SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
<b>NETWORK SYSTEMS</b>													
EQUIPMENT RACK	2	Each	\$0	\$0	\$250.00	\$500	8.0	1	16.0	\$77.30	\$1,237	\$868.40	\$1,737
CAT 6 CABLING	9,600	Lin.Ft	\$0	\$0	\$0.36	\$3,456	10.0	1000	96.0	\$77.30	\$7,420	\$1.13	\$10,876
DATA OUTLETS	240	Each	\$0	\$0	\$8.00	\$1,920	1.5	1	360.0	\$77.30	\$27,828	\$123.95	\$29,748
TERMINATE & TEST	0%	Matl	\$0	\$0	\$0	\$0	50%	Lab	180.0	\$74.36	\$13,386		\$13,386
GROUND BUS	2	Each	\$0	\$0	\$150.00	\$300	2.0	1	4.0	\$77.30	\$309	\$304.59	\$609
PATCH PANELS	8	Each	\$0	\$0	\$200.00	\$1,600	4.0	1	32.0	\$77.30	\$2,473	\$509.18	\$4,073
<b>MISCELLANEOUS</b>													
AVCATT SIMULATOR CONNECT	8	Allow	\$0	\$0	\$3,500.00	\$28,000	40.0	1	320.0	\$77.30	\$24,736	\$6,592.00	\$52,736
<b>DEMOLITION</b>													
ELECTRICAL DEMO	1	Allow	\$0	\$0	\$6,000.00	\$6,000	480.0	1	480	\$77.30	\$37,102	\$43,101.95	\$43,102
<b>COLUMN TOTALS:</b>													
			\$0		\$683,078				7,713.0		\$595,683		\$1,278,761



# COST ESTIMATE

## ALTERNATIVE 2 - FIXED SIMULATOR TRAINING



### PROJECT CONSTRUCTION COST ESTIMATE

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: SUMMARY - BASE BID

15-Oct-11

Prepared by: JMM

DESCRIPTION	QUANTITY	UNIT	LABOR			TOTAL
			HRS/ UNIT	LABOR RATE	LABOR COST	
GENERAL CONTRACTOR		COST				
ARCHITECTURAL BASIC REHAB TOTAL						\$10,505,341
ARCHITECTURAL ALTERN 2 TOTAL						\$267,329
<b>SUBCONTRACTOR WORK</b>						
HAZ MAT CONTRACTOR		\$113,924				\$113,924
CIVIL SITE WORK CONTRACTOR		\$1,806,746				\$1,806,746
STRUCTURAL CONTRACTORS		\$1,850,000				\$1,850,000
MECHANICAL CONTRACTOR & FIRE PROTECTION CONTRACTOR		\$2,501,008				\$2,501,008
ELECTRICAL CONTRACTOR		\$1,798,819				\$1,798,819
GEN.CONTRACTOR OHMARKUP	10.0%				\$8,070,497	\$807,050
SUBTOTAL						\$19,650,217
GENERAL CONDITIONS	15.0%					\$2,947,533
SUBTOTAL						\$22,597,749
ESTIMATING CONTINGENCY	35.0%					\$7,909,212
SUBTOTAL						\$30,506,962
ESCALATION-CONSTR.COST	15.0%	TO 2016				\$4,576,044
<b>TOTAL CONSTRUCTION COST</b>						<b>\$35,083,006</b>

**BASE BID (PER HANGER) \$35,083,006**

**+ FIRE & STAIR TOWER REPAIRS (HANGAR 2 ONLY) \$1,190,000**

#### NOTES REGARDING THE PREPARATION OF THIS COST ESTIMATE

THIS ESTIMATE IS PREPARED USING CURRENT CONSTRUCTION COSTS & ASSUMES WILL RECEIVE AN OPEN COMPETITIVE BID.

THIS ESTIMATE DOES NOT CONTAIN AN ALLOWANCE FOR NEGOTIATED NON-COMPETITIVE CONTRACTS.

THIS ESTIMATE HAS AN ESCALATION ALLOWANCE.

THIS ESTIMATE DOES NOT HAVE AN ALLOWANCE TO TREAT / REMOVE ANY HAZARDOUS MATERIALS OR CONTAMINATED SOIL.

THIS ESTIMATE DOES NOT INCLUDE ANY PLAN CHECK FEES CHARGED BY THE STATE OF ALASKA OR ANY OTHER ENTITY CLAIMING JURISDICTION OVER THE WORK PAID DIRECTLY BY THE OWNER.

THIS ESTIMATE DOES NOT INCLUDE THE A/E FEES, SHOP EQUIPMENT OR COSTS FOR ANY WORK NOT INDICATED.

THIS ESTIMATE IS BASED ON A NORMAL WORK WEEK WITH SOME PROVISIONS FOR OVERTIME.

ESTIMATING CONTINGENCY - AN ALLOWANCE FOR CONSTRUCTION DOCUMENT REQUIREMENTS THAT ARE NOT INCLUDED

EITHER THE 2011 R.S. MEANS FACILITIES CONSTRUCTION COST DATA MANUAL, THE 2011 R.S. MEANS ASSEMBLIES COST DATA MANUAL, OR PAST HISTORICAL DATA HAVE BEEN USED AS RESOURCES TO COMPILE THIS ESTIMATE.



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR						
DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$21,107	\$2,135,504	56727	\$4,565,146	\$6,721,757
REGIONAL FACTOR (MEANS)	10.0%		\$213,550			\$213,550
FREIGHT	10.0%		\$213,550			\$213,550
OVERTIME	12.5%				\$570,643	\$570,643
COMPLEXITY	15.0%				\$684,772	\$684,772
<b>SUBTOTAL</b>		\$21,107	\$2,562,605		\$5,820,561	\$8,404,273
CONTRACTORS OVERHEAD	15.0%					\$1,260,641
CONTRACTORS PROFIT	10.0%					\$840,427
<b>SUBTOTAL</b>						\$10,505,341
<b>ARCHITECTURAL CONTRACT TOTAL</b>						<b>\$ 10,505,341</b>

DIRECT COSTS BY CSI DIVISIONS

**DIVISION 2 - SITE WORK**

**BUILDING**

demo finishes to studs-ext. walls	40,200	sf	0.00	0	0.000	0	.040	1	1608	\$73.72	118,546	3	\$118,546
demo walls- interior	5,000	sf	0.00	0	0.000	0	.040	1	200	\$73.72	14,745	3	\$14,745
demo roof epdm	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof recovery board	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof insul. (below deck)	44,880	sf	0.00	0	0.000	0	.013	1	583	\$73.72	43,013	1	\$43,013
demo metal siding	32,850	lf	0.00	0	0.000	0	.030	1	986	\$73.72	72,654	2	\$72,654
demo metal flashing	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo wood fascia	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo concrete - support bays	5,000	sf	0.00	0	0.600	3,000	.050	1	250	\$73.72	18,431	4	\$21,431
demo concrete curbs at ext.dr.s.	1	ls	0.00	0	550.000	550	18.000	1	18	\$73.72	1,327	1877	\$1,877
demo mortar.conc.-restrooms	450	sf	0.00	0	0.600	270	.210	1	95	\$73.72	6,967	16	\$7,237
excavate restroom floors	50	bcy	1.40	70	0.000	0	2.660	1	133	\$73.72	9,805	198	\$9,875
demo entry canopy roof	3	ea	0.00	0	760.000	2,280	.035	1	0	\$73.72	8	763	\$2,288
demo int.wall finish- support bays	12,500	sf	0.00	0	0.000	0	.160	1	2000	\$73.72	147,446	12	\$147,446
demo tile	20,000	lf	0.00	0	0.000	0	.020	1	400	\$73.72	29,489	1	\$29,489
demo carpet	10,000	sf	0.00	0	0.000	0	.025	1	250	\$73.72	18,431	2	\$18,431
demo ceramic tile-floor	988	ls	0.00	0	0.000	0	.042	1	41	\$73.72	3,059	3	\$3,059
demo ceramic tile-wall	1,480	ea	0.00	0	0.000	0	.042	1	62	\$73.72	4,583	3	\$4,583
demo exterior drs & frames	16	ea	0.00	0	0.000	0	1.460	1	23	\$73.72	1,722	108	\$1,722
demo interior drs & frames	70	ea	0.00	0	0.000	0	1.500	1	105	\$73.72	7,741	111	\$7,741
demo hangar drs & frames(26'x72')	1,950	sf	1.10	2,145	0.000	0	.140	1	273	\$73.72	20,126	11	\$22,271
demo exterior windows	63	ea	0.00	0	0.000	0	1.500	1	95	\$73.72	6,967	111	\$6,967
demo interior relites	14	ea	0.00	0	0.000	0	.500	1	7	\$73.72	516	37	\$516
remove interior stair handrails	150	lf	0.00	0	0.000	0	.200	1	30	\$73.72	2,212	15	\$2,212
<b>SUBTOTAL</b>			\$2,215		\$6,100				9891		\$763,404		\$771,719

**DIVISION 3 - CONCRETE**

concrete floor- hangar-2" topping	30,400	sf	0.01	304	2.500	76,000	.022	1	669	\$79.38	53,092	4	\$129,396
concrete floor- 1st flr RRs/Lockrms	988	sf	0.01	10	2.500	2,470	.022	1	22	\$79.38	1,725	4	\$4,205
concrete floor- support bays-6"	5,000	sf	0.01	50	2.500	12,500	.022	1	110	\$79.38	8,732	4	\$21,282
<b>SUBTOTAL</b>			\$364		\$90,970				801		\$63,549		\$154,883

**DIVISION 5 - METAL**

floor exp.jts. (exist.jts.)	800	lf	0.01	8	25.000	20,000	.211	1	169	\$79.38	13,400	42	\$33,408
hangar dr.ext.rf.platforms-rebuild	240	sf	0.00	0	15.000	3,600	.010	1	2	\$79.39	191	16	\$3,791
hangar dr.ext.rf.guardrail-rebuild	184	lf	0.00	0	32.000	5,888	.200	1	37	\$79.39	2,921	48	\$8,809
stairs interior handrails- repair	140	lf	0.00	0	32.000	4,480	.200	1	28	\$79.39	2,223	48	\$6,703
catwalks - platforms - repair	2,500	sf	0.00	0	22.000	55,000	.010	1	25	\$79.39	1,985	23	\$56,985
catwalks - structure - repair	2,500	sf	0.00	0	28.000	70,000	.025	1	63	\$79.39	4,962	30	\$74,962
catwalks - guardrails - repair	200	lf	0.00	0	32.000	6,400	.200	1	40	\$79.39	3,176	48	\$9,576
catwalks - ladders/stairs	150	risers	0.00	0	250.000	37,500	.050	1	8	\$79.39	595	254	\$38,095
misc. connections	1	ls	0.00	0	2500.000	2,500	.000	1	0	\$79.39	0	2500	\$2,500
<b>SUBTOTAL</b>			\$8		\$205,368				371		\$29,452		\$234,828



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE			LABOR COST
<b>DIVISION 7 - THERMAL AND MOISTURE</b>													
EPDM roof - hangar-R90	24,880	sf	0.00	0	8,150	202,772	.351	1	8733	\$86.43	754,795	38	\$957,567
EPDM roof - support bays-R90	20,000	sf	0.00	0	8,150	163,000	.351	1	7020	\$86.43	606,748	38	\$769,748
waterprfg/insul./flashing- wall base	3,200	sf	0.00	0	0.400	1,280	.400	1	1280	\$79.39	101,616	32	\$102,896
roof fascia	1,500	lf	0.00	0	2,260	3,390	.016	1	24	\$86.43	2,074	4	\$5,464
metal flashing	1,500	lf	0.00	0	2,100	3,150	.016	1	24	\$86.43	2,074	3	\$5,224
conc.flr.moisture barrier- hangar	30,400	sf	0.00	0	1,600	48,640	.030	1	912	\$79.38	72,398	4	\$121,038
conc.flr.moisture barrier- supp.bays	50,400	sf	0.00	0	1,600	80,640	.030	1	1512	\$79.38	120,028	4	\$200,668
new framing (hangar dr.overhang)	1	ls	0.00	0	5000.000	5,000	250.000	1	250	\$79.38	19,846	24846	\$24,846
new sheathing (hangar dr.overhang)	600	sf	0.00	0	1,260	756	.020	1	12	\$79.38	953	3	\$1,709
bird screen (hangar dr.overhang)	1,200	sf	0.00	0	0,300	360	.260	1	312	\$79.38	24,768	21	\$25,128
metal roof (hangar dr.overhang)	1,200	sf	0.00	0	3,500	4,200	.350	1	420	\$86.43	36,301	34	\$40,501
entry canopy roofs	3	ea	0.00	0	800.000	2,400	15.000	1	45	\$86.43	3,889	2096	\$6,289
snow guards	2,400	lf	0.00	0	2,600	6,240	.060	1	144	\$86.43	12,446	8	\$18,686
new insulated mtl.wall panels-R49	32,850	sf	0.00	0	25,000	821,250	.060	1	1971	\$79.39	156,473	30	\$977,723
new wall batts-R21	32,850	sf	0.00	0	0,360	11,826	.350	1	11498	\$79.39	912,758	28	\$924,584
<b>SUBTOTAL</b>				\$0		\$1,354,904			<b>34156</b>		<b>\$2,827,167</b>		<b>\$4,182,071</b>
<b>DIVISION 8 - DOORS &amp; WINDOWS</b>													
ADA barrier free entrances	10	ea	0.00	0	1000.000	10,000	32.000	1	320	\$79.39	25,404	3540	\$35,404
doors- ext.insul.-drs.,fr.,hardware	16	ea	0.00	0	1800.000	28,800	3.000	1	48	\$79.39	3,811	2038	\$32,611
doors- hangar int.-drs.,fr.,hdwre	22	ea	0.00	0	1325.000	29,150	3.000	1	66	\$79.39	5,240	1563	\$34,390
doors- nonrated supp.spaces int.	22	ea	0.00	0	1200.000	26,400	2.000	1	44	\$79.39	3,493	1359	\$29,893
doors- rated supp.spaces int.	26	ea	0.00	0	1500.000	39,000	2.000	1	52	\$79.39	4,128	1659	\$43,128
replace hangar doors (26'x75')	3,900	sf	0.00	0	28,000	109,200	.090	1	351	\$79.39	27,865	35	\$137,065
ext. insulated access drs., frames	16	ea	0.00	0	410.000	6,560	.900	1	14	\$79.39	1,143	481	\$7,703
new energy efficient windows	63	ea	0.00	0	800.000	50,400	.900	1	57	\$79.39	4,501	871	\$54,901
new relites to hangar from sidebays	192	sf	0.00	0	22,500	4,320	.178	1	34	\$79.39	2,713	37	\$7,033
<b>SUBTOTAL</b>				\$0		\$303,830			<b>986</b>		<b>\$78,298</b>		<b>\$382,128</b>
<b>DIVISION 9 - FINISHES</b>													
upgrade hangar walls to 2 hr.rated	26,752	sf	0.00	0	2,600	69,555	.120	1	3210	\$79.39	254,853	12	\$324,408
upgrade int.walls occup.separation	1,650	sf	0.00	0	0,800	1,320	.700	1	1155	\$79.39	91,693	56	\$93,013
upgrade ext.walls support bays	20,100	sf	0.00	0	2,700	54,270	.090	1	1809	\$79.39	143,612	10	\$197,882
vapor retarder - roof	44,880	sf	0.00	0	0,032	1,436	.003	1	135	\$79.39	10,689	0	\$12,125
vapor retarder - exterior walls	32,850	sf	0.00	0	0,032	1,051	.003	1	99	\$79.39	7,824	0	\$8,875
replace improperly framed walls	1	ls	0.00	0	5500.000	5,500	255.000	1	255	\$79.39	20,244	25744	\$25,744
floor clean and prep	70,400	sf	0.00	0	0,026	1,830	.009	1	634	\$71.36	45,217	1	\$47,047
rubber base	3,950	sf	0.00	0	0,470	1,857	.035	1	138	\$71.36	9,866	3	\$11,723
int.exit stair rubber tile	200	sf	0.00	0	5,000	1,000	.065	1	13	\$71.36	928	10	\$1,928
seal concrete - hangar floor	30,400	sf	0.00	0	0,070	2,128	.004	1	122	\$79.38	9,653	0	\$11,781
epoxy paint concrete- support bays	19,550	sf	0.00	0	0,026	508	.066	1	1290	\$71.36	92,082	5	\$92,590
paint ceilings - support bays	20,000	sf	0.00	0	0,030	600	.015	1	300	\$69.29	20,788	1	\$21,388
patch, prep walls for finish	1	ls	0	0	4100.000	4,100	125.000	1	125	\$69.29	8,662	12762	\$12,762
paint walls up to 12'- support bays	39,500	sf	0.00	0	0,011	435	.022	1	869	\$69.29	60,216	2	\$60,650
paint walls above 12'- hangar	14,820	sf	1.00	14,820	0,014	207	.015	1	222	\$69.29	15,404	2	\$30,431
repaint large hangar numbers	400	sf	1.00	400	0,014	6	.015	1	6	\$69.29	416	2	\$821
hangar draft curtains	3,300	sf	1.00	3,300	5,800	19,140	.030	1	99	\$79.39	7,859	9	\$30,299
<b>SUBTOTAL</b>				\$18,520		\$164,943			<b>10480</b>		<b>\$800,004</b>		<b>\$983,467</b>
<b>DIVISION 10 - SPECIALTIES</b>													
interior signs	50	ea	0.00	0	80.000	4,000	.600	1	30	\$79.39	2,382	128	\$6,382
window blinds	63	ea	0.00	0	3,000	189	.015	1	1	\$79.39	75	4	\$264
fire extinguishers	20	ea	0.00	0	260.000	5,200	.550	1	11	\$74.06	815	301	\$6,015
<b>SUBTOTAL</b>				\$0		\$9,389			<b>42</b>		<b>\$3,271</b>		<b>\$12,660</b>
<b>TOTAL DIRECT COST</b>				<b>\$21,107</b>		<b>\$2,135,504</b>			<b>56727</b>		<b>\$4,565,146</b>		<b>\$6,721,757</b>



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: ARCHITECTURAL - ALTERNATIVE 2

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

**GENERAL CONTRACTOR**

DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$0	\$76,154	1335.97	\$96,062	\$172,216
REGIONAL FACTOR (MEANS)	10.0%		\$7,615			\$7,615
FREIGHT	10.0%		\$7,615			\$7,615
OVERTIME	12.5%				\$12,008	\$12,008
COMPLEXITY	15.0%				\$14,409	\$14,409
<b>SUBTOTAL</b>		<b>\$0</b>	<b>\$91,385</b>		<b>\$122,479</b>	<b>\$213,864</b>
CONTRACTORS OVERHEAD	15.0%					\$32,080
CONTRACTORS PROFIT	10.0%					\$21,386
<b>SUBTOTAL</b>						<b>\$267,329</b>
<b>ARCHITECTURAL CONTRACT TOTAL</b>						<b>\$ 267,329</b>

**DIRECT COSTS BY CSI DIVISIONS**

**DIVISION 9 - FINISHES**

ceramic tile - floor 2 colors	988.0	sf	0.00	0	6.60	6,521	.088	1	86.94	\$70.16	6,100	13	\$12,620
ceramic tile - wall 2 colors, 4' w'scot	650.0	sf	0.00	0	4.900	3,185	.075	1	48.75	\$70.16	3,420	10.16	\$6,605
VCT - 2nd floor, static dissipative	1,000.0	sf	0.00	0	2.600	2,600	.550	1	550.00	\$71.36	39,251	41.85	\$41,851
carpet tiles - 2nd floor, 26 oz., 18x18	10,000.0	sf	0.00	0	5.100	51,000	.054	1	540.00	\$71.36	38,537	8.95	\$89,537
<b>SUBTOTAL</b>				<b>\$0</b>		<b>\$63,306</b>			<b>1225.69</b>		<b>\$87,307</b>		<b>\$150,613</b>

**DIVISION 10 - SPECIALTIES**

toilet partitions	10.0	ea	0.00	0	325.00	3,250	2.300	1	23.00	\$79.39	1,826	508	\$5,076
privacy screens	10.0	ea	0.00	0	165.000	1,650	2.100	1	21.00	\$79.39	1,667	331.71	\$3,317
grab bars	10.0	ea	0.00	0	51.000	510	2.000	1	20.00	\$79.39	1,588	209.78	\$2,098
undercounter lav piping protection	8.0	ea	0.00	0	100.000	800	2.000	1	16.00	\$79.39	1,270	258.78	\$2,070
soap dispensers	8.0	ea	0.00	0	66.000	528	.800	1	6.40	\$79.39	508	129.51	\$1,036
toilet tissue dispensers	10.0	ea	0.00	0	85.000	850	1.000	1	10.00	\$79.39	794	164.39	\$1,644
paper towel dispensers	8.0	ea	0.00	0	155.000	1,240	.800	1	6.40	\$79.39	508	218.51	\$1,748
waste receptacles	4.0	ea	0.00	0	185.000	740	.800	1	3.20	\$79.39	254	248.51	\$994
full mirrors	4.0	ea	0.00	0	750.000	3,000	.800	1	3.20	\$79.39	254	813.51	\$3,254
sanitary napkin dispenser	1.0	ea	0.00	0	140.000	140	.530	1	0.54	\$79.39	43	182.87	\$183
sanitary napkin disposal	1.0	ea	0.00	0	140.000	140	.530	1	0.54	\$79.39	43	182.87	\$183
<b>SUBTOTAL</b>				<b>\$0</b>		<b>\$12,848</b>			<b>110.28</b>		<b>\$8,755</b>		<b>\$21,603</b>

<b>TOTAL DIRECT COST</b>				<b>\$0</b>		<b>\$76,154</b>			<b>1335.97</b>		<b>\$96,062</b>		<b>\$172,216</b>
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**HAZMAT REMOVAL COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HAZARDOUS MATERIALS - PER HANGAR

PREPARED BY: WAP  
 FOR: LLT

10/20/2011

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	HOURS			TOTAL LABOR RATE
TOTAL DIRECT COST, MATL & LAB				\$0		\$9,781			840		\$62,195.66	\$71,977
REGIONAL FACTOR			10.00%	\$0	\$0.10	\$978						\$978
FREIGHT			10.00%	\$0	\$0.00	\$0						\$0
OVER TIME - SOME COMPLEXITY										12.50%	\$7,774.46	\$7,774
										15.00%	\$9,329.35	\$9,329
<b>SUBTOTAL</b>				\$0		\$10,759					\$62,195.66	\$90,059
<u>CONTRACTOR OVER HEAD</u>		15.0%										\$13,509
<b>SUBTOTAL</b>												\$103,568
<u>CONTRACTOR PROFIT</u>		10.0%										\$10,357
<b>SUBTOTAL</b>												\$113,924
<b>CIVIL CONTRACT TOTAL</b>												\$113,924

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	HOURS			TOTAL LABOR RATE	LABOR COST
<b>DIRECT COSTS BY CSI DIVISIONS</b>													
<b><u>DIVISION 2 - SITE WORK</u></b>													
<b>02088 ACM ABATEMENT</b>													
<b>CLASS 1 ACM REMOVAL</b>													
TSI PIPE INSULATION	250	LF		\$1.00	\$250		0.750	1	187.50	\$74.06	\$13,887	\$56.55	\$14,137
Mastic - Wall	255	SF		\$1.50	\$383		0.100	1	25.50	\$74.06	\$1,889	\$8.91	\$2,271
AIR MONITORING	1	EACH		\$150.00	\$150		11.000	1	11.00	\$74.06	\$815	\$964.71	\$965
<b>CLASS II ACM REMOVAL</b>													
Vinyl Asbestos Tile + Mastic	4,800	SF		\$0.75	\$3,600		0.040	1	192.00	\$74.06	\$14,220	\$3.71	\$17,820
Asbestos Wrapped Wiring	1,000	LF		\$0.65	\$650		0.033	1	33.00	\$74.06	\$2,444	\$3.09	\$3,094
PREPARE ABATEMENT WORK PLANS	1	LS		\$350.00	\$350						\$0	\$350.00	\$350
				\$0	\$0								
<b>CLEARANCE AIR MONITORING</b>	1	EACH		\$150.00	\$150		10.000	1	10.00	\$74.06	\$741	\$890.65	\$891
<b>MOB/DEMOB</b>	1	EACH		\$1,000.00	\$1,000							\$1,000.00	\$1,000
<b>LANDFILL DISPOSAL (ACM TONS)</b>	3	each		\$600.00	\$1,800							\$600.00	\$1,800
<b>SUBTOTAL</b>				\$0	\$8,333				459.00		\$33,996		\$42,328
<b>LEAD BASE PAINT REMOVAL</b>													
Paint on Concrete Floors	300	sf		\$1.50	\$450		0.750	1	225.00	\$74.06	\$16,665	\$57.05	\$17,115
Paint on Trim / Windows / Doors	905	lf		\$0.75	\$679		0.150	1	135.75	\$74.06	\$10,054	\$11.86	\$10,733
<b>SUBTOTAL</b>				\$0	\$1,129				360.75	\$74.06	\$26,719		\$27,848
Fluorescent Bulbs	180	ea		\$0	\$180		8.000	1	8.00	\$74.06	\$593	\$4.29	\$773
Lead Acid Batteries	10	ea		\$0	\$100		4.000	1	4.00	\$74.06	\$296	\$39.63	\$396
High Intensity Lighting (Bays)	40	ea		\$1.00	\$40		8.000	1	8.00	\$74.06	\$593	\$15.81	\$633
<b>SUBTOTAL</b>				\$0	\$320				20.00		\$1,481		\$1,801
<b>DIRECT COST</b>				\$0	\$9,781				839.75		\$62,196		\$71,977



**CIVIL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGERS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: CIVIL CONSTRUCTION ESTIMATE- ALL ALTS WITH POV PARKING

PREPARED BY: LLT

10/19/2011

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE
TOTAL DIRECT COST, MATL & LAB			\$141,620.84		\$806,909.00			3,622		\$290,755.37	\$1,239,285
REGIONAL FACTOR		10.00%	\$14,162.08	\$0.10	\$80,690.90						\$94,853
FREIGHT		10.00%	\$14,162.08	\$0.00	\$0.00						\$14,162
OVER TIME - SOME COMPLEXITY								12.50%	\$36,344.42		\$36,344
								15.00%	\$43,613.31		\$43,613
<b>SUBTOTAL</b>			\$169,945.01		\$887,599.90					\$290,755.37	\$1,428,258
CONTRACTOR OVER HEAD	15.0%										\$214,239
<b>SUBTOTAL</b>											\$1,642,497
CONTRACTOR PROFIT	10.0%										\$164,250
<b>SUBTOTAL</b>											\$1,806,746
<b>CIVIL CONTRACT TOTAL</b>											\$1,806,746

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE
<b>DIRECT COSTS BY CSI DIVISIONS</b>											
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>											
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>											
TRAFFIC CONTROL + MAINT.	90 DAY			\$200.00	\$18,000.00					\$200.00	\$18,000
PERMANENT CONSTRUCTION SIGNING	1 SGN-DY	\$3.50	\$3.50	\$0.00	\$0.00	0.001	1	0.00	\$79.39	\$0.08	\$3.58
FIELD OFFICE	3 Months	\$350.00	\$1,050.00	\$0.00	\$0.00					\$0.00	\$350.00
MOB/DEMOB	2 Each	\$1,000.00	\$2,000.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$1,000.00
SUPERINTENDENT	90 DAY	\$90.20	\$8,118.00	\$0.00	\$0.00	8.000	1	720.00	\$79.39	\$57,159.04	\$725.30
<b>SUBTOTAL</b>			\$11,171.50		\$18,000.00			720.00		\$57,159.12	\$86,331
<b>DIVISION 2 - SITE WORK</b>											
<b>02200 - SITE DEMOLITION</b>											
9 YARD DUMP, DRIVER INCLUDED	630 HR	\$60.00	\$37,800.00	\$0.00	\$0.00	0.000	1	0.00	\$76.64	\$0.00	\$60.00
DUMPSTER PICK	40 EA	\$90.00	\$3,600.00	\$0.00	\$0.00	0.000	1	0.00	\$93.91	\$0.00	\$90.00
DUMPSTER RENTAL	120 DAY	\$60.00	\$7,200.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$60.00
HAUL MTRL OUT	230 TRIP	\$30.00	\$6,900.00	\$0.00	\$0.00	0.500	1	115.00	\$83.54	\$9,606.56	\$71.77
REMOVE AND RESET HYDRANT	4 Each	\$237.00	\$948.00	\$0.00	\$0.00	4.000	1	20.00	\$77.87	\$1,557.46	\$626.37
<b>SUBTOTAL</b>			\$56,448.00		\$0.00			135.00		\$11,164.02	\$67,612
<b>02300 EARTHWORK</b>											
02310-AREA GRADING	7,538 SY	\$0.28	\$2,110.64		\$0.00	0.010	1	75.38	\$82.97	\$6,253.93	\$1.11
STRUCTURAL FILL, COMPACT, IN-PLACE	1,000 CY	\$1.00	\$1,000.00	\$8.00	\$8,000.00	0.060	1	60.00	\$79.88	\$4,793.07	\$13.79
LOADING, 5CY, LOADER	2,513 CY	\$0.35	\$879.55	\$0.00	\$0.00	0.800	1	2010.40	\$82.97	\$166,793.72	\$66.72
COMPATION, VIBRATING ROLLER, RIDING, 2 X	1,000 CY	\$0.16	\$160.00	\$0.00	\$0.00	0.006	1	6.00	\$82.97	\$497.79	\$63.48
REMOVE 14" CONCRETE	2,513 CY	\$25.00	\$62,825.00	\$0.00	\$0.00						\$63.48
<b>SUBTOTAL</b>			\$66,975.19		\$8,000.00			2151.78		\$178,338.52	\$253,314
<b>02580- ELECTRICAL STRUCTURES</b>											
HEADBOLT HTR. OUT, WOOD POST ONLY	12 EA	\$14.00	\$168.00	\$27.00	\$324.00	0.500	1	6.00	\$73.72	\$442.34	\$77.86
NEW LIGHT POLE BASE	8 EA			\$500.00	\$4,000.00				\$73.72		\$500.00
GROUNDING POINTS/ TIE-DOWNS	4 EA	\$50.00	\$200.00	\$200.00	\$800.00	1.000	1	4.00	\$73.72	\$294.89	\$323.72
CONDUIT TRENCHING, BEDDING, BACKFILL	350 LF	\$1.16	\$406.00	\$0.63	\$220.50	0.017	1	5.95	\$76.80	\$456.98	\$3.10
<b>SUBTOTAL</b>			\$774.00		\$5,344.50			15.95		\$1,194.21	\$7,313
<b>PIPE TRENCHING AND BACKFILL</b>											
PIPE TRENCHING AND BACKFILL	125 CY	\$1.87	\$233.75	\$0.00	\$0.00	0.035	1	4.38	\$82.97	\$362.97	\$4.77
CATCH BASIN	1 EA	\$118.00	\$118.00	\$1,500.00	\$1,500.00	15.000	1	15.00	\$76.80	\$1,152.06	\$2,770.06
3/4" GALV. THAW PIPE	210 LF	\$1.22	\$256.20	\$8.00	\$1,680.00	0.024	1	5.04	\$75.26	\$379.33	\$11.03
<b>SUBTOTAL</b>			\$607.95		\$3,180.00			24.42		\$1,894.36	\$5,682
<b>02750-CONCRETE PAVEMENT</b>											
EXPANSION JOINTS (BACKER ROD W/SEAL)	2,100 LF	\$0.00	\$0.00	\$1.10	\$2,310.00	0.036	1	75.60	\$54.63	\$4,130.03	\$3.07
TRANSVERSE SAWCUTS	2,100 LF	\$0.31	\$651.00	\$0.34	\$714.00	0.100	1	210.00	\$73.72	\$15,481.80	\$8.02
CONCRETE PAVEMENT, 14" THICK	7,540 SY	\$0.40	\$3,016.00	\$100.00	\$754,000.00	0.029	1	218.66	\$76.70	\$16,771.98	\$102.62
PARKING PAINT STRIPING, 4" (POV)	870 LF	\$0.02	\$17.40	\$0.25	\$217.50	0.030	1	26.10	\$74.21	\$1,936.86	\$2.50
<b>SUBTOTAL</b>			\$3,684.40		\$757,241.50			530.36		\$38,320.67	\$799,247
<b>02800-SITE IMPROVEMENTS</b>											
LANSAPING BOULDERS	35 EA	\$50.00	\$1,750.00	\$300.00	\$10,500.00	0.500	1	17.50	\$73.72	\$1,290.15	\$386.86
24" R1-1. STOP	2 EA	\$7.70	\$15.40	\$65.00	\$130.00	0.457	1	0.91	\$77.78	\$71.09	\$108.24
PST SIGN POST	1 EA	\$4.00	\$4.00	\$65.00	\$65.00	0.229	1	0.23	\$51.23	\$11.73	\$80.73
BOLLARDS	16 EA	\$11.90	\$190.40	\$278.00	\$4,448.00	1.600	1	25.60	\$51.23	\$1,311.49	\$371.87
<b>SUBTOTAL</b>			\$1,959.80		\$15,143.00			44.24		\$2,684.46	\$19,787
<b>COLUMN TOTATLS:</b>			\$141,620.84		\$806,909.00			3621.75		\$290,755.37	\$1,239,285



**MECHANICAL CONSTRUCTION COST ESTIMATE**

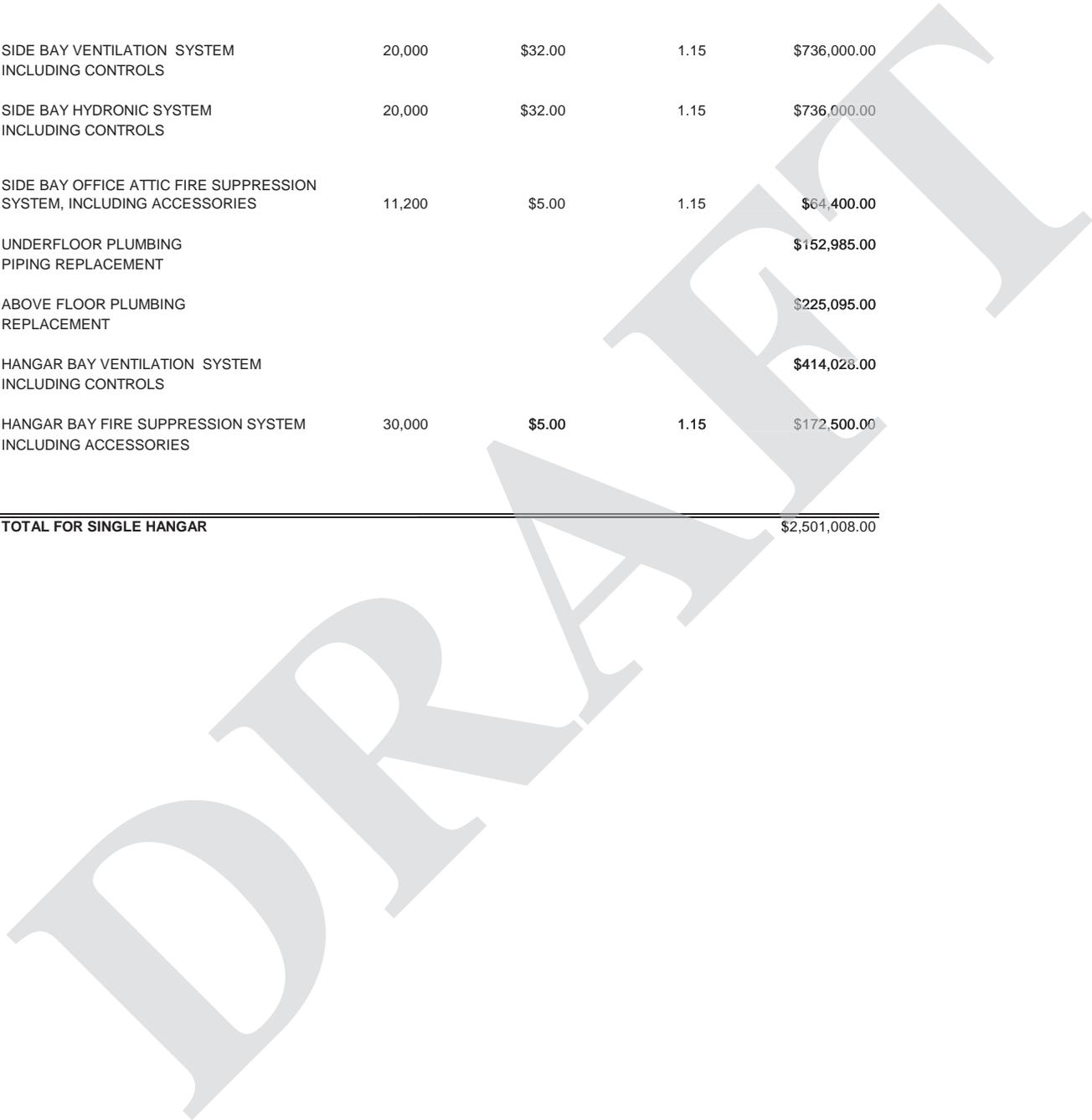
PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: FIXED SIMULATOR TRAINING

PREPARED BY: RJR  
 FOR: JMM

19-Oct-11

**MECHANICAL ESTIMATE SUMMARY**

SQUARE FOOTAGE COSTS:	SQ.FT	COST/SQ.FT	ESCALATION FACTOR	TOTAL
SIDE BAY VENTILATION SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY HYDRONIC SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY OFFICE ATTIC FIRE SUPPRESSION SYSTEM, INCLUDING ACCESSORIES	11,200	\$5.00	1.15	\$64,400.00
UNDERFLOOR PLUMBING PIPING REPLACEMENT				\$152,985.00
ABOVE FLOOR PLUMBING REPLACEMENT				\$225,095.00
HANGAR BAY VENTILATION SYSTEM INCLUDING CONTROLS				\$414,028.00
HANGAR BAY FIRE SUPPRESSION SYSTEM INCLUDING ACCESSORIES	30,000	\$5.00	1.15	\$172,500.00
<b>TOTAL FOR SINGLE HANGAR</b>				<b>\$2,501,008.00</b>





**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: UNDERFLOOR PIPING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$45,750			722.60		\$49,240		\$94,990
REGIONAL FACTOR (MEANS)	10.0%				\$4,575							\$4,575
FREIGHT	10.0%				\$4,575							\$4,575
OVERTIME	12.5%									\$6,155		\$6,155
COMPLEXITY	15.0%									\$7,386		\$7,386
<b>SUBTOTAL</b>			\$0		\$54,900					\$62,781		\$117,680
CONTRACTORS OVERHEAD	15.0%											\$17,652
CONTRACTORS PROFIT	15.0%											\$17,652
<b>SUBTOTAL</b>												\$152,985
<b>MECHANICAL CONTRACT TOTAL</b>											<b>\$152,985</b>	

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>WASTE &amp; VENT SYSTEM</b>												
<b>PIPING</b>												
4" CAST IRON	600 Lin.Ft	\$0	\$0	\$16.33	\$9,800	0.29	1	174.60	\$69.06	\$12,057	36.4	\$21,857
FITTINGS	1 Elbow/20'		\$0	\$1.13	\$677	0.40	1	12.00	\$69.06	\$829		\$1,506
TRENCH DRAIN	200 Lin.Ft	\$0	\$0	\$96	\$19,200	1.00	1	200	\$67.82	\$13,565	163.8	\$32,765
CONCRETE DEMO	2800 Sq.Ft	\$0	\$0	\$0.24	\$672	0.06	1	168	\$67.82	\$11,395	4.3	\$12,067
CONCRETE PATCH & TRENCH	2800 Each	\$0	\$0	\$5.5	\$15,400	0.06	1	168	\$67.82	\$11,395	9.6	\$26,795
<b>COLUMN TOTALS:</b>			\$0		\$45,750			722.60		\$49,240		\$94,990



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: ABOVE GRADE PLUMBING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ MULT UNIT FACT	TOTAL HRS.	LABOR RATE	LABOR COST			
TOTAL DIRECT COST, MATL & LAB.			\$0		\$37,887			1,460.47		\$100,145		\$138,032
REGIONAL FACTOR (MEANS)	10.0%				\$3,789							\$3,789
FREIGHT	10.0%				\$3,789							\$3,789
OVERTIME	12.5%									\$12,518		\$12,518
COMPLEXITY	15.0%									\$15,022		\$15,022
SUBTOTAL			\$0		\$45,464					\$127,685		\$173,150
CONTRACTORS OVERHEAD	15.0%											\$25,972
CONTRACTORS PROFIT	15.0%											\$25,972
SUBTOTAL												\$225,095
<b>MECHANICAL CONTRACT TOTAL</b>											<b>\$225,095</b>	

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ MULT UNIT FACT	TOTAL HRS.	LABOR RATE	LABOR COST			
<b>PLUMBING FIXTURES</b>												
TANK, WALL, 1 PIECE	3 Each	\$0	\$0	\$579.84	\$1,740	10.20	3	91.80	\$69.06	\$6,339	2693.0	\$8,079
FLUSH VALVE, WALL	4 Each	\$0	\$0	\$410.45	\$1,642	13.40	3	160.80	\$69.06	\$11,104	3186.5	\$12,746
WALL HUNG LAV	4 Each	\$0	\$0	\$853.47	\$3,414	12.00	3	144.00	\$69.06	\$9,944	3339.5	\$13,358
SERVICE, FLOOR, STONE	2 Each	\$0	\$0	\$650.20	\$1,300	16.30	3	97.80	\$69.06	\$6,754	4027.0	\$8,054
WALL SS, SINGLE COOLER	2 Each	\$0	\$0	\$963.57	\$1,927	10.00	3	60.00	\$69.06	\$4,143	3035.3	\$6,071
SHOWER	2 Each	\$0	\$0	\$865.19	\$1,730	16.00	3	96.00	\$69.06	\$6,629	4179.9	\$8,360
7360 BT EYEWASH, SS	1 Each	\$0	\$0	\$183.72	\$184	8.00	2	16.00	\$69.06	\$1,105	1288.6	\$1,289
8300 SHOWER/EYEWASH, SS	4 Each	\$0	\$0	\$658.02	\$2,632	8.00	2	64.00	\$69.06	\$4,420	1762.9	\$7,052
9202 TEMPERING VALVE	2 Each	\$0	\$0	\$1,710.00	\$3,420	4.00	2	16.00	\$69.06	\$1,105	2262.4	\$4,525
TEMPERING VALVE PANEL	2 Each	\$0	\$0	\$510.00	\$1,020	2.00	2	8.00	\$69.06	\$552	786.2	\$1,572
<b>DOMESTIC WATER MAINS</b>												
1" TYPE 'L' COPPER	200 Lin.Ft	\$0	\$0	\$5.88	\$1,176	0.12	1	23.60	\$69.06	\$1,630	14.0	\$2,806
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$41	0.50	1	5.00	\$69.06	\$345		\$386
2" TYPE 'L' COPPER	150 Lin.Ft	\$0	\$0	\$16.64	\$2,496	0.19	1	28.50	\$69.06	\$1,968	29.8	\$4,464
FITTINGS:	1 Elbow/20'	\$0	\$0	\$17.33	\$130	0.73	1	5.45	\$69.06	\$377		\$507
2 1/2" GALV. STEEL	200 Lin.Ft	\$0	\$0	\$18.40	\$3,679	0.26	1	51.60	\$69.06	\$3,563	36.2	\$7,242
FITTINGS:	1 Elbow/20'	\$0	\$0	\$12.68	\$127	0.89	1	8.89	\$69.06	\$614		\$741
<b>COMPRESSED AIR PIPING</b>												
3/4" BLACK STEEL	480 Lin.Ft	\$0	\$0	\$2.73	\$1,310	0.13	1	62.88	\$69.06	\$4,342	11.8	\$5,653
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.11	\$99	0.57	1	13.70	\$69.06	\$946		\$1,045
2" BLACK STEEL	550 Lin.Ft	\$0	\$0	\$8.32	\$4,576	0.25	1	137.50	\$69.06	\$9,495	25.6	\$14,071
FITTINGS:	1 Elbow/20'	\$0	\$0	\$14.56	\$400	0.89	1	24.48	\$69.06	\$1,690		\$2,091
<b>FIXTURE PIPING</b>												
3/4" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$4.11	\$1,233	0.11	3	94.50	\$69.06	\$6,526	25.9	\$7,759
FITTINGS:	1 Elbow/20'	\$0	\$0	\$1.62	\$24	0.42	1	6.32	\$69.06	\$436		\$460
1" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$5.88	\$1,764	0.12	3	106.20	\$69.06	\$7,334	30.3	\$9,098
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$61	0.50	1	7.50	\$69.06	\$518		\$579
<b>INSULATION - HYDRONIC SYSTEM</b>												
1" CW INSULATION	200 Lin.Ft	\$0	\$0	\$1.20	\$240	0.08	2	32	\$63.60	\$2,035	11.4	\$2,275
FITTINGS:	15% Allow	\$0	\$0		\$36		1	5	\$63.60	\$305		\$341
2" CW INSULATION	250 Lin.Ft	\$0	\$0	\$2.77	\$693	0.09	2	45	\$63.60	\$2,862	14.2	\$3,555
FITTINGS:	15% Allow	\$0	\$0		\$104		1	7	\$63.60	\$429		\$533
2 1/2" CW INSULATION	200 Lin.Ft	\$0	\$0	\$3.00	\$600	0.09	2	36	\$63.60	\$2,290	14.4	\$2,890
FITTINGS:	15% Allow	\$0	\$0		\$90		1	5	\$63.60	\$343		\$433
<b>COLUMN TOTALS:</b>			<b>\$0</b>		<b>\$37,887</b>			<b>1460.47</b>		<b>\$100,145</b>		<b>\$138,032</b>



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HANGAR BAY VENTILATION

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

MECHANICAL CONTRACTOR	DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST
			UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.		
	TOTAL DIRECT COST, MATL & LAB.			\$0		\$87,606		2,491.14		\$167,338	\$254,944
	REGIONAL FACTOR (MEANS)	10.0%				\$8,761					\$8,761
	FREIGHT	10.0%				\$8,761					\$8,761
	OVERTIME	12.5%								\$20,917	\$20,917
	COMPLEXITY	15.0%								\$25,101	\$25,101
	<b>SUBTOTAL</b>			\$0		\$105,127				\$213,357	\$318,483
	CONTRACTORS OVERHEAD	15.0%									\$47,772
	CONTRACTORS PROFIT	15.0%									\$47,772
	<b>SUBTOTAL</b>										\$414,028
	<b>MECHANICAL CONTRACT TOTAL</b>										<b>\$414,028</b>

MECHANICAL DIRECT COST ITEM	DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST		
			UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.			LABOR RATE	LABOR COST
<b>EQUIPMENT</b>													
	16,000 CFM SUPPLY FAN	2 Each	\$0	\$0	\$23000	\$46,000	200.00	1	400	\$67.82	\$27,130	36564.9	\$73,130
	8,000 CFM PROPELLER FAN	4 Each	\$0	\$0	\$2700	\$10,800	30.00	1	120	\$67.82	\$8,139	4734.7	\$18,939
	ELECTRICAL CONNECTION	6 Each	\$0	\$0	\$500	\$3,000	30.00	1	180	\$67.82	\$12,208	2534.7	\$15,208
	18" SUPPLY FAN PLATFORM	2 Each	\$0	\$0	\$500	\$1,000	40.00	1	80	\$67.82	\$5,426	3213.0	\$6,426
<b>PIPING</b>													
	2" TYPE L' COPPER	240 Lin.Ft	\$0	\$0	\$15.71	\$3,771	0.19	1	45.60	\$69.06	\$3,149	28.8	\$6,920
	FITTINGS	1 Elbow/20'	\$0	\$0	\$0.95	\$227	0.40	1	4.80	\$69.06	\$331		\$559
	3" BLACK STEEL	600 Lin.Ft	\$0	\$0	\$14.50	\$8,697	0.37	1	223.20	\$69.06	\$15,413	40.2	\$24,110
	FITTINGS	1 Elbow/20'	\$0	\$0	\$26.65	\$800	2.30	1	69.00	\$69.06	\$4,765		\$5,564
	2" HYDRONIC INSULATION	240 Lin.Ft	\$0	\$0	\$2.77	\$665	0.09	1	22	\$63.60	\$1,374	8.5	\$2,039
	FITTINGS	15% Allow	\$0	\$0	\$100	\$100		1	3	\$63.60	\$206		\$306
	3" HYDRONIC INSULATION	600 Lin.Ft	\$0	\$0	\$3.54	\$2,124	0.10	1	60	\$63.60	\$3,816	9.9	\$5,940
	FITTINGS	15% Allow	\$0	\$0	\$319	\$319		1	9	\$63.60	\$572		\$891
<b>DUCTWORK</b>													
	36" dia.	400 Lin.Ft	\$0	\$0	\$7.75	\$3,100	1.55	1	620	\$67.82	\$42,051	112.9	\$45,151
	110" SEMI-PERIMETER	80 Lin.Ft	\$0	\$0	\$33.67	\$2,693	3.13	1	250	\$67.82	\$16,963	245.7	\$19,656
	2" RIGID INSULATION	1500 Sq.Ft	\$0	\$0	\$1.26	\$1,890	0.13	2	390	\$63.60	\$24,804	17.8	\$26,694
	12"X48" SUPPLY REGISTERS	20 Each	\$0	\$0	\$121	\$2,420	0.73	1	15	\$67.82	\$990	170.5	\$3,410
<b>COLUMN TOTALS:</b>				<b>\$0</b>		<b>\$87,606</b>			<b>2491.14</b>		<b>\$167,338</b>		<b>\$254,944</b>



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: FIXED SIMULATOR TRAINING

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	ELECTRICAL CONTRACTOR	No. UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.						\$565,337			7,724.7		\$596,589		\$1,161,926
REGIONAL FACTOR (MEANS)	10.0%					\$56,534							\$56,534
FREIGHT	10.0%					\$56,534							\$56,534
OVERTIME	12.5%										\$74,574		\$74,574
COMPLEXITY	15.0%										\$89,488		\$89,488
SUBTOTAL						\$678,404					\$760,651		\$1,439,055
CONTRACTOR'S OVERHEAD	15.0%												\$215,858
CONTRACTOR'S PROFIT	10.0%												\$143,906
SUBTOTAL													\$1,798,819
<b>ELECTRICAL CONTRACT TOTAL</b>												<b>\$1,798,819</b>	

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	ELECTRICAL DIRECT COST ITEM	No. UNITS	UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>CONDUIT - E.M.T.</b>													
1/2" E.M.T.	17,230	Lin.Ft	\$0	\$0	\$0.87	\$15,065.91	4.5	100	775.4	\$77.30	\$59,935	\$6.97	\$75,000
FITTINGS & ASSEMBLY	100%	Matl	\$0	\$0		\$15,065.91	50%	Lab	387.7	\$77.30	\$29,967		\$45,033
3/4" E.M.T.	2,585	Lin.Ft	\$0	\$0	\$1.76	\$4,559.83	5.0	100	129.2	\$77.30	\$9,989	\$11.17	\$14,549
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$6,839.75	75%	Lab	96.9	\$77.30	\$7,492		\$14,332
1 1/4" E.M.T.	200	Lin.Ft	\$0	\$0	\$4.60	\$919.00	6.2	100	12.4	\$77.30	\$959	\$19.87	\$1,878
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$1,378.50	75%	Lab	9.3	\$77.30	\$719		\$2,097
<b>CONDUIT - FLEX</b>													
1/2" FLEX	100	Lin.Ft	\$0	\$0	\$0.98	\$98.16	4.0	100	4.0	\$77.30	\$309	\$6.11	\$407
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$49.08	50%	Lab	2.0	\$77.30	\$155		\$204
3/4" LIQ. TIGHT	100	Lin.Ft	\$0	\$0	\$4.17	\$417.00	5.0	100	5.0	\$77.30	\$387	\$12.05	\$804
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$208.50	50%	Lab	2.5	\$77.30	\$193		\$402
<b>CONDUIT - R.S.C.</b>													
2" R.S.C.	200	Lin.Ft	\$0	\$0	\$17.06	\$3,411.58	11.0	100	22.0	\$77.30	\$1,701	\$25.56	\$5,112
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$1,705.79	40%	Lab	8.8	\$77.30	\$680	\$11.93	\$2,386
3" R.S.C.	500	Lin.Ft	\$0	\$0	\$17.06	\$8,528.95	20.0	100	100.0	\$77.30	\$7,730	\$32.52	\$16,259
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$4,264.48	40%	Lab	40.0	\$77.30	\$3,092	\$14.71	\$7,356
<b>CONDUCTORS</b>													
12 AWG THHN	65,324	Lin.Ft	\$0	\$0	\$0.34	\$22,239.04	6.0	1000	391.9	\$77.30	\$30,297	\$0.80	\$52,536
10 AWG THHN	9,799	Lin.Ft	\$0	\$0	\$0.54	\$5,274.03	7.0	1000	68.6	\$77.30	\$5,302	\$1.08	\$10,576
4/0 AWG THHN	3,000	Lin.Ft	\$0	\$0	\$12.28	\$36,829.26	29.0	1000	87.0	\$77.30	\$6,725	\$14.52	\$43,554
500 MCM XHW	2,000	Lin.Ft	\$0	\$0	\$32.90	\$65,797.52	48.0	1000	96.0	\$77.30	\$7,421	\$36.61	\$73,218
<b>MULTI-OUTLET ASSEMBLY</b>													
WIREFOLD 3000	600	Lin.Ft	\$0	\$0	\$3.50	\$2,100.00	0.5	1	300.0	\$77.30	\$23,190	\$42.15	\$25,290
<b>RECEPTACLES</b>													
DUPLEX RECEPTACLE	480	Each	\$0	\$0	\$8.00	\$3,840.00	1.5	1	720.0	\$77.30	\$55,656	\$123.95	\$59,496
QUAD RECEPTACLE	40	Each	\$0	\$0	\$15.00	\$600.00	1.5	1	60.0	\$77.30	\$4,638	\$130.95	\$5,238
GFI RECEPTACLE	24	Each	\$0	\$0	\$25.00	\$600.00	1.5	1	36.0	\$77.30	\$2,783	\$140.95	\$3,383
WP GFCI RECEPTACLE	12	Each	\$0	\$0	\$45.00	\$540.00	1.5	1	18.0	\$77.30	\$1,391	\$160.95	\$1,931
<b>LIGHTING</b>													
TYPE 'A1'	37	Each	\$0	\$0	\$120.00	\$4,440.00	1.5	1	55.5	\$77.30	\$4,290	\$235.95	\$8,730
TYPE 'A2'	176	Each	\$0	\$0	\$130.00	\$22,880.00	1.5	1	264.0	\$77.30	\$20,407	\$245.95	\$43,287
TYPE 'C2'	23	Each	\$0	\$0	\$100.00	\$2,300.00	1.5	1	34.5	\$77.30	\$2,667	\$215.95	\$4,967
TYPE 'EX'	48	Each	\$0	\$0	\$85.00	\$4,080.00	1.5	1	72.0	\$77.30	\$5,566	\$200.95	\$9,646
TYPE 'I4'	32	Each	\$0	\$0	\$1,200.00	\$38,400.00	3.0	1	96.0	\$77.30	\$7,421	\$1,431.90	\$45,821
EXTERIOR LIGHTING	1	L.S.	\$0	\$0	\$20,000.00	\$20,000.00	400.0	1	400.0	\$77.30	\$30,920	\$50,920.00	\$50,920



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 2  
 DESCRIPTION: FIXED SIMULATOR TRAINING

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION ELECTRICAL CONTRACTOR	QUANTITY		EQUIPMENT		MATERIAL		LABOR				TOTAL		
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>MOTORS</b>													
SINGLE PH MOTOR CONN.	12	Each	\$0	\$0	\$27.00	\$324.00	1.0	1	12.0	\$77.30	\$928	\$104.30	\$1,252
30A TT SWITCH	12	Each	\$0	\$0	\$35.00	\$420.00	1.5	1	18.0	\$77.30	\$1,391	\$150.94	\$1,811
THREE PH MOTOR CONN.	8	Each	\$0	\$0	\$15.00	\$120.00	2.0	1	16.0	\$77.30	\$1,237	\$169.60	\$1,357
COMB STARTER	8	Each	\$0	\$0	\$675.00	\$5,400.00	6.0	1	48.0	\$77.30	\$3,710	\$1,138.80	\$9,110
<b>DISTRIBUTION PANELBOARDS</b>													
NEW DIST PNL '480V 1200A'	1	Each	\$0	\$0	\$17,910.80	\$17,910.80	24.0	1	24.0	\$77.30	\$1,855	\$19,766	\$19,766
NEW DIST PNL '208V 800A'	4	Each	\$0	\$0	\$11,604.00	\$46,416.00	24.0	1	96.0	\$77.30	\$7,421	\$13,459	\$53,837
<b>BRANCH CIRCUIT PANELBOARDS</b>													
NEW BRANCH PNL '208V 225A'	4	Each	\$0	\$0	\$2,520.48	\$10,081.92	24.0	1	96.0	\$77.30	\$7,421	\$4,376	\$17,503
NEW BRANCH PNL '480V 100A'	2	Each	\$0	\$0	\$3,719.20	\$7,438.40	24.0	1	48.0	\$77.30	\$3,710	\$5,574	\$11,149
<b>TRANSFORMERS</b>													
300 kVA 480V-208Y/120V	4	Each	\$0	\$0	\$16,754.40	\$67,017.60	16.0	1	64.0	\$77.30	\$4,947	\$17,991.20	\$71,965
<b>FIRE ALARM AND MNS</b>													
FIRE ALARM SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000.00	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
MNS SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000.00	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
<b>NETWORK SYSTEMS</b>													
EQUIPMENT RACK	2	Each	\$0	\$0	\$250.00	\$500.00	8.0	1	16.0	\$77.30	\$1,237	\$868.40	\$1,737
CAT 6 CABLING	9,600	Lin.Ft	\$0	\$0	\$0.36	\$3,456.00	10.0	1000	96.0	\$77.30	\$7,420	\$1.13	\$10,876
DATA OUTLETS	240	Each	\$0	\$0	\$8.00	\$1,920.00	1.5	1	360.0	\$77.30	\$27,828	\$123.95	\$29,748
TERMINATE & TEST	0%	Matl	\$0	\$0	\$0.00	\$0.00	50% Lab		180.0	\$74.36	\$13,386		\$13,386
GROUND BUS	2	Each	\$0	\$0	\$150.00	\$300.00	2.0	1	4.0	\$77.30	\$309	\$304.59	\$609
PATCH PANELS	8	Each	\$0	\$0	\$200.00	\$1,600.00	4.0	1	32.0	\$77.30	\$2,473	\$509.18	\$4,073
<b>MISCELANEOUS</b>													
FIXED SIMULATOR CONNECT	16	Allow	\$0	\$0	\$2,000.00	\$32,000.00	40.0	1	640.0	\$77.30	\$49,472	\$5,092.00	\$81,472
<b>DEMOLITION</b>													
ELECTRICAL DEMO	1	Allow	\$0	\$0	\$6,000.00	\$6,000.00	480.0	1	480	\$77.30	\$37,102	\$43,101.95	\$43,102
<b>COLUMN TOTALS:</b>				\$0		\$565,337			7,724.7		\$596,589		\$1,161,926

# COST ESTIMATE

## ALTERNATIVE 3 - MORALE SUPPORT GYMNASIUM



### PROJECT CONSTRUCTION COST ESTIMATE

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: SUMMARY - BASE BID

15-Oct-11

Prepared by: JMM

DESCRIPTION	QUANTITY	UNIT	HRS/ UNIT	LABOR RATE	LABOR COST	TOTAL
GENERAL CONTRACTOR						
ARCHITECTURAL BASIC REHAB TOTAL						\$10,505,341
ARCHITECTURAL ALTERN. 3 TOTAL						\$1,519,580
<b>SUBCONTRACTOR WORK</b>						
HAZ MAT CONTRACTOR					\$113,924	\$113,924
CIVIL SITE WORK CONTRACTOR					\$1,806,746	\$1,806,746
STRUCTURAL CONTRACTORS					\$1,850,000	\$1,850,000
MECHANICAL CONTRACTORS & FIRE PROTECTION CONTRACTOR					\$2,817,258	\$2,817,258
ELECTRICAL CONTRACTOR					\$1,788,425	\$1,788,425
GEN.CONTRACTOR OHMARKUP	10.0%					\$837,635
<b>SUBTOTAL</b>						<b>\$21,238,909</b>
GENERAL CONDITIONS	15.0%					\$3,185,836
<b>SUBTOTAL</b>						<b>\$24,424,746</b>
ESTIMATING CONTINGENCY	35.0%					\$8,548,661
<b>SUBTOTAL</b>						<b>\$32,973,407</b>
ESCALATION-CONSTR.COST	15.0%	TO 2016				\$4,946,011
<b>TOTAL CONSTRUCTION COST</b>						<b>\$37,919,418</b>

**BASE BID (PER HANGER) \$37,919,418**

**+ FIRE & STAIR TOWER REPAIRS (HANGAR 2 ONLY) \$1,190,000**

#### NOTES REGARDING THE PREPARATION OF THIS COST ESTIMATE

THIS ESTIMATE IS PREPARED USING CURRENT CONSTRUCTION COSTS & ASSUMES WILL RECEIVE AN OPEN COMPETITIVE BID.

THIS ESTIMATE DOES NOT CONTAIN AN ALLOWANCE FOR NEGOTIATED NON-COMPETITIVE CONTRACTS.

THIS ESTIMATE HAS AN ESCALATION ALLOWANCE.

THIS ESTIMATE DOES NOT HAVE AN ALLOWANCE TO TREAT / REMOVE ANY HAZARDOUS MATERIALS OR CONTAMINATED SOIL.

THIS ESTIMATE DOES NOT INCLUDE ANY PLAN CHECK FEES CHARGED BY THE STATE OF ALASKA OR ANY OTHER ENTITY CLAIMING JURISDICTION OVER THE WORK PAID DIRECTLY BY THE OWNER.

THIS ESTIMATE DOES NOT INCLUDE THE A/E FEES, SHOP EQUIPMENT OR COSTS FOR ANY WORK NOT INDICATED.

THIS ESTIMATE IS BASED ON A NORMAL WORK WEEK WITH SOME PROVISIONS FOR OVERTIME.

ESTIMATING CONTINGENCY - AN ALLOWANCE FOR CONSTRUCTION DOCUMENT REQUIREMENTS THAT ARE NOT INCLUDED

EITHER THE 2011 R.S. MEANS FACILITIES CONSTRUCTION COST DATA MANUAL, THE 2011 R.S. MEANS ASSEMBLIES COST DATA MANUAL, OR PAST HISTORICAL DATA HAVE BEEN USED AS RESOURCES TO COMPILE THIS ESTIMATE.



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR											
DESCRIPTION	%	EQUIPMENT COSTS		MATERIAL COSTS		LABOR HOURS			LABOR COSTS	MATERIAL & LABOR	
TOTAL DIRECT COST, MATL & LAB			\$21,107		\$2,135,504		56727		\$4,565,146		\$6,721,757
REGIONAL FACTOR (MEANS)	10.0%				\$213,550						\$213,550
FREIGHT	10.0%				\$213,550						\$213,550
OVERTIME	12.5%								\$570,643		\$570,643
COMPLEXITY	15.0%								\$684,772		\$684,772
<b>SUBTOTAL</b>			\$21,107		\$2,562,605				\$5,820,561		\$8,404,273
CONTRACTORS OVERHEAD	15.0%										\$1,260,641
CONTRACTORS PROFIT	10.0%										\$840,427
<b>SUBTOTAL</b>											\$10,505,341
<b>ARCHITECTURAL CONTRACT TOTAL</b>											<b>\$ 10,505,341</b>

DIRECT COSTS BY CSI DIVISIONS

**DIVISION 2 - SITE WORK**

**BUILDING**

demo finishes to studs-ext. walls	40,200	sf	0.00	0	0.000	0	.040	1	1608	\$73.72	118,546	3	\$118,546
demo walls- interior	5,000	sf	0.00	0	0.000	0	.040	1	200	\$73.72	14,745	3	\$14,745
demo roof epdm	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof recovery board	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof insul. (below deck)	44,880	sf	0.00	0	0.000	0	.013	1	583	\$73.72	43,013	1	\$43,013
demo metal siding	32,850	lf	0.00	0	0.000	0	.030	1	986	\$73.72	72,654	2	\$72,654
demo metal flashing	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo wood fascia	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo concrete - support bays	5,000	sf	0.00	0	0.600	3,000	.050	1	250	\$73.72	18,431	4	\$21,431
demo concrete curbs at ext.dr.s.	1	ls	0.00	0	550.000	550	18.000	1	18	\$73.72	1,327	1877	\$1,877
demo mortar conc.-restrooms	450	sf	0.00	0	0.600	270	.210	1	95	\$73.72	6,967	16	\$7,237
excavate restroom floors	50	bcy	1.40	70	0.000	0	2.660	1	133	\$73.72	9,805	198	\$9,875
demo entry canopy roof	3	ea	0.00	0	760.000	2,280	.035	1	0	\$73.72	8	763	\$2,288
demo int.wall finish- support bays	12,500	sf	0.00	0	0.000	0	.160	1	2000	\$73.72	147,446	12	\$147,446
demo tile	20,000	lf	0.00	0	0.000	0	.020	1	400	\$73.72	29,489	1	\$29,489
demo carpet	10,000	sf	0.00	0	0.000	0	.025	1	250	\$73.72	18,431	2	\$18,431
demo ceramic tile-floor	988	ls	0.00	0	0.000	0	.042	1	41	\$73.72	3,059	3	\$3,059
demo ceramic tile-wall	1,480	ea	0.00	0	0.000	0	.042	1	62	\$73.72	4,583	3	\$4,583
demo exterior drs & frames	16	ea	0.00	0	0.000	0	1.460	1	23	\$73.72	1,722	108	\$1,722
demo interior drs & frames	70	ea	0.00	0	0.000	0	1.500	1	105	\$73.72	7,741	111	\$7,741
demo hangar drs & frames(26'x72')	1,950	sf	1.10	2,145	0.000	0	.140	1	273	\$73.72	20,126	11	\$22,271
demo exterior windows	63	ea	0.00	0	0.000	0	1.500	1	95	\$73.72	6,967	111	\$6,967
demo interior relites	14	ea	0.00	0	0.000	0	.500	1	7	\$73.72	516	37	\$516
remove interior stair handrails	150	lf	0.00	0	0.000	0	.200	1	30	\$73.72	2,212	15	\$2,212
<b>SUBTOTAL</b>				\$2,215		\$6,100			9891		\$763,404		\$771,719

**DIVISION 3 - CONCRETE**

concrete floor- hangar-2" topping	30,400	sf	0.01	304	2.500	76,000	.022	1	669	\$79.38	53,092	4	\$129,396
concrete floor- 1st flr RRs/Lockrms	988	sf	0.01	10	2.500	2,470	.022	1	22	\$79.38	1,725	4	\$4,205
concrete floor- support bays-6"	5,000	sf	0.01	50	2.500	12,500	.022	1	110	\$79.38	8,732	4	\$21,282
<b>SUBTOTAL</b>				\$364		\$90,970			801		\$63,549		\$154,883

**DIVISION 5 - METAL**

floor exp.jts. (exist.jts.)	800	lf	0.01	8	25.000	20,000	.211	1	169	\$79.38	13,400	42	\$33,408
hangar dr.ext.rf.platforms-rebuild	240	sf	0.00	0	15.000	3,600	.010	1	2	\$79.39	191	16	\$3,791
hangar dr.ext.rf.guardrail-rebuild	184	lf	0.00	0	32.000	5,888	.200	1	37	\$79.39	2,921	48	\$8,809
stairs interior handrails- repair	140	lf	0.00	0	32.000	4,480	.200	1	28	\$79.39	2,223	48	\$6,703
catwalks - platforms - repair	2,500	sf	0.00	0	22.000	55,000	.010	1	25	\$79.39	1,985	23	\$56,985
catwalks - structure - repair	2,500	sf	0.00	0	28.000	70,000	.025	1	63	\$79.39	4,962	30	\$74,962
catwalks - guardrails - repair	200	lf	0.00	0	32.000	6,400	.200	1	40	\$79.39	3,176	48	\$9,576
catwalks - ladders/stairs	150	risers	0.00	0	250.000	37,500	.050	1	8	\$79.39	595	254	\$38,095
misc. connections	1	ls	0.00	0	2500.000	2,500	.000	1	0	\$79.39	0	2500	\$2,500
<b>SUBTOTAL</b>				\$8		\$205,368			371		\$29,452		\$234,828



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE	LABOR COST
<b>DIVISION 7 - THERMAL AND MOISTURE</b>													
EPDM roof - hangar-R90	24,880	sf	0.00	0	8.150	202,772	.351	1	8733	\$86.43	754,795	38	\$957,567
EPDM roof - support bays-R90	20,000	sf	0.00	0	8.150	163,000	.351	1	7020	\$86.43	606,748	38	\$769,748
waterprfg/insul./flashing- wall base	3,200	sf	0.00	0	0.400	1,280	.400	1	1280	\$79.39	101,616	32	\$102,896
roof fascia	1,500	lf	0.00	0	2.260	3,390	.016	1	24	\$86.43	2,074	4	\$5,464
metal flashing	1,500	lf	0.00	0	2.100	3,150	.016	1	24	\$86.43	2,074	3	\$5,224
conc.flr.moisture barrier- hangar	30,400	sf	0.00	0	1.600	48,640	.030	1	912	\$79.38	72,398	4	\$121,038
conc.flr.moisture barrier- supp.bays	50,400	sf	0.00	0	1.600	80,640	.030	1	1512	\$79.38	120,028	4	\$200,668
new framing (hangar dr.overhang)	1	ls	0.00	0	5000.000	5,000	250.000	1	250	\$79.38	19,846	24846	\$24,846
new sheathing (hangar dr.overhang)	600	sf	0.00	0	1.260	756	.020	1	12	\$79.38	953	3	\$1,709
bird screen (hangar dr.overhang)	1,200	sf	0.00	0	0.300	360	.260	1	312	\$79.38	24,768	21	\$25,128
metal roof (hangar dr.overhang)	1,200	sf	0.00	0	3.500	4,200	.350	1	420	\$86.43	36,301	34	\$40,501
entry canopy roofs	3	ea	0.00	0	800.000	2,400	15.000	1	45	\$86.43	3,889	2096	\$6,289
snow guards	2,400	lf	0.00	0	2.600	6,240	.060	1	144	\$86.43	12,446	8	\$18,686
new insulated mtl.wall panels-R49	32,850	sf	0.00	0	25.000	821,250	.060	1	1971	\$79.39	156,473	30	\$977,723
new wall batts-R21	32,850	sf	0.00	0	0.360	11,820	.350	1	11498	\$79.39	912,758	28	\$924,584
<b>SUBTOTAL</b>				\$0		\$1,354,904			34156		\$2,827,167		\$4,182,071
<b>DIVISION 8 - DOORS &amp; WINDOWS</b>													
ADA barrier free entrances	10	ea	0.00	0	1000.000	10,000	32.000	1	320	\$79.39	25,404	3540	\$35,404
doors- ext.insul.-drs.,fr.,hardware	16	ea	0.00	0	1800.000	28,800	3.000	1	48	\$79.39	3,811	2038	\$32,611
doors- hangar int.-drs.,fr.,hdwre	22	ea	0.00	0	1325.000	29,150	3.000	1	66	\$79.39	5,240	1563	\$34,390
doors- nonrated supp.spaces int.	22	ea	0.00	0	1200.000	26,400	2.000	1	44	\$79.39	3,493	1359	\$29,893
doors- rated supp.spaces int.	26	ea	0.00	0	1500.000	39,000	2.000	1	52	\$79.39	4,128	1659	\$43,128
replace hangar doors (26'x75')	3,900	sf	0.00	0	28.000	109,200	.090	1	351	\$79.39	27,865	35	\$137,065
ext. insulated access drs., frames	16	ea	0.00	0	410.000	6,560	.900	1	14	\$79.39	1,143	481	\$7,703
new energy efficient windows	63	ea	0.00	0	800.000	50,400	.900	1	57	\$79.39	4,501	871	\$54,901
new relites to hangar from sidebays	192	sf	0.00	0	22.500	4,320	.178	1	34	\$79.39	2,713	37	\$7,033
<b>SUBTOTAL</b>				\$0		\$303,830			986		\$78,298		\$382,128
<b>DIVISION 9 - FINISHES</b>													
upgrade hangar walls to 2 hr.rated	26,752	sf	0.00	0	2.600	69,555	.120	1	3210	\$79.39	254,853	12	\$324,408
upgrade int.walls occup.separation	1,650	sf	0.00	0	0.800	1,320	.700	1	1155	\$79.39	91,693	56	\$93,013
upgrade ext.walls support bays	20,100	sf	0.00	0	2.700	54,270	.090	1	1809	\$79.39	143,612	10	\$197,882
vapor retarder - roof	44,880	sf	0.00	0	0.032	1,436	.003	1	135	\$79.39	10,689	0	\$12,125
vapor retarder - exterior walls	32,850	sf	0.00	0	0.032	1,051	.003	1	99	\$79.39	7,824	0	\$8,875
replace improperly framed walls	1	ls	0.00	0	5500.000	5,500	255.000	1	255	\$79.39	20,244	25744	\$25,744
floor clean and prep	70,400	sf	0.00	0	0.026	1,830	.009	1	634	\$71.36	45,217	1	\$47,047
rubber base	3,950	sf	0.00	0	0.470	1,857	.035	1	138	\$71.36	9,866	3	\$11,723
int.exit stair rubber tile	200	sf	0.00	0	5.000	1,000	.065	1	13	\$71.36	928	10	\$1,928
seal concrete - hangar floor	30,400	sf	0.00	0	0.070	2,128	.004	1	122	\$79.38	9,653	0	\$11,781
epoxy paint concrete- support bays	19,550	sf	0.00	0	0.026	508	.066	1	1290	\$71.36	92,082	5	\$92,590
paint ceilings - support bays	20,000	sf	0.00	0	0.030	600	.015	1	300	\$69.29	20,788	1	\$21,388
patch, prep walls for finish	1	ls	0	0	4100.000	4,100	125.000	1	125	\$69.29	8,662	12762	\$12,762
paint walls up to 12'- support bays	39,500	sf	0.00	0	0.011	435	.022	1	869	\$69.29	60,216	2	\$60,650
paint walls above 12'- hangar	14,820	sf	1.00	14,820	0.014	207	.015	1	222	\$69.29	15,404	2	\$30,431
repaint large hangar numbers	400	sf	1.00	400	0.014	6	.015	1	6	\$69.29	416	2	\$821
hangar draft curtains	3,300	sf	1.00	3,300	5.800	19,140	.030	1	99	\$79.39	7,859	9	\$30,299
<b>SUBTOTAL</b>				\$18,520		\$164,943			10480		\$800,004		\$983,467
<b>DIVISION 10 - SPECIALTIES</b>													
interior signs	50	ea	0.00	0	80.000	4,000	.600	1	30	\$79.39	2,382	128	\$6,382
window blinds	63	ea	0.00	0	3.000	189	.015	1	1	\$79.39	75	4	\$264
fire extinguishers	20	ea	0.00	0	260.000	5,200	.550	1	11	\$74.06	815	301	\$6,015
<b>SUBTOTAL</b>				\$0		\$9,389			42		\$3,271		\$12,660
<b>TOTAL DIRECT COST</b>				\$21,107		\$2,135,504			56727		\$4,565,146		\$6,721,757



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: FT. WW HANGARS 2 & 3 CONDITION ASSESSMENT  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: ARCHITECTURAL - ALTERNATIVE 3

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR												
DESCRIPTION	%	EQUIPMENT COSTS		MATERIAL COSTS		LABOR HOURS		LABOR COSTS		MATERIAL & LABOR		
TOTAL DIRECT COST, MATL & LAB			\$0		\$498,378		6778		\$484,400			\$982,778
REGIONAL FACTOR (MEANS)	10.0%				\$49,838							\$49,838
FREIGHT	10.0%				\$49,838							\$49,838
OVERTIME	12.5%								\$60,550			\$60,550
COMPLEXITY	15.0%								\$72,660			\$72,660
<b>SUBTOTAL</b>			\$0		\$598,054				\$617,611			\$1,215,664
CONTRACTORS OVERHEAD	15.0%											\$182,350
CONTRACTORS PROFIT	10.0%											\$121,566
<b>SUBTOTAL</b>												\$1,519,580
<b>ARCHITECTURAL CONTRACT TOTAL</b>											<b>\$ 1,519,580</b>	

**DIRECT COSTS BY CSI DIVISIONS**

**DIVISION 6 - WOOD & PLASTICS**

racquetball ct walls-lam.plastic	7,200.0	sf	0.00	0	9.500	68,400	.008	1	58	\$71.36	4,111	10.07	\$72,511
<b>SUBTOTAL</b>				\$0		\$68,400			58		\$4,111		\$72,511

**DIVISION 9 - FINISHES**

ceramic tile - floor 2 colors	2,600.0	sf	0.00	0	6.600	17,160	.088	1	229	\$70.16	16,052	12.77	\$33,212
ceramic tile - wall 2 colors, 4' w'scot	10,400.0	sf	0.00	0	4.900	50,960	.075	1	780	\$70.16	54,721	10.16	\$105,681
synthetic athletic flooring	31,500.0	SF	0.00	0	8.00	252,000	.140	1	4410	\$71.36	314,718	17.99	\$566,718
racquetball court wood flooring	2,400.0	SF	0.00	0	8.00	19,200	.140	1	336	\$71.36	23,979	17.99	\$43,179
training activity synthetic flooring	5,200.0	SF	0.00	0	9.00	46,800	.140	1	728	\$71.36	51,953	18.99	\$98,753
<b>SUBTOTAL</b>				\$0		\$386,120			6483		\$461,423		\$847,543

**DIVISION 10 - SPECIALTIES**

boxing rings, floor level	2.0	ea	0.00	0	7000.00	14,000	.50	1	1	\$79.39	79	7,039.69	\$14,079
toilet partitions	10.0	ea	0.00	0	325.00	3,250	2.30	1	23	\$79.39	1,826	507.59	\$5,076
privacy screens	10.0	ea	0.00	0	165.00	1,650	2.10	1	21	\$79.39	1,667	331.71	\$3,317
shower curtain rod & curtain	2.0	ea	0.00	0	120.00	240	2.10	1	4	\$79.39	333	286.71	\$573
retractable shower seat	2.0	ea	0.00	0	385.00	770	1.10	1	2	\$79.39	175	472.33	\$945
lockers	100.0	ea	0.00	0	160.00	16,000	1.20	1	120	\$79.39	9,527	255.27	\$25,527
grab bars	10.0	ea	0.00	0	51.00	510	2.00	1	20	\$79.39	1,588	209.78	\$2,098
undercounter lav piping protection	8.0	ea	0.00	0	100.00	800	2.00	1	16	\$79.39	1,270	258.78	\$2,070
soap dispensers	8.0	ea	0.00	0	66.00	528	.80	1	6	\$79.39	508	129.51	\$1,036
toilet tissue dispensers	10.0	ea	0.00	0	85.00	850	1.00	1	10	\$79.39	794	164.39	\$1,644
paper towel dispensers	8.0	ea	0.00	0	155.00	1,240	.80	1	6	\$79.39	508	218.51	\$1,748
waste receptacles	4.0	ea	0.00	0	185.00	740	.80	1	3	\$79.39	254	248.51	\$994
full mirrors	4.0	ea	0.00	0	750.00	3,000	.80	1	3	\$79.39	254	813.51	\$3,254
sanitary napkin dispenser	1.0	ea	0.00	0	140.00	140	.53	1	1	\$79.39	42	182.08	\$182
sanitary napkin disposal	1.0	ea	0.00	0	140.00	140	.53	1	1	\$79.39	42	182.08	\$182
<b>SUBTOTAL</b>				\$0		\$43,858			238		\$18,867		\$62,725

<b>TOTAL DIRECT COST</b>				\$0		\$498,378			6778		\$484,400		\$982,778
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**HAZMAT REMOVAL COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HAZARDOUS MATERIALS - PER HANGAR

PREPARED BY: WAP  
 FOR: LLT

10/20/2011

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	HOURS			TOTAL LABOR RATE
TOTAL DIRECT COST, MATL & LAB				\$0		\$9,781			840		\$62,195.66	\$71,977
REGIONAL FACTOR			10.00%	\$0	\$0.10	\$978						\$978
FREIGHT			10.00%	\$0	\$0.00	\$0						\$0
OVER TIME - SOME COMPLEXITY										12.50%	\$7,774.46	\$7,774
										15.00%	\$9,329.35	\$9,329
<b>SUBTOTAL</b>				\$0		\$10,759					\$62,195.66	\$90,059
<u>CONTRACTOR OVER HEAD</u>		15.0%										\$13,509
<b>SUBTOTAL</b>												\$103,568
<u>CONTRACTOR PROFIT</u>		10.0%										\$10,357
<b>SUBTOTAL</b>												\$113,924
<b>CIVIL CONTRACT TOTAL</b>												\$113,924

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	HOURS			TOTAL LABOR RATE	LABOR COST
<b>DIRECT COSTS BY CSI DIVISIONS</b>													
<b><u>DIVISION 2 - SITE WORK</u></b>													
<b>02088 ACM ABATEMENT</b>													
<b>CLASS 1 ACM REMOVAL</b>													
TSI PIPE INSULATION	250	LF		\$1.00	\$250		0.750	1	187.50	\$74.06	\$13,887	\$56.55	\$14,137
Mastic - Wall	255	SF		\$1.50	\$383		0.100	1	25.50	\$74.06	\$1,889	\$8.91	\$2,271
AIR MONITORING	1	EACH		\$150.00	\$150		11.000	1	11.00	\$74.06	\$815	\$964.71	\$965
<b>CLASS II ACM REMOVAL</b>													
Vinyl Asbestos Tile + Mastic	4,800	SF		\$0.75	\$3,600		0.040	1	192.00	\$74.06	\$14,220	\$3.71	\$17,820
Asbestos Wrapped Wiring	1,000	LF		\$0.65	\$650		0.033	1	33.00	\$74.06	\$2,444	\$3.09	\$3,094
PREPARE ABATEMENT WORK PLANS	1	LS		\$350.00	\$350						\$0	\$350.00	\$350
				\$0	\$0								
<b>CLEARANCE AIR MONITORING</b>	1	EACH		\$150.00	\$150		10.000	1	10.00	\$74.06	\$741	\$890.65	\$891
<b>MOB/DEMOB</b>	1	EACH		\$1,000.00	\$1,000							\$1,000.00	\$1,000
<b>LANDFILL DISPOSAL (ACM TONS)</b>	3	each		\$600.00	\$1,800							\$600.00	\$1,800
<b>SUBTOTAL</b>				\$0	\$8,333				459.00		\$33,996		\$42,328
<b>LEAD BASE PAINT REMOVAL</b>													
Paint on Concrete Floors	300	sf		\$1.50	\$450		0.750	1	225.00	\$74.06	\$16,665	\$57.05	\$17,115
Paint on Trim / Windows / Doors	905	lf		\$0.75	\$679		0.150	1	135.75	\$74.06	\$10,054	\$11.86	\$10,733
<b>SUBTOTAL</b>				\$0	\$1,129				360.75	\$74.06	\$26,719		\$27,848
Fluorescent Bulbs	180	ea		\$0	\$180		8.000	1	8.00	\$74.06	\$593	\$4.29	\$773
Lead Acid Batteries	10	ea		\$0	\$100		4.000	1	4.00	\$74.06	\$296	\$39.63	\$396
High Intensity Lighting (Bays)	40	ea		\$1.00	\$40		8.000	1	8.00	\$74.06	\$593	\$15.81	\$633
<b>SUBTOTAL</b>				\$0	\$320				20.00		\$1,481		\$1,801
<b>DIRECT COST</b>				\$0	\$9,781				839.75		\$62,196		\$71,977



**CIVIL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: CIVIL CONSTRUCTION ESTIMATE- ALL ALTS WITH POV PARKING

PREPARED BY: LLT

10/19/2011

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE
TOTAL DIRECT COST, MATL & LAB			\$141,620.84		\$806,909.00			3,622		\$290,755.37	\$1,239,285
REGIONAL FACTOR		10.00%	\$14,162.08	\$0.10	\$80,690.90						\$94,853
FREIGHT		10.00%	\$14,162.08	\$0.00	\$0.00						\$14,162
OVER TIME - SOME COMPLEXITY								12.50%	\$36,344.42		\$36,344
								15.00%	\$43,613.31		\$43,613
<b>SUBTOTAL</b>			<b>\$169,945.01</b>		<b>\$887,599.90</b>					<b>\$290,755.37</b>	<b>\$1,428,258</b>
CONTRACTOR OVER HEAD	15.0%										\$214,239
<b>SUBTOTAL</b>											<b>\$1,642,497</b>
CONTRACTOR PROFIT	10.0%										\$164,250
<b>SUBTOTAL</b>											<b>\$1,806,746</b>
<b>CIVIL CONTRACT TOTAL</b>											<b>\$1,806,746</b>

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE
<b>DIRECT COSTS BY CSI DIVISIONS</b>											
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>											
TRAFFIC CONTROL + MAINT.	90 DAY			\$200.00	\$18,000.00					\$200.00	\$18,000
PERMANENT CONSTRUCTION SIGNING	1 SGN-DY	\$3.50	\$3.50	\$0.00	\$0.00	0.001	1	0.00	\$79.39	\$0.08	\$3.58
FIELD OFFICE	3 Months	\$350.00	\$1,050.00	\$0.00	\$0.00					\$0.00	\$350.00
MOB/DEMOB	2 Each	\$1,000.00	\$2,000.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$1,000.00
SUPERINTENDENT	90 DAY	\$90.20	\$8,118.00	\$0.00	\$0.00	8.000	1	720.00	\$79.39	\$57,159.04	\$725.30
<b>SUBTOTAL</b>			<b>\$11,171.50</b>		<b>\$18,000.00</b>			720.00		<b>\$57,159.12</b>	<b>\$86,331</b>
<b>DIVISION 2 - SITE WORK</b>											
<b>02200 - SITE DEMOLITION</b>											
9 YARD DUMP, DRIVER INCLUDED	630 HR	\$60.00	\$37,800.00	\$0.00	\$0.00	0.000	1	0.00	\$76.64	\$0.00	\$60.00
DUMPSTER PICK	40 EA	\$90.00	\$3,600.00	\$0.00	\$0.00	0.000	1	0.00	\$93.91	\$0.00	\$90.00
DUMPSTER RENTAL	120 DAY	\$60.00	\$7,200.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$60.00
HAUL MTRL OUT	230 TRIP	\$30.00	\$6,900.00	\$0.00	\$0.00	0.500	1	115.00	\$83.54	\$9,606.56	\$71.77
REMOVE AND RESET HYDRANT	4 Each	\$237.00	\$948.00	\$0.00	\$0.00	4.000	1	20.00	\$77.87	\$1,557.46	\$626.37
<b>SUBTOTAL</b>			<b>\$56,448.00</b>		<b>\$0.00</b>			135.00		<b>\$11,164.02</b>	<b>\$67,612</b>
<b>02300 EARTHWORK</b>											
02310-AREA GRADING	7,538 SY	\$0.28	\$2,110.64	\$0.00	\$0.00	0.010	1	75.38	\$82.97	\$6,253.93	\$1.11
STRUCTURAL FILL, COMPACT, IN-PLACE	1,000 CY	\$1.00	\$1,000.00	\$8.00	\$8,000.00	0.060	1	60.00	\$79.88	\$4,793.07	\$13.79
LOADING, 5CY, LOADER	2,513 CY	\$0.35	\$879.55	\$0.00	\$0.00	0.800	1	2010.40	\$82.97	\$166,793.72	\$66.72
COMPATION, VIBRATING ROLLER, RIDING, 2 X	1,000 CY	\$0.16	\$160.00	\$0.00	\$0.00	0.006	1	6.00	\$82.97	\$497.79	\$63.48
REMOVE 14" CONCRETE	2,513 CY	\$25.00	\$62,825.00	\$0.00	\$0.00		1				\$63,483
<b>SUBTOTAL</b>			<b>\$66,975.19</b>		<b>\$8,000.00</b>			2151.78		<b>\$178,338.52</b>	<b>\$253,314</b>
<b>02580- ELECTRICAL STRUCTURES</b>											
HEADBOLT HTR. OUT, WOOD POST ONLY	12 EA	\$14.00	\$168.00	\$27.00	\$324.00	0.500	1	6.00	\$73.72	\$442.34	\$77.86
NEW LIGHT POLE BASE	8 EA			\$500.00	\$4,000.00				\$73.72		\$500.00
GROUNDING POINTS/ TIE-DOWNS	4 EA	\$50.00	\$200.00	\$200.00	\$800.00	1.000	1	4.00	\$73.72	\$294.89	\$323.72
CONDUIT TRENCHING, BEDDING, BACKFILL	350 LF	\$1.16	\$406.00	\$0.63	\$220.50	0.017	1	5.95	\$76.80	\$456.98	\$3.10
<b>SUBTOTAL</b>			<b>\$774.00</b>		<b>\$5,344.50</b>			15.95		<b>\$1,194.21</b>	<b>\$7,313</b>
<b>PIPE TRENCHING AND BACKFILL</b>											
PIPE TRENCHING AND BACKFILL	125 CY	\$1.87	\$233.75	\$0.00	\$0.00	0.035	1	4.38	\$82.97	\$362.97	\$4.77
CATCH BASIN	1 EA	\$118.00	\$118.00	\$1,500.00	\$1,500.00	15.000	1	15.00	\$76.80	\$1,152.06	\$2,770.06
3/4" GALV. THAW PIPE	210 LF	\$1.22	\$256.20	\$8.00	\$1,680.00	0.024	1	5.04	\$75.26	\$379.33	\$11.03
<b>SUBTOTAL</b>			<b>\$607.95</b>		<b>\$3,180.00</b>			24.42		<b>\$1,894.36</b>	<b>\$5,682</b>
<b>02750-CONCRETE PAVEMENT</b>											
EXPANSION JOINTS (BACKER ROD W/SEAL)	2,100 LF	\$0.00	\$0.00	\$1.10	\$2,310.00	0.036	1	75.60	\$54.63	\$4,130.03	\$3.07
TRANSVERSE SAWCUTS	2,100 LF	\$0.31	\$651.00	\$0.34	\$714.00	0.100	1	210.00	\$73.72	\$15,481.80	\$8.02
CONCRETE PAVEMENT, 14" THICK	7,540 SY	\$0.40	\$3,016.00	\$100.00	\$754,000.00	0.029	1	218.66	\$76.70	\$16,771.98	\$102.62
PARKING PAINT STRIPING, 4" (POV)	870 LF	\$0.02	\$17.40	\$0.25	\$217.50	0.030	1	26.10	\$74.21	\$1,936.86	\$2.50
<b>SUBTOTAL</b>			<b>\$3,684.40</b>		<b>\$757,241.50</b>			530.36		<b>\$38,320.67</b>	<b>\$799,247</b>
<b>02800-SITE IMPROVEMENTS</b>											
LANDSCAPING BOULDERS	35 EA	\$50.00	\$1,750.00	\$300.00	\$10,500.00	0.500	1	17.50	\$73.72	\$1,290.15	\$386.86
24" R1-1, STOP	2 EA	\$7.70	\$15.40	\$65.00	\$130.00	0.457	1	0.91	\$77.78	\$71.09	\$108.24
PST SIGN POST	1 EA	\$4.00	\$4.00	\$65.00	\$65.00	0.229	1	0.23	\$51.23	\$11.73	\$80.73
BOLLARDS	16 EA	\$11.90	\$190.40	\$278.00	\$4,448.00	1.600	1	25.60	\$51.23	\$1,311.49	\$371.87
<b>SUBTOTAL</b>			<b>\$1,959.80</b>		<b>\$15,143.00</b>			44.24		<b>\$2,684.46</b>	<b>\$19,787</b>
<b>COLUMN TOTALS:</b>			<b>\$141,620.84</b>		<b>\$806,909.00</b>			3621.75		<b>\$290,755.37</b>	<b>\$1,239,285</b>



**MECHANICAL CONSTRUCTION COST ESTIMATE**

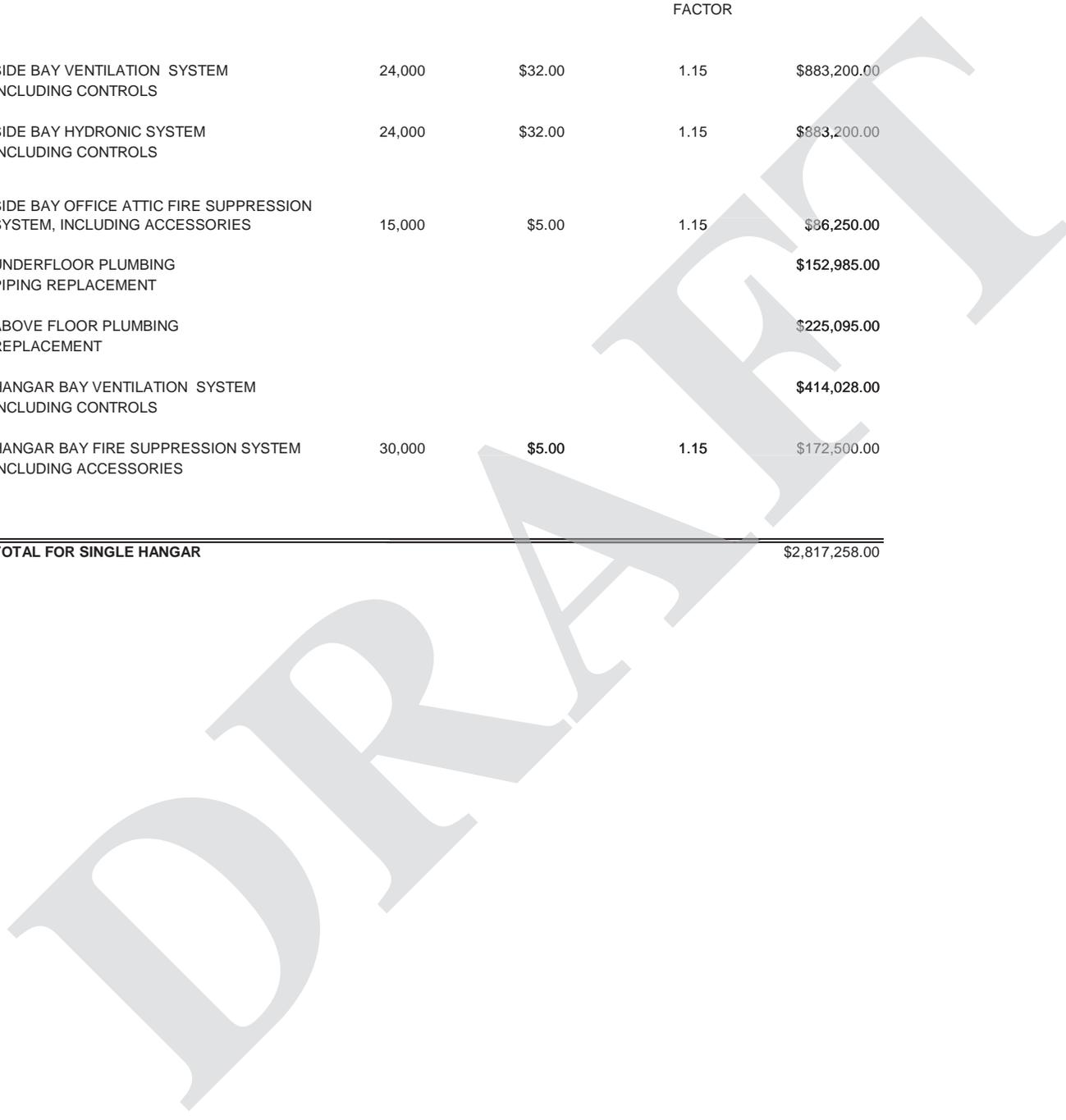
PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: MORALE SUPPORT - GYMNASIUM

PREPARED BY: RJR  
 FOR: JMM

19-Oct-11

**MECHANICAL ESTIMATE SUMMARY**

SQUARE FOOTAGE COSTS:	SQ.FT	COST/SQ.FT	ESCALATION FACTOR	TOTAL
SIDE BAY VENTILATION SYSTEM INCLUDING CONTROLS	24,000	\$32.00	1.15	\$883,200.00
SIDE BAY HYDRONIC SYSTEM INCLUDING CONTROLS	24,000	\$32.00	1.15	\$883,200.00
SIDE BAY OFFICE ATTIC FIRE SUPPRESSION SYSTEM, INCLUDING ACCESSORIES	15,000	\$5.00	1.15	\$86,250.00
UNDERFLOOR PLUMBING PIPING REPLACEMENT				\$152,985.00
ABOVE FLOOR PLUMBING REPLACEMENT				\$225,095.00
HANGAR BAY VENTILATION SYSTEM INCLUDING CONTROLS				\$414,028.00
HANGAR BAY FIRE SUPPRESSION SYSTEM INCLUDING ACCESSORIES	30,000	\$5.00	1.15	\$172,500.00
<b>TOTAL FOR SINGLE HANGAR</b>				<b>\$2,817,258.00</b>





**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: UNDERFLOOR PIPING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ MULT UNIT FACT	TOTAL LABOR HRS. RATE	LABOR COST		
TOTAL DIRECT COST, MATL & LAB.			\$0		\$45,750			722.60	\$49,240	\$94,990
REGIONAL FACTOR (MEANS)	10.0%				\$4,575					\$4,575
FREIGHT	10.0%				\$4,575					\$4,575
OVERTIME	12.5%								\$6,155	\$6,155
COMPLEXITY	15.0%								\$7,386	\$7,386
<b>SUBTOTAL</b>			\$0		\$54,900				\$62,781	\$117,680
CONTRACTORS OVERHEAD	15.0%									\$17,652
CONTRACTORS PROFIT	15.0%									\$17,652
<b>SUBTOTAL</b>										\$152,985
<b>MECHANICAL CONTRACT TOTAL</b>										<b>\$152,985</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST		
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ MULT UNIT FACT	TOTAL LABOR HRS. RATE	LABOR COST				
<b>WASTE &amp; VENT SYSTEM</b>												
<b>PIPING</b>												
4" CAST IRON	600 Lin.Ft	\$0	\$0	\$16.33	\$9,800	0.29	1	174.60	\$69.06	\$12,057	36.4	\$21,857
FITTINGS	1 Elbow/20'		\$0	\$1.13	\$677	0.40	1	12.00	\$69.06	\$829		\$1,506
TRENCH DRAIN	200 Lin.Ft	\$0	\$0	\$96	\$19,200	1.00	1	200	\$67.82	\$13,565	163.8	\$32,765
CONCRETE DEMO	2800 Sq.Ft	\$0	\$0	\$0.24	\$672	0.06	1	168	\$67.82	\$11,395	4.3	\$12,067
CONCRETE PATCH & TRENCH	2800 Each	\$0	\$0	\$5.5	\$15,400	0.06	1	168	\$67.82	\$11,395	9.6	\$26,795
<b>COLUMN TOTALS:</b>			\$0		\$45,750			722.60		\$49,240		\$94,990



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: ABOVE GRADE PLUMBING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$37,887			1,460.47		\$100,145		\$138,032
REGIONAL FACTOR (MEANS)	10.0%				\$3,789							\$3,789
FREIGHT	10.0%				\$3,789							\$3,789
OVERTIME	12.5%									\$12,518		\$12,518
COMPLEXITY	15.0%									\$15,022		\$15,022
SUBTOTAL			\$0		\$45,464					\$127,685		\$173,150
CONTRACTORS OVERHEAD	15.0%											\$25,972
CONTRACTORS PROFIT	15.0%											\$25,972
SUBTOTAL												\$225,095
MECHANICAL CONTRACT TOTAL												\$225,095

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>PLUMBING FIXTURES</b>												
TANK, WALL, 1 PIECE	3 Each	\$0	\$0	\$579.84	\$1,740	10.20	3	91.80	\$69.06	\$6,339	2693.0	\$8,079
FLUSH VALVE, WALL	4 Each	\$0	\$0	\$410.45	\$1,642	13.40	3	160.80	\$69.06	\$11,104	3186.5	\$12,746
WALL HUNG LAV	4 Each	\$0	\$0	\$853.47	\$3,414	12.00	3	144.00	\$69.06	\$9,944	3339.5	\$13,358
SERVICE, FLOOR, STONE	2 Each	\$0	\$0	\$650.20	\$1,300	16.30	3	97.80	\$69.06	\$6,754	4027.0	\$8,054
WALL SS, SINGLE COOLER	2 Each	\$0	\$0	\$963.57	\$1,927	10.00	3	60.00	\$69.06	\$4,143	3035.3	\$6,071
SHOWER	2 Each	\$0	\$0	\$865.19	\$1,730	16.00	3	96.00	\$69.06	\$6,629	4179.9	\$8,360
7360 BT EYEWASH, SS	1 Each	\$0	\$0	\$183.72	\$184	8.00	2	16.00	\$69.06	\$1,105	1288.6	\$1,289
8300 SHOWER/EYEWASH, SS	4 Each	\$0	\$0	\$658.02	\$2,632	8.00	2	64.00	\$69.06	\$4,420	1762.9	\$7,052
9202 TEMPERING VALVE	2 Each	\$0	\$0	\$1,710.00	\$3,420	4.00	2	16.00	\$69.06	\$1,105	2262.4	\$4,525
TEMPERING VALVE PANEL	2 Each	\$0	\$0	\$510.00	\$1,020	2.00	2	8.00	\$69.06	\$552	786.2	\$1,572
<b>DOMESTIC WATER MAINS</b>												
1" TYPE 'L' COPPER	200 Lin.Ft	\$0	\$0	\$5.88	\$1,176	0.12	1	23.60	\$69.06	\$1,630	14.0	\$2,806
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$41	0.50	1	5.00	\$69.06	\$345		\$386
2" TYPE 'L' COPPER	150 Lin.Ft	\$0	\$0	\$16.64	\$2,496	0.19	1	28.50	\$69.06	\$1,968	29.8	\$4,464
FITTINGS:	1 Elbow/20'	\$0	\$0	\$17.33	\$130	0.73	1	5.45	\$69.06	\$377		\$507
2 1/2" GALV. STEEL	200 Lin.Ft	\$0	\$0	\$18.40	\$3,679	0.26	1	51.60	\$69.06	\$3,563	36.2	\$7,242
FITTINGS:	1 Elbow/20'	\$0	\$0	\$12.68	\$127	0.89	1	8.89	\$69.06	\$614		\$741
<b>COMPRESSED AIR PIPING</b>												
3/4" BLACK STEEL	480 Lin.Ft	\$0	\$0	\$2.73	\$1,310	0.13	1	62.88	\$69.06	\$4,342	11.8	\$5,653
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.11	\$99	0.57	1	13.70	\$69.06	\$946		\$1,045
2" BLACK STEEL	550 Lin.Ft	\$0	\$0	\$8.32	\$4,576	0.25	1	137.50	\$69.06	\$9,495	25.6	\$14,071
FITTINGS:	1 Elbow/20'	\$0	\$0	\$14.56	\$400	0.89	1	24.48	\$69.06	\$1,690		\$2,091
<b>FIXTURE PIPING</b>												
3/4" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$4.11	\$1,233	0.11	3	94.50	\$69.06	\$6,526	25.9	\$7,759
FITTINGS:	1 Elbow/20'	\$0	\$0	\$1.62	\$24	0.42	1	6.32	\$69.06	\$436		\$460
1" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$5.88	\$1,764	0.12	3	106.20	\$69.06	\$7,334	30.3	\$9,098
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$61	0.50	1	7.50	\$69.06	\$518		\$579
<b>INSULATION - HYDRONIC SYSTEM</b>												
1" CW INSULATION	200 Lin.Ft	\$0	\$0	\$1.20	\$240	0.08	2	32	\$63.60	\$2,035	11.4	\$2,275
FITTINGS:	15% Allow	\$0	\$0	\$36	\$36	1	1	5	\$63.60	\$305		\$341
2" CW INSULATION	250 Lin.Ft	\$0	\$0	\$2.77	\$693	0.09	2	45	\$63.60	\$2,862	14.2	\$3,555
FITTINGS:	15% Allow	\$0	\$0	\$104	\$104	1	1	7	\$63.60	\$429		\$533
2 1/2" CW INSULATION	200 Lin.Ft	\$0	\$0	\$3.00	\$600	0.09	2	36	\$63.60	\$2,290	14.4	\$2,890
FITTINGS:	15% Allow	\$0	\$0	\$90	\$90	1	1	5	\$63.60	\$343		\$433
<b>COLUMN TOTALS:</b>			\$0		\$37,887			1460.47		\$100,145		\$138,032



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HANGAR BAY VENTILATION

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR						
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$87,606			2,491.14		\$167,338		\$254,944
REGIONAL FACTOR (MEANS)	10.0%				\$8,761							\$8,761
FREIGHT	10.0%				\$8,761							\$8,761
OVERTIME	12.5%									\$20,917		\$20,917
COMPLEXITY	15.0%									\$25,101		\$25,101
<b>SUBTOTAL</b>			\$0		\$105,127					\$213,357		\$318,483
CONTRACTORS OVERHEAD	15.0%											\$47,772
CONTRACTORS PROFIT	15.0%											\$47,772
<b>SUBTOTAL</b>												\$414,028
<b>MECHANICAL CONTRACT TOTAL</b>												
											<b>\$414,028</b>	

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR						
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>EQUIPMENT</b>												
16,000 CFM SUPPLY FAN	2 Each	\$0	\$0	\$23000	\$46,000	200.00	1	400	\$67.82	\$27,130	36564.9	\$73,130
8,000 CFM PROPELLER FAN	4 Each	\$0	\$0	\$2700	\$10,800	30.00	1	120	\$67.82	\$8,139	4734.7	\$18,939
ELECTRICAL CONNECTION	6 Each	\$0	\$0	\$500	\$3,000	30.00	1	180	\$67.82	\$12,208	2534.7	\$15,208
18" SUPPLY FAN PLATFORM	2 Each	\$0	\$0	\$500	\$1,000	40.00	1	80	\$67.82	\$5,426	3213.0	\$6,426
<b>PIPING</b>												
2" TYPE 'L' COPPER	240 Lin.Ft	\$0	\$0	\$15.71	\$3,771	0.19	1	45.60	\$69.06	\$3,149	28.8	\$6,920
FITTINGS	1 Elbow/20'	\$0	\$0	\$0.95	\$227	0.40	1	4.80	\$69.06	\$331		\$559
3" BLACK STEEL	600 Lin.Ft	\$0	\$0	\$14.50	\$8,697	0.37	1	223.20	\$69.06	\$15,413	40.2	\$24,110
FITTINGS	1 Elbow/20'	\$0	\$0	\$26.65	\$800	2.30	1	69.00	\$69.06	\$4,765		\$5,564
2" HYDRONIC INSULATION	240 Lin.Ft	\$0	\$0	\$2.77	\$665	0.09	1	22	\$63.60	\$1,374	8.5	\$2,039
FITTINGS	15% Allow	\$0	\$0		\$100			3	\$63.60	\$206		\$306
3" HYDRONIC INSULATION	600 Lin.Ft	\$0	\$0	\$3.54	\$2,124	0.10	1	60	\$63.60	\$3,816	9.9	\$5,940
FITTINGS	15% Allow	\$0	\$0		\$319			9	\$63.60	\$572		\$891
<b>DUCTWORK</b>												
36" dia.	400 Lin.Ft	\$0	\$0	\$7.75	\$3,100	1.55	1	620	\$67.82	\$42,051	112.9	\$45,151
110" SEMI-PERIMETER	80 Lin.Ft	\$0	\$0	\$33.67	\$2,693	3.13	1	250	\$67.82	\$16,963	245.7	\$19,656
2" RIGID INSULATION	1500 Sq.Ft	\$0	\$0	\$1.26	\$1,890	0.13	2	390	\$63.60	\$24,804	17.8	\$26,694
12"X48" SUPPLY REGISTERS	20 Each	\$0	\$0	\$121	\$2,420	0.73	1	15	\$67.82	\$990	170.5	\$3,410
<b>COLUMN TOTALS:</b>			<b>\$0</b>		<b>\$87,606</b>			<b>2491.14</b>		<b>\$167,338</b>		<b>\$254,944</b>



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: MORALE SUPPORT - GYMNASIUM

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL		
	Electrical Contractor	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.						\$611,075		7,083.6		\$547,020		\$1,158,095
REGIONAL FACTOR (MEANS)	10.0%					\$61,107						\$61,107
FREIGHT	10.0%					\$61,107						\$61,107
OVERTIME	12.5%									\$68,377		\$68,377
COMPLEXITY	15.0%									\$82,053		\$82,053
<b>SUBTOTAL</b>						\$733,290				\$697,450		\$1,430,740
CONTRACTOR'S OVERHEAD	15.0%											\$214,611
CONTRACTOR'S PROFIT	10.0%											\$143,074
<b>SUBTOTAL</b>												\$1,788,425
<b>ELECTRICAL CONTRACT TOTAL</b>												\$1,788,425

DESCRIPTION	QUANTITY	EQUIPMENT	MATERIAL		LABOR			TOTAL				
ELECTRICAL DIRECT COST ITEM	No. UNITS	UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/UNIT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST	
<b>CONDUIT - E.M.T.</b>												
1/2" E.M.T.	16,905 Lin.Ft	\$0	\$0	\$0.87	\$14,782	4.5	100	760.7	\$77.30	\$58,801	\$6.97	\$73,583
FITTINGS & ASSEMBLY	100% Matl	\$0	\$0		\$14,782	50%	Lab	380.4	\$77.30	\$29,400		\$44,182
3/4" E.M.T.	2,536 Lin.Ft	\$0	\$0	\$1.76	\$4,474	5.0	100	126.8	\$77.30	\$9,800	\$11.17	\$14,274
FITTINGS & ASSEMBLY	150% Matl	\$0	\$0		\$6,711	75%	Lab	95.1	\$77.30	\$7,350		\$14,061
1 1/4" E.M.T.	200 Lin.Ft	\$0	\$0	\$4.60	\$919	6.2	100	12.4	\$77.30	\$958	\$19.87	\$1,877
FITTINGS & ASSEMBLY	150% Matl	\$0	\$0		\$1,379	75%	Lab	9.3	\$77.30	\$719		\$2,097
<b>CONDUIT - FLEX</b>												
1/2" FLEX	100 Lin.Ft	\$0	\$0	\$0.98	\$98	4.0	100	4.0	\$77.30	\$309	\$6.11	\$407
FITTINGS & ASSEMBLY	50% Matl	\$0	\$0		\$49	50%	Lab	2.0	\$77.30	\$155		\$204
3/4" LIQ. TIGHT	100 Lin.Ft	\$0	\$0	\$4.17	\$417	5.0	100	5.0	\$77.30	\$386	\$12.05	\$803
FITTINGS & ASSEMBLY	50% Matl	\$0	\$0		\$209	50%	Lab	2.5	\$77.30	\$193		\$402
<b>CONDUIT - R.S.C.</b>												
2" R.S.C.	200 Lin.Ft	\$0	\$0	\$17.06	\$3,412	11.0	100	22.0	\$77.30	\$1,701	\$25.56	\$5,112
FITTINGS & ASSEMBLY	50% Matl	\$0	\$0		\$1,706	40%	Lab	8.8	\$77.30	\$680	\$11.93	\$2,386
3" R.S.C.	500 Lin.Ft	\$0	\$0	\$38.79	\$19,393	20.0	100	100.0	\$77.30	\$7,730	\$54.25	\$27,123
FITTINGS & ASSEMBLY	50% Matl	\$0	\$0		\$9,696	40%	Lab	40.0	\$77.30	\$3,092	\$25.58	\$12,788
<b>CONDUCTORS</b>												
12 AWG THHN	63,995 Lin.Ft	\$0	\$0	\$0.34	\$21,786	6.0	1000	384.0	\$77.30	\$29,679	\$0.80	\$51,465
10 AWG THHN	9,599 Lin.Ft	\$0	\$0	\$0.54	\$5,167	7.0	1000	67.2	\$77.30	\$5,194	\$1.08	\$10,360
4/0 AWG THHN	3,000 Lin.Ft	\$0	\$0	\$12.28	\$36,829	29.0	1000	87.0	\$77.30	\$6,725	\$14.52	\$43,554
500 MCM XHHW	2,000 Lin.Ft	\$0	\$0	\$32.90	\$65,798	48.0	1000	96.0	\$77.30	\$7,420	\$36.61	\$73,218
<b>MULTI-OULET ASSEMBLY</b>												
WIREMOLD 3000	600 Lin.Ft	\$0	\$0	\$3.50	\$2,100	0.5	1	300.0	\$77.30	\$23,189	\$42.15	\$25,289
<b>RECEPTACLES</b>												
DUPLEX RECEPTACLE	480 Each	\$0	\$0	\$8.00	\$3,840	1.5	1	720.0	\$77.30	\$55,653	\$123.94	\$59,493
QUAD RECEPTACLE	40 Each	\$0	\$0	\$15.00	\$600	1.5	1	60.0	\$77.30	\$4,638	\$130.94	\$5,238
GFI RECEPTACLE	24 Each	\$0	\$0	\$25.00	\$600	1.5	1	36.0	\$77.30	\$2,783	\$140.94	\$3,383
WP GFCI RECEPTACLE	12 Each	\$0	\$0	\$45.00	\$540	1.5	1	18.0	\$77.30	\$1,391	\$160.94	\$1,931
<b>LIGHTING</b>												
TYPE 'A1'	26 Each	\$0	\$0	\$120.00	\$3,120	1.5	1	39.0	\$77.30	\$3,015	\$235.94	\$6,135
TYPE 'A2'	136 Each	\$0	\$0	\$130.00	\$17,680	1.5	1	204.0	\$77.30	\$15,769	\$245.95	\$33,449
TYPE 'C2'	33 Each	\$0	\$0	\$100.00	\$3,300	1.5	1	49.5	\$77.30	\$3,826	\$215.95	\$7,126
TYPE 'EX'	48 Each	\$0	\$0	\$85.00	\$4,080	1.5	1	72.0	\$77.30	\$5,566	\$200.95	\$9,646
TYPE 'I4'	60 Each	\$0	\$0	\$1,200.00	\$72,000	3.0	1	180.0	\$77.30	\$13,914	\$1,431.90	\$85,914
EXTERIOR LIGHTING	1 L.S.	\$0	\$0	\$20,000.00	\$20,000	400.0	1	400.0	\$77.30	\$30,920	\$50,920.00	\$50,920
<b>MOTORS</b>												
SINGLE PH MOTOR CONN.	12 Each	\$0	\$0	\$27.00	\$324	1.0	1	12.0	\$77.30	\$928	\$104.30	\$1,252
30A TT SWITCH	12 Each	\$0	\$0	\$35.00	\$420	1.5	1	18.0	\$77.30	\$1,391	\$150.94	\$1,811
THREE PH MOTOR CONN.	8 Each	\$0	\$0	\$15.00	\$120	2.0	1	16.0	\$77.30	\$1,237	\$169.60	\$1,357
COMB STARTER	8 Each	\$0	\$0	\$675.00	\$5,400	6.0	1	48.0	\$77.30	\$3,710	\$1,138.80	\$9,110



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 3  
 DESCRIPTION: MORALE SUPPORT - GYMNASIUM

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION ELECTRICAL CONTRACTOR	QUANTITY		EQUIPMENT		MATERIAL		LABOR				TOTAL		
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/ UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b><u>DISTRIBUTION PANELBOARDS</u></b>													
NEW DIST PNL '480V 1200A'	1	Each	\$0	\$0	\$17,910.80	\$17,911	24.0	1	24.0	\$77.30	\$1,855	\$19,766	\$19,766
NEW DIST PNL '208V 800A'	1	Each	\$0	\$0	\$11,604.00	\$11,604	24.0	1	24.0	\$77.30	\$1,855	\$13,459	\$13,459
<b><u>BRANCH CIRCUIT PANELBOARDS</u></b>													
NEW BRANCH PNL '208V 225A'	4	Each	\$0	\$0	\$2,520.48	\$10,082	24.0	1	96.0	\$77.30	\$7,421	\$4,376	\$17,503
NEW BRANCH PNL '480V 100A'	2	Each	\$0	\$0	\$3,719.20	\$7,438	24.0	1	48.0	\$77.30	\$3,710	\$5,574	\$11,149
<b><u>TRANSFORMERS</u></b>													
300 kVA 480V-208Y/120V	8	Each	\$0	\$0	\$16,754.40	\$134,035	16.0	1	128.0	\$77.30	\$9,894	\$17,991.20	\$143,930
<b><u>FIRE ALARM AND MNS</u></b>													
FIRE ALARM SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
MNS SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
<b><u>NETWORK SYSTEMS</u></b>													
EQUIPMENT RACK	2	Each	\$0	\$0	\$250.00	\$500	8.0	1	16.0	\$77.30	\$1,237	\$868.40	\$1,737
CAT 6 CABLING	9,600	Lin.Ft	\$0	\$0	\$0.36	\$3,456	10.0	1000	96.0	\$77.30	\$7,420	\$1.13	\$10,876
DATA OUTLETS	240	Each	\$0	\$0	\$8.00	\$1,920	1.5	1	360.0	\$77.30	\$27,828	\$123.95	\$29,748
TERMINATE & TEST	0%	Matl	\$0	\$0	\$0	\$0	50% Lab		180.0	\$74.36	\$13,386		\$13,386
GROUND BUS	2	Each	\$0	\$0	\$150.00	\$300	2.0	1	4.0	\$77.30	\$309	\$304.59	\$609
PATCH PANELS	8	Each	\$0	\$0	\$200.00	\$1,600	4.0	1	32.0	\$77.30	\$2,473	\$509.18	\$4,073
<b><u>MISCELLANEOUS</u></b>													
RACQUETBALL COURT LIGHTING	1	Allow	\$0	\$0	\$2,500.00	\$2,500	20.0	1	20.0	\$77.30	\$1,546	\$4,046.00	\$4,046
<b><u>DEMOLITION</u></b>													
ELECTRICAL DEMO	1	Allow	\$0	\$0	\$6,000.00	\$6,000	480.0	1	480	\$77.30	\$37,102	\$43,101.95	\$43,102
<b>COLUMN TOTALS:</b>				\$0		\$611,075			7,083.6		\$547,020		\$1,158,095

# COST ESTIMATE

## ALTERNATIVE 4 - MORALE SUPPORT FIELD HOUSE



### PROJECT CONSTRUCTION COST ESTIMATE

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: SUMMARY - BASE BID

15-Oct-11

Prepared by: JMM

DESCRIPTION	QUANTITY	UNIT	COST	LABOR			TOTAL
				HRS/ UNIT	LABOR RATE	LABOR COST	
GENERAL CONTRACTOR							
ARCHITECTURAL BASIC REHAB TOTAL							\$10,505,341
ARCHITECTURAL ALTERN. 4 TOTAL							\$1,428,070
<b>SUBCONTRACTOR WORK</b>							
HAZ MAT CONTRACTOR			\$113,924				\$113,924
CIVIL SITE WORK CONTRACTOR			\$1,806,746				\$1,806,746
STRUCTURAL CONTRACTORS			\$1,850,000				\$1,850,000
MECHANICAL CONTRACTORS & FIRE PROTECTION CONTRACTOR			\$2,501,008				\$2,501,008
ELECTRICAL CONTRACTOR			\$1,685,446				\$1,685,446
GEN.CONTRACTOR OHMARKUP	10.0%					\$7,957,124	\$795,712
SUBTOTAL							\$20,686,248
GENERAL CONDITIONS	15.0%						\$3,102,937
SUBTOTAL							\$23,789,185
ESTIMATING CONTINGENCY	35.0%						\$8,326,215
SUBTOTAL							\$32,115,399
ESCALATION-CONSTR.COST	15.0%	TO 2016					\$4,817,310
<b>TOTAL CONSTRUCTION COST</b>							<b>\$36,932,709</b>

**BASE BID (PER HANGER) \$36,932,709**

**+ FIRE & STAIR TOWER REPAIRS (HANGAR 2 ONLY) \$1,190,000**

#### NOTES REGARDING THE PREPARATION OF THIS COST ESTIMATE

THIS ESTIMATE IS PREPARED USING CURRENT CONSTRUCTION COSTS & ASSUMES WILL RECEIVE AN OPEN COMPETITIVE BID.

THIS ESTIMATE DOES NOT CONTAIN AN ALLOWANCE FOR NEGOTIATED NON-COMPETITIVE CONTRACTS.

THIS ESTIMATE HAS AN ESCALATION ALLOWANCE.

THIS ESTIMATE DOES NOT HAVE AN ALLOWANCE TO TREAT / REMOVE ANY HAZARDOUS MATERIALS OR CONTAMINATED SOIL.

THIS ESTIMATE DOES NOT INCLUDE ANY PLAN CHECK FEES CHARGED BY THE STATE OF ALASKA OR ANY OTHER ENTITY CLAIMING JURISDICTION OVER THE WORK PAID DIRECTLY BY THE OWNER.

THIS ESTIMATE DOES NOT INCLUDE THE A/E FEES, SHOP EQUIPMENT OR COSTS FOR ANY WORK NOT INDICATED.

THIS ESTIMATE IS BASED ON A NORMAL WORK WEEK WITH SOME PROVISIONS FOR OVERTIME.

ESTIMATING CONTINGENCY - AN ALLOWANCE FOR CONSTRUCTION DOCUMENT REQUIREMENTS THAT ARE NOT INCLUDED

EITHER THE 2011 R.S. MEANS FACILITIES CONSTRUCTION COST DATA MANUAL, THE 2011 R.S. MEANS ASSEMBLIES COST DATA MANUAL, OR PAST HISTORICAL DATA HAVE BEEN USED AS RESOURCES TO COMPILE THIS ESTIMATE.



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR						
DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$21,107	\$2,135,504	56727	\$4,565,146	\$6,721,757
REGIONAL FACTOR (MEANS)	10.0%		\$213,550			\$213,550
FREIGHT	10.0%		\$213,550			\$213,550
OVERTIME	12.5%				\$570,643	\$570,643
COMPLEXITY	15.0%				\$684,772	\$684,772
<b>SUBTOTAL</b>		<b>\$21,107</b>	<b>\$2,562,605</b>		<b>\$5,820,561</b>	<b>\$8,404,273</b>
CONTRACTORS OVERHEAD	15.0%					\$1,260,641
CONTRACTORS PROFIT	10.0%					\$840,427
<b>SUBTOTAL</b>						<b>\$10,505,341</b>
<b>ARCHITECTURAL CONTRACT TOTAL</b>						<b>\$ 10,505,341</b>

**DIRECT COSTS BY CSI DIVISIONS**

**DIVISION 2 - SITE WORK**

**BUILDING**

demo finishes to studs-ext. walls	40,200	sf	0.00	0	0.000	0	.040	1	1608	\$73.72	118,546	3	\$118,546
demo walls- interior	5,000	sf	0.00	0	0.000	0	.040	1	200	\$73.72	14,745	3	\$14,745
demo roof epdm	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof recovery board	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof insul. (below deck)	44,880	sf	0.00	0	0.000	0	.013	1	583	\$73.72	43,013	1	\$43,013
demo metal siding	32,850	lf	0.00	0	0.000	0	.030	1	986	\$73.72	72,654	2	\$72,654
demo metal flashing	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo wood fascia	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo concrete - support bays	5,000	sf	0.00	0	0.600	3,000	.050	1	250	\$73.72	18,431	4	\$21,431
demo concrete curbs at ext.dr.s.	1	ls	0.00	0	550.000	550	18.000	1	18	\$73.72	1,327	1877	\$1,877
demo mortar conc.-restrooms	450	sf	0.00	0	0.600	270	.210	1	95	\$73.72	6,967	16	\$7,237
excavate restroom floors	50	bcy	1.40	70	0.000	0	2.660	1	133	\$73.72	9,805	198	\$9,875
demo entry canopy roof	3	ea	0.00	0	760.000	2,280	.035	1	0	\$73.72	8	763	\$2,288
demo int.wall finish- support bays	12,500	sf	0.00	0	0.000	0	.160	1	2000	\$73.72	147,446	12	\$147,446
demo tile	20,000	lf	0.00	0	0.000	0	.020	1	400	\$73.72	29,489	1	\$29,489
demo carpet	10,000	sf	0.00	0	0.000	0	.025	1	250	\$73.72	18,431	2	\$18,431
demo ceramic tile-floor	988	ls	0.00	0	0.000	0	.042	1	41	\$73.72	3,059	3	\$3,059
demo ceramic tile-wall	1,480	ea	0.00	0	0.000	0	.042	1	62	\$73.72	4,583	3	\$4,583
demo exterior drs & frames	16	ea	0.00	0	0.000	0	1.460	1	23	\$73.72	1,722	108	\$1,722
demo interior drs & frames	70	ea	0.00	0	0.000	0	1.500	1	105	\$73.72	7,741	111	\$7,741
demo hangar drs & frames(26'x72')	1,950	sf	1.10	2,145	0.000	0	.140	1	273	\$73.72	20,126	11	\$22,271
demo exterior windows	63	ea	0.00	0	0.000	0	1.500	1	95	\$73.72	6,967	111	\$6,967
demo interior relites	14	ea	0.00	0	0.000	0	.500	1	7	\$73.72	516	37	\$516
remove interior stair handrails	150	lf	0.00	0	0.000	0	.200	1	30	\$73.72	2,212	15	\$2,212
<b>SUBTOTAL</b>				<b>\$2,215</b>		<b>\$6,100</b>			<b>9891</b>		<b>\$763,404</b>		<b>\$771,719</b>

**DIVISION 3 - CONCRETE**

concrete floor- hangar-2" topping	30,400	sf	0.01	304	2.500	76,000	.022	1	669	\$79.38	53,092	4	\$129,396
concrete floor- 1st flr RRs/Lockrms	988	sf	0.01	10	2.500	2,470	.022	1	22	\$79.38	1,725	4	\$4,205
concrete floor- support bays-6"	5,000	sf	0.01	50	2.500	12,500	.022	1	110	\$79.38	8,732	4	\$21,282
<b>SUBTOTAL</b>				<b>\$364</b>		<b>\$90,970</b>			<b>801</b>		<b>\$63,549</b>		<b>\$154,883</b>

**DIVISION 5 - METAL**

floor exp.jts. (exist.jts.)	800	lf	0.01	8	25.000	20,000	.211	1	169	\$79.38	13,400	42	\$33,408
hangar dr.ext.rf.platforms-rebuild	240	sf	0.00	0	15.000	3,600	.010	1	2	\$79.39	191	16	\$3,791
hangar dr.ext.rf.guardrail-rebuild	184	lf	0.00	0	32.000	5,888	.200	1	37	\$79.39	2,921	48	\$8,809
stairs interior handrails- repair	140	lf	0.00	0	32.000	4,480	.200	1	28	\$79.39	2,223	48	\$6,703
catwalks - platforms - repair	2,500	sf	0.00	0	22.000	55,000	.010	1	25	\$79.39	1,985	23	\$56,985
catwalks- structure - repair	2,500	sf	0.00	0	28.000	70,000	.025	1	63	\$79.39	4,962	30	\$74,962
catwalks - guardrails - repair	200	lf	0.00	0	32.000	6,400	.200	1	40	\$79.39	3,176	48	\$9,576
catwalks - ladders/stairs	150	risers	0.00	0	250.000	37,500	.050	1	8	\$79.39	595	254	\$38,095
misc. connections	1	ls	0.00	0	2500.000	2,500	.000	1	0	\$79.39	0	2500	\$2,500
<b>SUBTOTAL</b>				<b>\$8</b>		<b>\$205,368</b>			<b>371</b>		<b>\$29,452</b>		<b>\$234,828</b>



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE	LABOR COST
<b>DIVISION 7 - THERMAL AND MOISTURE</b>													
EPDM roof - hangar-R90	24,880	sf	0.00	0	8.150	202,772	.351	1	8733	\$86.43	754,795	38	\$957,567
EPDM roof - support bays-R90	20,000	sf	0.00	0	8.150	163,000	.351	1	7020	\$86.43	606,748	38	\$769,748
waterprfg/insul./flashing- wall base	3,200	sf	0.00	0	0.400	1,280	.400	1	1280	\$79.39	101,616	32	\$102,896
roof fascia	1,500	lf	0.00	0	2.260	3,390	.016	1	24	\$86.43	2,074	4	\$5,464
metal flashing	1,500	lf	0.00	0	2.100	3,150	.016	1	24	\$86.43	2,074	3	\$5,224
conc.flr.moisture barrier- hangar	30,400	sf	0.00	0	1.600	48,640	.030	1	912	\$79.38	72,398	4	\$121,038
conc.flr.moisture barrier- supp.bays	50,400	sf	0.00	0	1.600	80,640	.030	1	1512	\$79.38	120,028	4	\$200,668
new framing (hangar dr.overhang)	1	ls	0.00	0	5000.000	5,000	250.000	1	250	\$79.38	19,846	24846	\$24,846
new sheathing (hangar dr.overhang)	600	sf	0.00	0	1.260	756	.020	1	12	\$79.38	953	3	\$1,709
bird screen (hangar dr.overhang)	1,200	sf	0.00	0	0.300	360	.260	1	312	\$79.38	24,768	21	\$25,128
metal roof (hangar dr.overhang)	1,200	sf	0.00	0	3.500	4,200	.350	1	420	\$86.43	36,301	34	\$40,501
entry canopy roofs	3	ea	0.00	0	800.000	2,400	15.000	1	45	\$86.43	3,889	2096	\$6,289
snow guards	2,400	lf	0.00	0	2.600	6,240	.060	1	144	\$86.43	12,446	8	\$18,686
new insulated mtl.wall panels-R49	32,850	sf	0.00	0	25.000	821,250	.060	1	1971	\$79.39	156,473	30	\$977,723
new wall batts-R21	32,850	sf	0.00	0	0.360	11,826	.350	1	11498	\$79.39	912,758	28	\$924,584
<b>SUBTOTAL</b>				\$0		\$1,354,904			34156		\$2,827,167		\$4,182,071
<b>DIVISION 8 - DOORS &amp; WINDOWS</b>													
ADA barrier free entrances	10	ea	0.00	0	1000.000	10,000	32.000	1	320	\$79.39	25,404	3540	\$35,404
doors- ext.insul.-drs.,fr.,hardware	16	ea	0.00	0	1800.000	28,800	3.000	1	48	\$79.39	3,811	2038	\$32,611
doors- hangar int.-drs.,fr.,hdwre	22	ea	0.00	0	1325.000	29,150	3.000	1	66	\$79.39	5,240	1563	\$34,390
doors- nonrated supp.spaces int.	22	ea	0.00	0	1200.000	26,400	2.000	1	44	\$79.39	3,493	1359	\$29,893
doors- rated supp.spaces int.	26	ea	0.00	0	1500.000	39,000	2.000	1	52	\$79.39	4,128	1659	\$43,128
replace hangar doors (26'x75')	3,900	sf	0.00	0	28.000	109,200	.090	1	351	\$79.39	27,865	35	\$137,065
ext. insulated access drs., frames	16	ea	0.00	0	410.000	6,560	.900	1	14	\$79.39	1,143	481	\$7,703
new energy efficient windows	63	ea	0.00	0	800.000	50,400	.900	1	57	\$79.39	4,501	871	\$54,901
new relites to hangar from sidebays	192	sf	0.00	0	22.500	4,320	.178	1	34	\$79.39	2,713	37	\$7,033
<b>SUBTOTAL</b>				\$0		\$303,830			986		\$78,298		\$382,128
<b>DIVISION 9 - FINISHES</b>													
upgrade hangar walls to 2 hr.rated	26,752	sf	0.00	0	2.600	69,555	.120	1	3210	\$79.39	254,853	12	\$324,408
upgrade int.walls occup.separation	1,650	sf	0.00	0	0.800	1,320	.700	1	1155	\$79.39	91,693	56	\$93,013
upgrade ext.walls support bays	20,100	sf	0.00	0	2.700	54,270	.090	1	1809	\$79.39	143,612	10	\$197,882
vapor retarder - roof	44,880	sf	0.00	0	0.032	1,436	.003	1	135	\$79.39	10,689	0	\$12,125
vapor retarder - exterior walls	32,850	sf	0.00	0	0.032	1,051	.003	1	99	\$79.39	7,824	0	\$8,875
replace improperly framed walls	1	ls	0.00	0	5500.000	5,500	255.000	1	255	\$79.39	20,244	25744	\$25,744
floor clean and prep	70,400	sf	0.00	0	0.026	1,830	.009	1	634	\$71.36	45,217	1	\$47,047
rubber base	3,950	sf	0.00	0	0.470	1,857	.035	1	138	\$71.36	9,866	3	\$11,723
int.exit stair rubber tile	200	sf	0.00	0	5.000	1,000	.065	1	13	\$71.36	928	10	\$1,928
seal concrete - hangar floor	30,400	sf	0.00	0	0.070	2,128	.004	1	122	\$79.38	9,653	0	\$11,781
epoxy paint concrete- support bays	19,550	sf	0.00	0	0.026	508	.066	1	1290	\$71.36	92,082	5	\$92,590
paint ceilings - support bays	20,000	sf	0.00	0	0.030	600	.015	1	300	\$69.29	20,788	1	\$21,388
patch, prep walls for finish	1	ls	0	0	4100.000	4,100	125.000	1	125	\$69.29	8,662	12762	\$12,762
paint walls up to 12'- support bays	39,500	sf	0.00	0	0.011	435	.022	1	869	\$69.29	60,216	2	\$60,650
paint walls above 12'- hangar	14,820	sf	1.00	14,820	0.014	207	.015	1	222	\$69.29	15,404	2	\$30,431
repaint large hangar numbers	400	sf	1.00	400	0.014	6	.015	1	6	\$69.29	416	2	\$821
hangar draft curtains	3,300	sf	1.00	3,300	5.800	19,140	.030	1	99	\$79.39	7,859	9	\$30,299
<b>SUBTOTAL</b>				\$18,520		\$164,943			10480		\$800,004		\$983,467
<b>DIVISION 10 - SPECIALTIES</b>													
interior signs	50	ea	0.00	0	80.000	4,000	.600	1	30	\$79.39	2,382	128	\$6,382
window blinds	63	ea	0.00	0	3.000	189	.015	1	1	\$79.39	75	4	\$264
fire extinguishers	20	ea	0.00	0	260.000	5,200	.550	1	11	\$74.06	815	301	\$6,015
<b>SUBTOTAL</b>				\$0		\$9,389			42		\$3,271		\$12,660
<b>TOTAL DIRECT COST</b>				\$21,107		\$2,135,504			56727		\$4,565,146		\$6,721,757



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: FT. WW HANGARS 2 & 3 CONDITION ASSESSMENT  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: ARCHITECTURAL - ALTERNATIVE 4

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR												
DESCRIPTION	%	EQUIPMENT COSTS		MATERIAL COSTS		LABOR HOURS		LABOR COSTS		MATERIAL & LABOR		
TOTAL DIRECT COST, MATL & LAB			\$0		\$482,564		6187		\$441,866			\$924,430
REGIONAL FACTOR (MEANS)	10.0%				\$48,256							\$48,256
FREIGHT	10.0%				\$48,256							\$48,256
OVERTIME	12.5%								\$55,233			\$55,233
COMPLEXITY	15.0%								\$66,280			\$66,280
<b>SUBTOTAL</b>			\$0		\$579,077				\$563,379			\$1,142,456
CONTRACTORS OVERHEAD	15.0%											\$171,368
CONTRACTORS PROFIT	10.0%											\$114,246
<b>SUBTOTAL</b>												\$1,428,070
<b>ARCHITECTURAL CONTRACT TOTAL</b>											<b>\$ 1,428,070</b>	

DIRECT COSTS BY CSI DIVISIONS													
DIVISION 9 - FINISHES													
ceramic tile - floor 2 colors	2,600.0	sf	0.00	0	6.600	17,160	.088	1	229	\$70.16	16,052	12.77	\$33,212
ceramic tile - wall 2 colors, 4' w'scot	10,400.0	sf	0.00	0	4.900	50,960	.075	1	780	\$70.16	54,721	10.16	\$105,681
synthetic track	13,500.0	SF	0.00	0	10.00	135,000	.140	1	1890	\$71.36	134,879	19.99	\$269,879
synthetic turf	16,900.0	SF	0.00	0	12.00	202,800	.140	1	2366	\$71.36	168,849	21.99	\$371,649
cardio-wt training synthetic flooring	5,200.0	SF	0.00	0	9.00	46,800	.140	1	728	\$71.36	51,953	18.99	\$98,753
<b>SUBTOTAL</b>				\$0		\$452,720			5993		\$426,454		\$879,174
DIVISION 10 - SPECIALTIES													
toilet partitions	10.0	ea	0.00	0	325.00	3,250	.09	1	1	\$79.39	70	331.99	\$3,320
privacy screens	10.0	ea	0.00	0	165.00	1,650	2.10	1	21	\$79.39	1,667	331.71	\$3,317
shower curtain rod & curtain	2.0	ea	0.00	0	115.00	230	2.00	1	4	\$79.39	318	273.78	\$548
retractable shower seat	2.0	ea	0.00	0	383.00	766	1.00	1	2	\$79.39	159	462.39	\$925
lockers	100.0	ea	0.00	0	160.00	16,000	1.00	1	100	\$79.39	7,939	239.39	\$23,939
grab bars	10.0	ea	0.00	0	51.00	510	2.00	1	20	\$79.39	1,588	209.78	\$2,098
undercounter lav piping protection	8.0	ea	0.00	0	100.00	800	2.00	1	16	\$79.39	1,270	258.78	\$2,070
soap dispensers	8.0	ea	0.00	0	66.00	528	.80	1	6	\$79.39	508	129.51	\$1,036
toilet tissue dispensers	10.0	ea	0.00	0	85.00	850	1.00	1	10	\$79.39	794	164.39	\$1,644
paper towel dispensers	8.0	ea	0.00	0	155.00	1,240	.80	1	6	\$79.39	508	218.51	\$1,748
waste receptacles	4.0	ea	0.00	0	185.00	740	.80	1	3	\$79.39	254	248.51	\$994
full mirrors	4.0	ea	0.00	0	750.00	3,000	.80	1	3	\$79.39	254	813.51	\$3,254
sanitary napkin dispenser	1.0	ea	0.00	0	140.00	140	.53	1	1	\$79.39	42	182.08	\$182
sanitary napkin disposal	1.0	ea	0.00	0	140.00	140	.53	1	1	\$79.39	42	182.08	\$182
<b>SUBTOTAL</b>				\$0		\$29,844			194		\$15,412		\$45,256
<b>TOTAL DIRECT COST</b>				\$0		\$482,564			6187		\$441,866		\$924,430



**HAZMAT REMOVAL COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HAZARDOUS MATERIALS - PER HANGAR

PREPARED BY: WAP  
 FOR: LLT

10/20/2011

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE		
TOTAL DIRECT COST, MATL & LAB				\$0		\$9,781			840		\$62,195.66	\$71,977
REGIONAL FACTOR			10.00%	\$0	\$0.10	\$978						\$978
FREIGHT			10.00%	\$0	\$0.00	\$0						\$0
OVER TIME - SOME COMPLEXITY									12.50%	\$7,774.46		\$7,774
									15.00%	\$9,329.35		\$9,329
<b>SUBTOTAL</b>				\$0		\$10,759					\$62,195.66	\$90,059
<u>CONTRACTOR OVER HEAD</u>	15.0%											\$13,509
<b>SUBTOTAL</b>												\$103,568
<u>CONTRACTOR PROFIT</u>	10.0%											\$10,357
<b>SUBTOTAL</b>												\$113,924
<b>CIVIL CONTRACT TOTAL</b>												\$113,924

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS	LABOR RATE			LABOR COST
<b>DIRECT COSTS BY CSI DIVISIONS</b>													
<b><u>DIVISION 2 - SITE WORK</u></b>													
<b>02088 ACM ABATEMENT</b>													
<b>CLASS 1 ACM REMOVAL</b>													
TSI PIPE INSULATION	250	LF			\$1.00	\$250	0.750	1	187.50	\$74.06	\$13,887	\$56.55	\$14,137
Mastic - Wall	255	SF			\$1.50	\$383	0.100	1	25.50	\$74.06	\$1,889	\$8.91	\$2,271
AIR MONITORING	1	EACH			\$150.00	\$150	11.000	1	11.00	\$74.06	\$815	\$964.71	\$965
<b>CLASS II ACM REMOVAL</b>													
Vinyl Asbestos Tile + Mastic	4,800	SF			\$0.75	\$3,600	0.040	1	192.00	\$74.06	\$14,220	\$3.71	\$17,820
Asbestos Wrapped Wiring	1,000	LF			\$0.65	\$650	0.033	1	33.00	\$74.06	\$2,444	\$3.09	\$3,094
PREPARE ABATEMENT WORK PLANS	1	LS			\$350.00	\$350					\$0	\$350.00	\$350
					\$0	\$0							
<b>CLEARANCE AIR MONITORING</b>	1	EACH			\$150.00	\$150	10.000	1	10.00	\$74.06	\$741	\$890.65	\$891
<b>MOB/DEMOB</b>	1	EACH			\$1,000.00	\$1,000						\$1,000.00	\$1,000
<b>LANDFILL DISPOSAL (ACM TONS)</b>	3	each			\$600.00	\$1,800						\$600.00	\$1,800
<b>SUBTOTAL</b>				\$0		\$8,333			459.00		\$33,996		\$42,328
<b>LEAD BASE PAINT REMOVAL</b>													
Paint on Concrete Floors	300	sf			\$1.50	\$450	0.750	1	225.00	\$74.06	\$16,665	\$57.05	\$17,115
Paint on Trim / Windows / Doors	905	lf			\$0.75	\$679	0.150	1	135.75	\$74.06	\$10,054	\$11.86	\$10,733
<b>SUBTOTAL</b>				\$0		\$1,129			360.75	\$74.06	\$26,719		\$27,848
Fluorescent Bulbs	180	ea			\$0	\$180	8.000	1	8.00	\$74.06	\$593	\$4.29	\$773
Lead Acid Batteries	10	ea			\$0	\$100	4.000	1	4.00	\$74.06	\$296	\$39.63	\$396
High Intensity Lighting (Bays)	40	ea			\$1.00	\$40	8.000	1	8.00	\$74.06	\$593	\$15.81	\$633
<b>SUBTOTAL</b>				\$0		\$320			20.00		\$1,481		\$1,801
<b>DIRECT COST</b>				\$0		\$9,781			839.75		\$62,196		\$71,977



**CIVIL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGERS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: CIVIL CONSTRUCTION ESTIMATE- ALL ALTS WITH POV PARKING

PREPARED BY: LLT

10/19/2011

DESCRIPTION	QUANTITY	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE
CIVIL CONTRACTOR	No. UNITS										
TOTAL DIRECT COST, MATL & LAB			\$141,620.84		\$806,909.00			3,622		\$290,755.37	\$1,239,285
REGIONAL FACTOR		10.00%	\$14,162.08	\$0.10	\$80,690.90						\$94,853
FREIGHT		10.00%	\$14,162.08	\$0.00	\$0.00						\$14,162
OVER TIME - SOME COMPLEXITY								12.50%	\$36,344.42		\$36,344
								15.00%	\$43,613.31		\$43,613
<b>SUBTOTAL</b>			\$169,945.01		\$887,599.90					\$290,755.37	\$1,428,258
<b>CONTRACTOR OVER HEAD</b>	15.0%										\$214,239
<b>SUBTOTAL</b>											\$1,642,497
<b>CONTRACTOR PROFIT</b>	10.0%										\$164,250
<b>SUBTOTAL</b>											\$1,806,746
<b>CIVIL CONTRACT TOTAL</b>											\$1,806,746

DESCRIPTION	QUANTITY	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS			LABOR RATE
CIVIL CONTRACTOR	No. UNITS										
<b>DIRECT COSTS BY CSI DIVISIONS</b>											
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>											
TRAFFIC CONTROL + MAINT.	90 DAY			\$200.00	\$18,000.00					\$200.00	\$18,000
PERMANENT CONSTRUCTION SIGNING	1 SGN-DY	\$3.50	\$3.50	\$0.00	\$0.00	0.001	1	0.00	\$79.39	\$0.08	\$3.58 \$4
FIELD OFFICE	3 Months	\$350.00	\$1,050.00	\$0.00	\$0.00					\$0.00	\$350.00 \$1,050
MOB/DEMOB	2 Each	\$1,000.00	\$2,000.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$1,000.00 \$2,000
SUPERINTENDENT	90 DAY	\$90.20	\$8,118.00	\$0.00	\$0.00	8.000	1	720.00	\$79.39	\$57,159.04	\$725.30 \$65,277
<b>SUBTOTAL</b>			\$11,171.50		\$18,000.00			720.00		\$57,159.12	\$86,331
<b>DIVISION 2 - SITE WORK</b>											
<b>02200 - SITE DEMOLITION</b>											
9 YARD DUMP, DRIVER INCLUDED	630 HR	\$60.00	\$37,800.00	\$0.00	\$0.00	0.000	1	0.00	\$76.64	\$0.00	\$60.00 \$37,800
DUMPSTER PICK	40 EA	\$90.00	\$3,600.00	\$0.00	\$0.00	0.000	1	0.00	\$93.91	\$0.00	\$90.00 \$3,600
DUMPSTER RENTAL	120 DAY	\$60.00	\$7,200.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$60.00 \$7,200
HAUL MTRL OUT	230 TRIP	\$30.00	\$6,900.00	\$0.00	\$0.00	0.500	1	115.00	\$83.54	\$9,606.56	\$71.77 \$16,507
REMOVE AND RESET HYDRANT	4 Each	\$237.00	\$948.00	\$0.00	\$0.00	4.000	1	20.00	\$77.87	\$1,557.46	\$626.37 \$2,505
<b>SUBTOTAL</b>			\$56,448.00		\$0.00			135.00		\$11,164.02	\$67,612
<b>02300 EARTHWORK</b>											
02310-AREA GRADING	7,538 SY	\$0.28	\$2,110.64		\$0.00	0.010	1	75.38	\$82.97	\$6,253.93	\$1.11 \$8,365
STRUCTURAL FILL, COMPACT, IN-PLACE	1,000 CY	\$1.00	\$1,000.00	\$8.00	\$8,000.00	0.060	1	60.00	\$79.88	\$4,793.07	\$13.79 \$13,793
LOADING, 5CY, LOADER	2,513 CY	\$0.35	\$879.55	\$0.00	\$0.00	0.800	1	2010.40	\$82.97	\$166,793.72	\$66.72 \$167,673
COMPATION, VIBRATING ROLLER, RIDING, 2 X	1,000 CY	\$0.16	\$160.00	\$0.00	\$0.00	0.006	1	6.00	\$82.97	\$497.79	\$63.48 \$63,483
REMOVE 14" CONCRETE	2,513 CY	\$25.00	\$62,825.00	\$0.00	\$0.00		1				
<b>SUBTOTAL</b>			\$66,975.19		\$8,000.00			2151.78		\$178,338.52	\$253,314
<b>02580- ELECTRICAL STRUCTURES</b>											
HEADBOLT HTR. OUT, WOOD POST ONLY	12 EA	\$14.00	\$168.00	\$27.00	\$324.00	0.500	1	6.00	\$73.72	\$442.34	\$77.86 \$934
NEW LIGHT POLE BASE	8 EA			\$500.00	\$4,000.00				\$73.72		\$500.00 \$4,000
GROUNDING POINTS/ TIE-DOWNS	4 EA	\$50.00	\$200.00	\$200.00	\$800.00	1.000	1	4.00	\$73.72	\$294.89	\$323.72 \$1,295
CONDUIT TRENCHING, BEDDING, BACKFILL	350 LF	\$1.16	\$406.00	\$0.63	\$220.50	0.017	1	5.95	\$76.80	\$456.98	\$3.10 \$1,083
<b>SUBTOTAL</b>			\$774.00		\$5,344.50			15.95		\$1,194.21	\$7,313
<b>PIPE TRENCHING AND BACKFILL</b>											
PIPE TRENCHING AND BACKFILL	125 CY	\$1.87	\$233.75	\$0.00	\$0.00	0.035	1	4.38	\$82.97	\$362.97	\$4.77 \$597
CATCH BASIN	1 EA	\$118.00	\$118.00	\$1,500.00	\$1,500.00	15.000	1	15.00	\$76.80	\$1,152.06	\$2,770.06 \$2,770
3/4" GALV. THAW PIPE	210 LF	\$1.22	\$256.20	\$8.00	\$1,680.00	0.024	1	5.04	\$75.26	\$379.33	\$11.03 \$2,316
<b>SUBTOTAL</b>			\$607.95		\$3,180.00			24.42		\$1,894.36	\$5,682
<b>02750-CONCRETE PAVEMENT</b>											
EXPANSION JOINTS (BACKER ROD W/SEAL)	2,100 LF	\$0.00	\$0.00	\$1.10	\$2,310.00	0.036	1	75.60	\$54.63	\$4,130.03	\$3.07 \$6,440
TRANSVERSE SAWCUTS	2,100 LF	\$0.31	\$651.00	\$0.34	\$714.00	0.100	1	210.00	\$73.72	\$15,481.80	\$8.02 \$16,847
CONCRETE PAVEMENT, 14" THICK	7,540 SY	\$0.40	\$3,016.00	\$100.00	\$754,000.00	0.029	1	218.66	\$76.70	\$16,771.98	\$102.62 \$773,788
PARKING PAINT STRIPING, 4" (POV)	870 LF	\$0.02	\$17.40	\$0.25	\$217.50	0.030	1	26.10	\$74.21	\$1,936.86	\$2.50 \$2,172
<b>SUBTOTAL</b>			\$3,684.40		\$757,241.50			530.36		\$38,320.67	\$799,247
<b>02800-SITE IMPROVEMENTS</b>											
LANSAPING BOULDERS	35 EA	\$50.00	\$1,750.00	\$300.00	\$10,500.00	0.500	1	17.50	\$73.72	\$1,290.15	\$386.86 \$13,540
24" R1-1, STOP	2 EA	\$7.00	\$14.00	\$65.00	\$130.00	0.457	1	0.91	\$77.78	\$71.09	\$108.24 \$216
PST SIGN POST	1 EA	\$4.00	\$4.00	\$65.00	\$65.00	0.229	1	0.23	\$51.23	\$11.73	\$80.73 \$81
BOLLARDS	16 EA	\$11.90	\$190.40	\$278.00	\$4,448.00	1.600	1	25.60	\$51.23	\$1,311.49	\$371.87 \$5,950
<b>SUBTOTAL</b>			\$1,959.80		\$15,143.00			44.24		\$2,684.46	\$19,787
<b>COLUMN TOTALS:</b>			\$141,620.84		\$806,909.00			3621.75		\$290,755.37	\$1,239,285



**MECHANICAL CONSTRUCTION COST ESTIMATE**

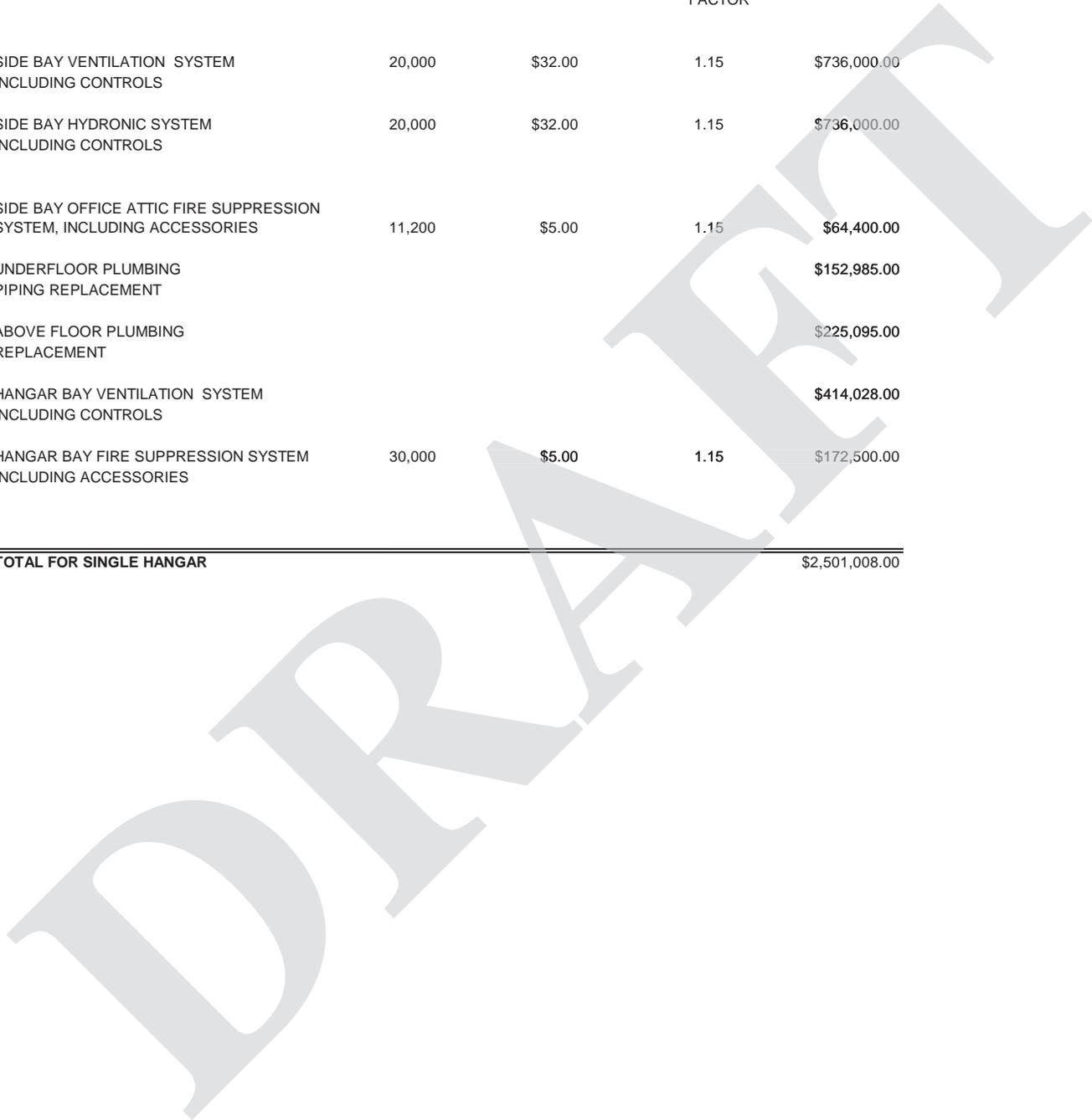
PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: MORALE SUPPORT - FIELD HOUSE

PREPARED BY: RJR  
 FOR: JMM

19-Oct-11

**MECHANICAL ESTIMATE SUMMARY**

SQUARE FOOTAGE COSTS:	SQ.FT	COST/SQ.FT	ESCALATION FACTOR	TOTAL
SIDE BAY VENTILATION SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY HYDRONIC SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY OFFICE ATTIC FIRE SUPPRESSION SYSTEM, INCLUDING ACCESSORIES	11,200	\$5.00	1.15	\$64,400.00
UNDERFLOOR PLUMBING PIPING REPLACEMENT				\$152,985.00
ABOVE FLOOR PLUMBING REPLACEMENT				\$225,095.00
HANGAR BAY VENTILATION SYSTEM INCLUDING CONTROLS				\$414,028.00
HANGAR BAY FIRE SUPPRESSION SYSTEM INCLUDING ACCESSORIES	30,000	\$5.00	1.15	\$172,500.00
<b>TOTAL FOR SINGLE HANGAR</b>				<b>\$2,501,008.00</b>





**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: UNDERFLOOR PIPING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$45,750			722.60		\$49,240		\$94,990
REGIONAL FACTOR (MEANS)	10.0%				\$4,575							\$4,575
FREIGHT	10.0%				\$4,575							\$4,575
OVERTIME	12.5%									\$6,155		\$6,155
COMPLEXITY	15.0%									\$7,386		\$7,386
<b>SUBTOTAL</b>			\$0		\$54,900					\$62,781		\$117,680
CONTRACTORS OVERHEAD	15.0%											\$17,652
CONTRACTORS PROFIT	15.0%											\$17,652
<b>SUBTOTAL</b>												\$152,985
<b>MECHANICAL CONTRACT TOTAL</b>											<b>\$152,985</b>	

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>WASTE &amp; VENT SYSTEM</b>												
<b>PIPING</b>												
4" CAST IRON	600 Lin.Ft	\$0	\$0	\$16.33	\$9,800	0.29	1	174.60	\$69.06	\$12,057	36.4	\$21,857
FITTINGS	1 Elbow/20'		\$0	\$1.13	\$677	0.40	1	12.00	\$69.06	\$829		\$1,506
TRENCH DRAIN	200 Lin.Ft	\$0	\$0	\$96	\$19,200	1.00	1	200	\$67.82	\$13,565	163.8	\$32,765
CONCRETE DEMO	2800 Sq.Ft	\$0	\$0	\$0.24	\$672	0.06	1	168	\$67.82	\$11,395	4.3	\$12,067
CONCRETE PATCH & TRENCH	2800 Each	\$0	\$0	\$5.5	\$15,400	0.06	1	168	\$67.82	\$11,395	9.6	\$26,795
<b>COLUMN TOTALS:</b>			<b>\$0</b>		<b>\$45,750</b>			<b>722.60</b>		<b>\$49,240</b>		<b>\$94,990</b>



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: ABOVE GRADE PLUMBING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.		
TOTAL DIRECT COST, MATL & LAB.			\$0		\$37,887			1,460.47	\$100,145	\$138,032
REGIONAL FACTOR (MEANS)	10.0%				\$3,789					\$3,789
FREIGHT	10.0%				\$3,789					\$3,789
OVERTIME	12.5%								\$12,518	\$12,518
COMPLEXITY	15.0%								\$15,022	\$15,022
<b>SUBTOTAL</b>			\$0		\$45,464				\$127,085	\$173,150
CONTRACTORS OVERHEAD	15.0%									\$25,972
CONTRACTORS PROFIT	15.0%									\$25,972
<b>SUBTOTAL</b>										\$225,095
<b>MECHANICAL CONTRACT TOTAL</b>										<b>\$225,095</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST		
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.			LABOR RATE	LABOR COST
<b>PLUMBING FIXTURES</b>												
TANK, WALL, 1 PIECE	3 Each	\$0	\$0	\$579.84	\$1,740	10.20	3	91.80	\$69.06	\$6,339	2693.0	\$8,079
FLUSH VALVE, WALL	4 Each	\$0	\$0	\$410.45	\$1,642	13.40	3	160.80	\$69.06	\$11,104	3186.5	\$12,746
WALL HUNG LAV	4 Each	\$0	\$0	\$853.47	\$3,414	12.00	3	144.00	\$69.06	\$9,944	3339.5	\$13,358
SERVICE, FLOOR, STONE	2 Each	\$0	\$0	\$650.20	\$1,300	16.30	3	97.80	\$69.06	\$6,754	4027.0	\$8,054
WALL SS, SINGLE COOLER	2 Each	\$0	\$0	\$963.57	\$1,927	10.00	3	60.00	\$69.06	\$4,143	3035.3	\$6,071
SHOWER	2 Each	\$0	\$0	\$865.19	\$1,730	16.00	3	96.00	\$69.06	\$6,629	4179.9	\$8,360
7360 BT EYEWASH, SS	1 Each	\$0	\$0	\$183.72	\$184	8.00	2	16.00	\$69.06	\$1,105	1288.6	\$1,289
8300 SHOWER/EYEWASH, SS	4 Each	\$0	\$0	\$658.02	\$2,632	8.00	2	64.00	\$69.06	\$4,420	1762.9	\$7,052
9202 TEMPERING VALVE	2 Each	\$0	\$0	\$1,710.00	\$3,420	4.00	2	16.00	\$69.06	\$1,105	2262.4	\$4,525
TEMPERING VALVE PANEL	2 Each	\$0	\$0	\$510.00	\$1,020	2.00	2	8.00	\$69.06	\$552	786.2	\$1,572
<b>DOMESTIC WATER MAINS</b>												
1" TYPE 'L' COPPER	200 Lin.Ft	\$0	\$0	\$5.88	\$1,176	0.12	1	23.60	\$69.06	\$1,630	14.0	\$2,806
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$41	0.50	1	5.00	\$69.06	\$345		\$386
2" TYPE 'L' COPPER	150 Lin.Ft	\$0	\$0	\$16.64	\$2,496	0.19	1	28.50	\$69.06	\$1,968	29.8	\$4,464
FITTINGS:	1 Elbow/20'	\$0	\$0	\$17.33	\$130	0.73	1	5.45	\$69.06	\$377		\$507
2 1/2" GALV. STEEL	200 Lin.Ft	\$0	\$0	\$18.40	\$3,679	0.26	1	51.60	\$69.06	\$3,563	36.2	\$7,242
FITTINGS:	1 Elbow/20'	\$0	\$0	\$12.68	\$127	0.89	1	8.89	\$69.06	\$614		\$741
<b>COMPRESSED AIR PIPING</b>												
3/4" BLACK STEEL	480 Lin.Ft	\$0	\$0	\$2.73	\$1,310	0.13	1	62.88	\$69.06	\$4,342	11.8	\$5,653
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.11	\$99	0.57	1	13.70	\$69.06	\$946		\$1,045
2" BLACK STEEL	550 Lin.Ft	\$0	\$0	\$8.32	\$4,576	0.25	1	137.50	\$69.06	\$9,495	25.6	\$14,071
FITTINGS:	1 Elbow/20'	\$0	\$0	\$14.56	\$400	0.89	1	24.48	\$69.06	\$1,690		\$2,091
<b>FIXTURE PIPING</b>												
3/4" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$4.11	\$1,233	0.11	3	94.50	\$69.06	\$6,526	25.9	\$7,759
FITTINGS:	1 Elbow/20'	\$0	\$0	\$1.62	\$24	0.42	1	6.32	\$69.06	\$436		\$460
1" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$5.88	\$1,764	0.12	3	106.20	\$69.06	\$7,334	30.3	\$9,098
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$61	0.50	1	7.50	\$69.06	\$518		\$579
<b>INSULATION - HYDRONIC SYSTEM</b>												
1" CW INSULATION	200 Lin.Ft	\$0	\$0	\$1.20	\$240	0.08	2	32	\$63.60	\$2,035	11.4	\$2,275
FITTINGS:	15% Allow	\$0	\$0		\$36		1	5	\$63.60	\$305		\$341
2" CW INSULATION	250 Lin.Ft	\$0	\$0	\$2.77	\$693	0.09	2	45	\$63.60	\$2,862	14.2	\$3,555
FITTINGS:	15% Allow	\$0	\$0		\$104		1	7	\$63.60	\$429		\$533
2 1/2" CW INSULATION	200 Lin.Ft	\$0	\$0	\$3.00	\$600	0.09	2	36	\$63.60	\$2,290	14.4	\$2,890
FITTINGS:	15% Allow	\$0	\$0		\$90		1	5	\$63.60	\$343		\$433
<b>COLUMN TOTALS:</b>			\$0		\$37,887			1460.47	\$100,145			\$138,032



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HANGAR BAY VENTILATION

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$87,606			2,491.14		\$167,338		\$254,944
REGIONAL FACTOR (MEANS)	10.0%				\$8,761							\$8,761
FREIGHT	10.0%				\$8,761							\$8,761
OVERTIME	12.5%									\$20,917		\$20,917
COMPLEXITY	15.0%									\$25,101		\$25,101
<b>SUBTOTAL</b>			\$0		\$105,127					\$213,357		\$318,483
CONTRACTORS OVERHEAD	15.0%											\$47,772
CONTRACTORS PROFIT	15.0%											\$47,772
<b>SUBTOTAL</b>												\$414,028
<b>MECHANICAL CONTRACT TOTAL</b>												<b>\$414,028</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>EQUIPMENT</b>												
16,000 CFM SUPPLY FAN	2 Each	\$0	\$0	\$23000	\$46,000	200.00	1	400	\$67.82	\$27,130	36564.9	\$73,130
8,000 CFM PROPELLER FAN	4 Each	\$0	\$0	\$2700	\$10,800	30.00	1	120	\$67.82	\$8,139	4734.7	\$18,939
ELECTRICAL CONNECTION	6 Each	\$0	\$0	\$500	\$3,000	30.00	1	180	\$67.82	\$12,208	2534.7	\$15,208
18" SUPPLY FAN PLATFORM	2 Each	\$0	\$0	\$500	\$1,000	40.00	1	80	\$67.82	\$5,426	3213.0	\$6,426
<b>PIPING</b>												
2" TYPE 'L' COPPER	240 Lin.Ft	\$0	\$0	\$15.71	\$3,771	0.19	1	45.60	\$69.06	\$3,149	28.8	\$6,920
FITTINGS	1 Elbow/20'	\$0	\$0	\$0.95	\$227	0.40	1	4.80	\$69.06	\$331		\$559
3" BLACK STEEL	600 Lin.Ft	\$0	\$0	\$14.50	\$8,697	0.37	1	223.20	\$69.06	\$15,413	40.2	\$24,110
FITTINGS	1 Elbow/20'	\$0	\$0	\$26.65	\$800	2.30	1	69.00	\$69.06	\$4,765		\$5,564
2" HYDRONIC INSULATION	240 Lin.Ft	\$0	\$0	\$2.77	\$665	0.09	1	22	\$63.60	\$1,374	8.5	\$2,039
FITTINGS	15% Allow	\$0	\$0		\$100		1	3	\$63.60	\$206		\$306
3" HYDRONIC INSULATION	600 Lin.Ft	\$0	\$0	\$3.54	\$2,124	0.10	1	60	\$63.60	\$3,816	9.9	\$5,940
FITTINGS	15% Allow	\$0	\$0		\$319		1	9	\$63.60	\$572		\$891
<b>DUCTWORK</b>												
36" dia.	400 Lin.Ft	\$0	\$0	\$7.75	\$3,100	1.55	1	620	\$67.82	\$42,051	112.9	\$45,151
110" SEMI-PERIMETER	80 Lin.Ft	\$0	\$0	\$33.67	\$2,693	3.13	1	250	\$67.82	\$16,963	245.7	\$19,656
2" RIGID INSULATION	1500 Sq.Ft	\$0	\$0	\$1.26	\$1,890	0.13	2	390	\$63.60	\$24,804	17.8	\$26,694
12"X48" SUPPLY REGISTERS	20 Each	\$0	\$0	\$121	\$2,420	0.73	1	15	\$67.82	\$990	170.5	\$3,410
<b>COLUMN TOTALS:</b>			\$0		\$87,606			2491.14		\$167,338		\$254,944



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: MORALE SUPPORT - FIELD HOUSE

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.						\$528,920			7,248.1		\$559,728		\$1,088,647
REGIONAL FACTOR (MEANS)	10.0%					\$52,892							\$52,892
FREIGHT	10.0%					\$52,892							\$52,892
OVERTIME	12.5%										\$69,966		\$69,966
COMPLEXITY	15.0%										\$83,959		\$83,959
<b>SUBTOTAL</b>						\$634,704					\$713,653		\$1,348,357
CONTRACTOR'S OVERHEAD	15.0%												\$202,253
CONTRACTOR'S PROFIT	10.0%												\$134,836
<b>SUBTOTAL</b>													\$1,685,446
<b>ELECTRICAL CONTRACT TOTAL</b>													\$1,685,446

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No.	UNITS	UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>CONDUIT - E.M.T.</b>													
1/2" E.M.T.	17,480	Lin.Ft	\$0	\$0	\$0.87	\$15,285	4.5	100	786.6	\$77.30	\$60,801	\$6.97	\$76,085
FITTINGS & ASSEMBLY	100%	Matl	\$0	\$0		\$15,285	50%	Lab	393.3	\$77.30	\$30,400		\$45,685
3/4" E.M.T.	2,622	Lin.Ft	\$0	\$0	\$1.76	\$4,626	5.0	100	131.1	\$77.30	\$10,133	\$11.17	\$14,759
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$6,939	75%	Lab	98.3	\$77.30	\$7,600		\$14,539
1 1/4" E.M.T.	200	Lin.Ft	\$0	\$0	\$4.60	\$919	6.2	100	12.4	\$77.30	\$958	\$19.87	\$1,877
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$1,379	75%	Lab	9.3	\$77.30	\$719		\$2,097
<b>CONDUIT - FLEX</b>													
1/2" FLEX	100	Lin.Ft	\$0	\$0	\$0.98	\$98	4.0	100	4.0	\$77.30	\$309	\$6.11	\$407
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$49	50%	Lab	2.0	\$77.30	\$155		\$204
3/4" LIQ. TIGHT	100	Lin.Ft	\$0	\$0	\$4.17	\$417	5.0	100	5.0	\$77.30	\$386	\$12.05	\$803
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$209	50%	Lab	2.5	\$77.30	\$193		\$402
<b>CONDUIT - R.S.C.</b>													
2" R.S.C.	200	Lin.Ft	\$0	\$0	\$17.06	\$3,412	11.0	100	22.0	\$77.30	\$1,701	\$25.56	\$5,112
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$1,706	40%	Lab	8.8	\$77.30	\$680	\$11.93	\$2,386
3" R.S.C.	500	Lin.Ft	\$0	\$0	\$38.79	\$19,393	20.0	100	100.0	\$77.30	\$7,730	\$54.25	\$27,123
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$9,696	40%	Lab	40.0	\$77.30	\$3,092	\$25.58	\$12,788
<b>CONDUCTORS</b>													
12 AWG THHN	66,347	Lin.Ft	\$0	\$0	\$0.34	\$22,587	6.0	1000	398.1	\$77.30	\$30,770	\$0.80	\$53,358
10 AWG THHN	9,952	Lin.Ft	\$0	\$0	\$0.54	\$5,357	7.0	1000	69.7	\$77.30	\$5,385	\$1.08	\$10,741
4/0 AWG THHN	3,000	Lin.Ft	\$0	\$0	\$12.28	\$36,829	29.0	1000	87.0	\$77.30	\$6,725	\$14.52	\$43,554
500 MCM XHHW	3,000	Lin.Ft	\$0	\$0	\$32.90	\$98,696	48.0	1000	144.0	\$77.30	\$11,131	\$36.61	\$109,827
<b>MULTI-OULET ASSEMBLY</b>													
WIREMOLD 3000	600	Lin.Ft	\$0	\$0	\$3.50	\$2,100	0.5	1	300.0	\$77.30	\$23,189	\$42.15	\$25,289
<b>RECEPTACLES</b>													
DUPLEX RECEPTACLE	480	Each	\$0	\$0	\$8.00	\$3,840	1.5	1	720.0	\$77.30	\$55,653	\$123.94	\$59,493
QUAD RECEPTACLE	40	Each	\$0	\$0	\$15.00	\$600	1.5	1	60.0	\$77.30	\$4,638	\$130.94	\$5,238
GFI RECEPTACLE	24	Each	\$0	\$0	\$25.00	\$600	1.5	1	36.0	\$77.30	\$2,783	\$140.94	\$3,383
WP GFCI RECEPTACLE	12	Each	\$0	\$0	\$45.00	\$540	1.5	1	18.0	\$77.30	\$1,391	\$160.94	\$1,931
<b>LIGHTING</b>													
TYPE 'A1'	35	Each	\$0	\$0	\$120.00	\$4,200	1.5	1	52.5	\$77.30	\$4,058	\$235.94	\$8,258
TYPE 'A2'	175	Each	\$0	\$0	\$130.00	\$22,750	1.5	1	262.5	\$77.30	\$20,290	\$245.94	\$43,040
TYPE 'C2'	10	Each	\$0	\$0	\$100.00	\$1,000	1.5	1	15.0	\$77.30	\$1,159	\$215.94	\$2,159
TYPE 'C4'	4	Each	\$0	\$0	\$175.00	\$700	1.5	1	6.0	\$77.30	\$464	\$290.94	\$1,164
TYPE 'EX'	48	Each	\$0	\$0	\$85.00	\$4,080	1.5	1	72.0	\$77.30	\$5,565	\$200.94	\$9,645
TYPE 'I4'	54	Each	\$0	\$0	\$1,200.00	\$64,800	3.0	1	162.0	\$77.30	\$12,522	\$1,431.89	\$77,322
EXTERIOR LIGHTING	1	L.S.	\$0	\$0	\$20,000.00	\$20,000	400.0	1	400.0	\$77.30	\$30,918	\$50,918.29	\$50,918



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 4  
 DESCRIPTION: MORALE SUPPORT - FIELD HOUSE

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION ELECTRICAL CONTRACTOR	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST	
<b>MOTORS</b>													
SINGLE PH MOTOR CONN.	12	Each	\$0	\$0	\$27.00	\$324	1.0	1	12.0	\$77.30	\$928	\$104.30	\$1,252
30A TT SWITCH	12	Each	\$0	\$0	\$35.00	\$420	1.5	1	18.0	\$77.30	\$1,391	\$150.94	\$1,811
THREE PH MOTOR CONN.	8	Each	\$0	\$0	\$15.00	\$120	2.0	1	16.0	\$77.30	\$1,237	\$169.60	\$1,357
COMB STARTER	8	Each	\$0	\$0	\$675.00	\$5,400	6.0	1	48.0	\$77.30	\$3,710	\$1,138.80	\$9,110
<b>DISTRIBUTION PANELBOARDS</b>													
NEW DIST PNL '480V 1200A'	1	Each	\$0	\$0	\$17,910.80	\$17,911	24.0	1	24.0	\$77.30	\$1,855	\$19,766	\$19,766
NEW DIST PNL '208V 800A'	1	Each	\$0	\$0	\$11,604.00	\$11,604	24.0	1	24.0	\$77.30	\$1,855	\$13,459	\$13,459
<b>BRANCH CIRCUIT PANELBOARDS</b>													
NEW BRANCH PNL '208V 225A'	4	Each	\$0	\$0	\$2,520.48	\$10,082	24.0	1	96.0	\$77.30	\$7,421	\$4,376	\$17,503
NEW BRANCH PNL '480V 100A'	2	Each	\$0	\$0	\$3,719.20	\$7,438	24.0	1	48.0	\$77.30	\$3,710	\$5,574	\$11,149
<b>TRANSFORMERS</b>													
300 kVA 480V-208Y/120V	1	Each	\$0	\$0	\$16,754.40	\$16,754	16.0	1	16.0	\$77.30	\$1,237	\$17,991.20	\$17,991
<b>FIRE ALARM AND MNS</b>													
FIRE ALARM SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
MNS SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
<b>NETWORK SYSTEMS</b>													
EQUIPMENT RACK	2	Each	\$0	\$0	\$250.00	\$500	8.0	1	16.0	\$77.30	\$1,237	\$868.40	\$1,737
CAT 6 CABLING	9,600	Lin.Ft	\$0	\$0	\$0.36	\$3,456	10.0	1000	96.0	\$77.30	\$7,420	\$1.13	\$10,876
DATA OUTLETS	240	Each	\$0	\$0	\$8.00	\$1,920	1.5	1	360.0	\$77.30	\$27,828	\$123.95	\$29,748
TERMINATE & TEST	0%	Matl	\$0	\$0	\$0	\$0	50%	Lab	180.0	\$74.36	\$13,386		\$13,386
GROUND BUS	2	Each	\$0	\$0	\$150.00	\$300	2.0	1	4.0	\$77.30	\$309	\$304.59	\$609
PATCH PANELS	8	Each	\$0	\$0	\$200.00	\$1,600	4.0	1	32.0	\$77.30	\$2,473	\$509.18	\$4,073
<b>MISCELLANEOUS</b>													
EXERCISE EQUIPMENT CONNECT	1	L.S.	\$0	\$0	\$5,000.00	\$5,000	160.0	1	160.0	\$77.30	\$12,368	\$17,368.00	\$17,368
<b>DEMOLITION</b>													
ELECTRICAL DEMO	1	Allow	\$0	\$0	\$6,000.00	\$6,000	480.0	1	480	\$77.30	\$37,102	\$43,101.95	\$43,102
<b>COLUMN TOTALS:</b>			\$0	\$0		\$528,920			7,248.1		\$559,728		\$1,088,647

# COST ESTIMATE

## ALTERNATIVE 5 - FIELD TRAINING



### PROJECT CONSTRUCTION COST ESTIMATE

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 5  
 DESCRIPTION: SUMMARY - BASE BID

15-Oct-11

Prepared by: JMM

DESCRIPTION	QUANTITY	UNIT	LABOR	TOTAL
GENERAL CONTRACTOR		COST	HRS/ UNIT LABOR RATE LABOR COST	
ARCHITECTURAL BASIC REHAB TOTAL				\$10,505,341
ARCHITECTURAL ALTERN. 5 TOTAL				\$909,092
<b>SUBCONTRACTOR WORK</b>				
HAZ MAT CONTRACTOR		\$113,924		\$113,924
CIVIL SITE WORK CONTRACTOR		\$1,806,746		\$1,806,746
STRUCTURAL CONTRACTORS		\$1,850,000		\$1,850,000
MECHANICAL CONTRACTORS & FIRE PROTECTION CONTRACTOR		\$2,501,008		\$2,501,008
ELECTRICAL CONTRACTOR		\$1,592,646		\$1,592,646
GEN.CONTRACTOR OHMARKUP	10.0%			\$786,432
SUBTOTAL				\$20,065,189
GENERAL CONDITIONS	15.0%			\$3,009,778
SUBTOTAL				\$23,074,968
ESTIMATING CONTINGENCY	35.0%			\$8,076,239
SUBTOTAL				\$31,151,206
ESCALATION-CONSTR.COST	15.0%	TO 2016		\$4,672,681
<b>TOTAL CONSTRUCTION COST</b>				<b>\$35,823,887</b>

**BASE BID (PER HANGER) \$35,823,887**

**+ FIRE & STAIR TOWER REPAIRS (HANGAR 2 ONLY) \$1,190,000**

#### NOTES REGARDING THE PREPARATION OF THIS COST ESTIMATE

THIS ESTIMATE IS PREPARED USING CURRENT CONSTRUCTION COSTS & ASSUMES WILL RECEIVE AN OPEN COMPETITIVE BID.

THIS ESTIMATE DOES NOT CONTAIN AN ALLOWANCE FOR NEGOTIATED NON-COMPETITIVE CONTRACTS.

THIS ESTIMATE HAS AN ESCALATION ALLOWANCE.

THIS ESTIMATE DOES NOT HAVE AN ALLOWANCE TO TREAT / REMOVE ANY HAZARDOUS MATERIALS OR CONTAMINATED SOIL.

THIS ESTIMATE DOES NOT INCLUDE ANY PLAN CHECK FEES CHARGED BY THE STATE OF ALASKA OR ANY OTHER ENTITY CLAIMING JURISDICTION OVER THE WORK PAID DIRECTLY BY THE OWNER.

THIS ESTIMATE DOES NOT INCLUDE THE A/E FEES, SHOP EQUIPMENT OR COSTS FOR ANY WORK NOT INDICATED.

THIS ESTIMATE IS BASED ON A NORMAL WORK WEEK WITH SOME PROVISIONS FOR OVERTIME.

ESTIMATING CONTINGENCY - AN ALLOWANCE FOR CONSTRUCTION DOCUMENT REQUIREMENTS THAT ARE NOT INCLUDED

EITHER THE 2011 R.S. MEANS FACILITIES CONSTRUCTION COST DATA MANUAL, THE 2011 R.S. MEANS ASSEMBLIES COST DATA MANUAL, OR PAST HISTORICAL DATA HAVE BEEN USED AS RESOURCES TO COMPILE THIS ESTIMATE.



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3

15-Oct-11

LOCATION: FT. WAINWRIGHT, ALASKA

PREPARED BY: JMM

PHASE: CONCEPT - ALTERNATIVE 5

DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

**GENERAL CONTRACTOR**

DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$21,107	\$2,135,504	56727	\$4,565,146	\$6,721,757
REGIONAL FACTOR (MEANS)	10.0%		\$213,550			\$213,550
FREIGHT	10.0%		\$213,550			\$213,550
OVERTIME	12.5%				\$570,643	\$570,643
COMPLEXITY	15.0%				\$684,772	\$684,772
<b>SUBTOTAL</b>		\$21,107	\$2,562,605		\$5,820,561	\$8,404,273
CONTRACTORS OVERHEAD	15.0%					\$1,260,641
CONTRACTORS PROFIT	10.0%					\$840,427
<b>SUBTOTAL</b>						\$10,505,341

**ARCHITECTURAL CONTRACT TOTAL**

**\$ 10,505,341**

**DIRECT COSTS BY CSI DIVISIONS**

**DIVISION 2 - SITE WORK**

**BUILDING**

demo finishes to studs-ext. walls	40,200	sf	0.00	0	0.000	0	.040	1	1608	\$73.72	118,546	3	\$118,546
demo walls- interior	5,000	sf	0.00	0	0.000	0	.040	1	200	\$73.72	14,745	3	\$14,745
demo roof epdm	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof recovery board	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof insul. (below deck)	44,880	sf	0.00	0	0.000	0	.013	1	583	\$73.72	43,013	1	\$43,013
demo metal siding	32,850	lf	0.00	0	0.000	0	.030	1	986	\$73.72	72,654	2	\$72,654
demo metal flashing	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo wood fascia	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo concrete - support bays	5,000	sf	0.00	0	0.600	3,000	.050	1	250	\$73.72	18,431	4	\$21,431
demo concrete curbs at ext.dr.s.	1	ls	0.00	0	550.000	550	18.000	1	18	\$73.72	1,327	1877	\$1,877
demo mortar.conc.-restrooms	450	sf	0.00	0	0.600	270	.210	1	95	\$73.72	6,967	16	\$7,237
excavate restroom floors	50	bcy	1.40	70	0.000	0	2.660	1	133	\$73.72	9,805	198	\$9,875
demo entry canopy roof	3	ea	0.00	0	760.000	2,280	.035	1	0	\$73.72	8	763	\$2,288
demo int.wall finish- support bays	12,500	sf	0.00	0	0.000	0	.160	1	2000	\$73.72	147,446	12	\$147,446
demo tile	20,000	lf	0.00	0	0.000	0	.020	1	400	\$73.72	29,489	1	\$29,489
demo carpet	10,000	sf	0.00	0	0.000	0	.025	1	250	\$73.72	18,431	2	\$18,431
demo ceramic tile-floor	988	ls	0.00	0	0.000	0	.042	1	41	\$73.72	3,059	3	\$3,059
demo ceramic tile-wall	1,480	ea	0.00	0	0.000	0	.042	1	62	\$73.72	4,583	3	\$4,583
demo exterior drs & frames	16	ea	0.00	0	0.000	0	1.460	1	23	\$73.72	1,722	108	\$1,722
demo interior drs & frames	70	ea	0.00	0	0.000	0	1.500	1	105	\$73.72	7,741	111	\$7,741
demo hangar drs & frames(26'x72')	1,950	sf	1.10	2,145	0.000	0	.140	1	273	\$73.72	20,126	11	\$22,271
demo exterior windows	63	ea	0.00	0	0.000	0	1.500	1	95	\$73.72	6,967	111	\$6,967
demo interior relites	14	ea	0.00	0	0.000	0	.500	1	7	\$73.72	516	37	\$516
remove interior stair handrails	150	lf	0.00	0	0.000	0	.200	1	30	\$73.72	2,212	15	\$2,212
<b>SUBTOTAL</b>				\$2,215	\$6,100				9891		\$763,404		\$771,719

**DIVISION 3 - CONCRETE**

concrete floor- hangar-2" topping	30,400	sf	0.01	304	2.500	76,000	.022	1	669	\$79.38	53,092	4	\$129,396
concrete floor- 1st flr RRs/Lockrms	988	sf	0.01	10	2.500	2,470	.022	1	22	\$79.38	1,725	4	\$4,205
concrete floor- support bays-6"	5,000	sf	0.01	50	2.500	12,500	.022	1	110	\$79.38	8,732	4	\$21,282
<b>SUBTOTAL</b>				\$364	\$90,970				801		\$63,549		\$154,883

**DIVISION 5 - METAL**

floor exp.jts. (exist.jts.)	800	lf	0.01	8	25.000	20,000	.211	1	169	\$79.38	13,400	42	\$33,408
hangar dr.ext.rf.platforms-rebuild	240	sf	0.00	0	15.000	3,600	.010	1	2	\$79.39	191	16	\$3,791
hangar dr.ext.rf.guardrail-rebuild	184	lf	0.00	0	32.000	5,888	.200	1	37	\$79.39	2,921	48	\$8,809
stairs interior handrails- repair	140	lf	0.00	0	32.000	4,480	.200	1	28	\$79.39	2,223	48	\$6,703
catwalks - platforms - repair	2,500	sf	0.00	0	22.000	55,000	.010	1	25	\$79.39	1,985	23	\$56,985
catwalks- structure - repair	2,500	sf	0.00	0	28.000	70,000	.025	1	63	\$79.39	4,962	30	\$74,962
catwalks - guardrails - repair	200	lf	0.00	0	32.000	6,400	.200	1	40	\$79.39	3,176	48	\$9,576
catwalks - ladders/stairs	150	risers	0.00	0	250.000	37,500	.050	1	8	\$79.39	595	254	\$38,095
misc. connections	1	ls	0.00	0	2500.000	2,500	.000	1	0	\$79.39	0	2500	\$2,500
<b>SUBTOTAL</b>				\$8	\$205,368				371		\$29,452		\$234,828



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 5  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS				UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL	LABOR			LABOR
									HOURS	RATE			COST
<b>DIVISION 7 - THERMAL AND MOISTURE</b>													
EPDM roof - hangar-R90	24,880	sf	0.00	0	8.150	202,772	.351	1	8733	\$86.43	754,795	38	\$957,567
EPDM roof - support bays-R90	20,000	sf	0.00	0	8.150	163,000	.351	1	7020	\$86.43	606,748	38	\$769,748
waterprfg/insul./flashing- wall base	3,200	sf	0.00	0	0.400	1,280	.400	1	1280	\$79.39	101,616	32	\$102,896
roof fascia	1,500	lf	0.00	0	2.260	3,390	.016	1	24	\$86.43	2,074	4	\$5,464
metal flashing	1,500	lf	0.00	0	2.100	3,150	.016	1	24	\$86.43	2,074	3	\$5,224
conc.flr.moisture barrier- hangar	30,400	sf	0.00	0	1.600	48,640	.030	1	912	\$79.38	72,398	4	\$121,038
conc.flr.moisture barrier- supp.bays	50,400	sf	0.00	0	1.600	80,640	.030	1	1512	\$79.38	120,028	4	\$200,668
new framing (hangar dr.overhang)	1	ls	0.00	0	5000.000	5,000	250.000	1	250	\$79.38	19,846	24846	\$24,846
new sheathing (hangar dr.overhang)	600	sf	0.00	0	1.260	756	.020	1	12	\$79.38	953	3	\$1,709
bird screen (hangar dr.overhang)	1,200	sf	0.00	0	0.300	360	.260	1	312	\$79.38	24,768	21	\$25,128
metal roof (hangar dr.overhang)	1,200	sf	0.00	0	3.500	4,200	.350	1	420	\$86.43	36,301	34	\$40,501
entry canopy roofs	3	ea	0.00	0	800.000	2,400	15.000	1	45	\$86.43	3,889	2096	\$6,289
snow guards	2,400	lf	0.00	0	2.600	6,240	.060	1	144	\$86.43	12,446	8	\$18,686
new insulated mtl.wall panels-R49	32,850	sf	0.00	0	25.000	821,250	.060	1	1971	\$79.39	156,473	30	\$977,723
new wall batts-R21	32,850	sf	0.00	0	0.360	11,826	.350	1	11498	\$79.39	912,758	28	\$924,584
<b>SUBTOTAL</b>				\$0		\$1,354,904			34156		\$2,827,167		\$4,182,071
<b>DIVISION 8 - DOORS &amp; WINDOWS</b>													
ADA barrier free entrances	10	ea	0.00	0	1000.000	10,000	32.000	1	320	\$79.39	25,404	3540	\$35,404
doors- ext.insul.-drs.,fr.,hardware	16	ea	0.00	0	1800.000	28,800	3.000	1	48	\$79.39	3,811	2038	\$32,611
doors- hangar int.-drs.,fr.,hdwre	22	ea	0.00	0	1325.000	29,150	3.000	1	66	\$79.39	5,240	1563	\$34,390
doors- nonrated supp.spaces int.	22	ea	0.00	0	1200.000	26,400	2.000	1	44	\$79.39	3,493	1359	\$29,893
doors- rated supp.spaces int.	26	ea	0.00	0	1500.000	39,000	2.000	1	52	\$79.39	4,128	1659	\$43,128
replace hangar doors (26'x75')	3,900	sf	0.00	0	28.000	109,200	.090	1	351	\$79.39	27,865	35	\$137,065
ext. insulated access drs., frames	16	ea	0.00	0	410.000	6,560	.900	1	14	\$79.39	1,143	481	\$7,703
new energy efficient windows	63	ea	0.00	0	800.000	50,400	.900	1	57	\$79.39	4,501	871	\$54,901
new relites to hangar from sidebays	192	sf	0.00	0	22.500	4,320	.178	1	34	\$79.39	2,713	37	\$7,033
<b>SUBTOTAL</b>				\$0		\$303,830			986		\$78,298		\$382,128
<b>DIVISION 9 - FINISHES</b>													
upgrade hangar walls to 2 hr.rated	26,752	sf	0.00	0	2.600	69,555	.120	1	3210	\$79.39	254,853	12	\$324,408
upgrade int.walls occup.separation	1,650	sf	0.00	0	0.800	1,320	.700	1	1155	\$79.39	91,693	56	\$93,013
upgrade ext.walls support bays	20,100	sf	0.00	0	2.700	54,270	.090	1	1809	\$79.39	143,612	10	\$197,882
vapor retarder - roof	44,880	sf	0.00	0	0.032	1,436	.003	1	135	\$79.39	10,689	0	\$12,125
vapor retarder - exterior walls	32,850	sf	0.00	0	0.032	1,051	.003	1	99	\$79.39	7,824	0	\$8,875
replace improperly framed walls	1	ls	0.00	0	5500.000	5,500	255.000	1	255	\$79.39	20,244	25744	\$25,744
floor clean and prep	70,400	sf	0.00	0	0.026	1,830	.009	1	634	\$71.36	45,217	1	\$47,047
rubber base	3,950	sf	0.00	0	0.470	1,857	.035	1	138	\$71.36	9,866	3	\$11,723
int.exit stair rubber tile	200	sf	0.00	0	5.000	1,000	.065	1	13	\$71.36	928	10	\$1,928
seal concrete - hangar floor	30,400	sf	0.00	0	0.070	2,128	.004	1	122	\$79.38	9,653	0	\$11,781
epoxy paint concrete- support bays	19,550	sf	0.00	0	0.026	508	.066	1	1290	\$71.36	92,082	5	\$92,590
paint ceilings - support bays	20,000	sf	0.00	0	0.030	600	.015	1	300	\$69.29	20,788	1	\$21,388
patch, prep walls for finish	1	ls	0	0	4100.000	4,100	125.000	1	125	\$69.29	8,662	12762	\$12,762
paint walls up to 12'- support bays	39,500	sf	0.00	0	0.011	435	.022	1	869	\$69.29	60,216	2	\$60,650
paint walls above 12'- hangar	14,820	sf	1.00	14,820	0.014	207	.015	1	222	\$69.29	15,404	2	\$30,431
repaint large hangar numbers	400	sf	1.00	400	0.014	6	.015	1	6	\$69.29	416	2	\$821
hangar draft curtains	3,300	sf	1.00	3,300	5.800	19,140	.030	1	99	\$79.39	7,859	9	\$30,299
<b>SUBTOTAL</b>				\$18,520		\$164,943			10480		\$800,004		\$983,467
<b>DIVISION 10 - SPECIALTIES</b>													
interior signs	50	ea	0.00	0	80.000	4,000	.600	1	30	\$79.39	2,382	128	\$6,382
window blinds	63	ea	0.00	0	3.000	189	.015	1	1	\$79.39	75	4	\$264
fire extinguishers	20	ea	0.00	0	260.000	5,200	.550	1	11	\$74.06	815	301	\$6,015
<b>SUBTOTAL</b>				\$0		\$9,389			42		\$3,271		\$12,660
<b>TOTAL DIRECT COST</b>				\$21,107		\$2,135,504			56727		\$4,565,146		\$6,721,757



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: FT. WW HANGARS 2 & 3 CONDITION ASSESSMENT  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 5  
 DESCRIPTION: ARCHITECTURAL - ALTERNATIVE 5

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR											
DESCRIPTION	%	EQUIPMENT COSTS		MATERIAL COSTS		LABOR HOURS			LABOR COSTS		MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB			\$0		\$265,459		4479		\$320,567		\$586,026
REGIONAL FACTOR (MEANS)	10.0%				\$26,546						\$26,546
FREIGHT	10.0%				\$26,546						\$26,546
OVERTIME	12.5%								\$40,071		\$40,071
COMPLEXITY	15.0%								\$48,085		\$48,085
<b>SUBTOTAL</b>			\$0		\$318,551				\$408,723		\$727,274
CONTRACTORS OVERHEAD	15.0%										\$109,091
CONTRACTORS PROFIT	10.0%										\$72,727
<b>SUBTOTAL</b>											\$909,092
<b>ARCHITECTURAL CONTRACT TOTAL</b>											<b>\$ 909,092</b>

DIRECT COSTS BY CSI DIVISIONS													
DIVISION 9 - FINISHES													
ceramic tile - floor 2 colors	550.0	sf	0.00	0	6.600	3,630	.088	1	48	\$70.16	3,396	12.77	\$7,026
ceramic tile - wall 2 colors, 4' w'scot	650.0	sf	0.00	0	4.900	3,185	.075	1	49	\$70.16	3,420	10.16	\$6,605
synthetic athletic flooring	30,400.0	SF	0.00	0	8.00	243,200	.140	1	4256	\$71.36	303,728	17.99	\$546,928
<b>SUBTOTAL</b>				\$0		\$250,015			4353		\$310,543		\$560,558
DIVISION 10 - SPECIALTIES													
toilet partitions	10.0	ea	0.00	0	325.000	3,250	2.300	1	23	\$79.39	1,826	507.59	\$5,076
privacy screens	10.0	ea	0.00	0	165.000	1,650	2.100	1	21	\$79.39	1,667	331.71	\$3,317
shower curtain rod & curtain	2.0	ea	0.00	0	115.000	230	2.000	1	4	\$79.39	318	273.78	\$548
retractable shower seat	2.0	ea	0.00	0	383.000	766	1.000	1	2	\$79.39	159	462.39	\$925
lockers	10.0	ea	0.00	0	160.000	1,600	1.000	1	10	\$79.39	794	239.39	\$2,394
grab bars	10.0	ea	0.00	0	51.000	510	2.000	1	20	\$79.39	1,588	209.78	\$2,098
undercounter lav piping protection	8.0	ea	0.00	0	100.000	800	2.000	1	16	\$79.39	1,270	258.78	\$2,070
soap dispensers	8.0	ea	0.00	0	66.000	528	.800	1	6	\$79.39	508	129.51	\$1,036
toilet tissue dispensers	10.0	ea	0.00	0	85.000	850	1.000	1	10	\$79.39	794	164.39	\$1,644
paper towel dispensers	8.0	ea	0.00	0	155.000	1,240	.800	1	6	\$79.39	508	218.51	\$1,748
waste receptacles	4.0	ea	0.00	0	185.000	740	.800	1	3	\$79.39	254	248.51	\$994
full mirrors	4.0	ea	0.00	0	750.000	3,000	.800	1	3	\$79.39	254	813.51	\$3,254
sanitary napkin dispenser	1.0	ea	0.00	0	140.000	140	.530	1	1	\$79.39	42	182.08	\$182
sanitary napkin disposal	1.0	ea	0.00	0	140.000	140	.530	1	1	\$79.39	42	182.08	\$182
<b>SUBTOTAL</b>				\$0		\$15,444			126		\$10,023		\$25,467
<b>TOTAL DIRECT COST</b>				\$0		\$265,459			4479		\$320,567		\$586,026



**HAZMAT REMOVAL COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HAZARDOUS MATERIALS - PER HANGAR

PREPARED BY: WAP  
 FOR: LLT

10/20/2011

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	HOURS			TOTAL LABOR RATE
TOTAL DIRECT COST, MATL & LAB				\$0		\$9,781			840		\$62,195.66	\$71,977
REGIONAL FACTOR			10.00%	\$0	\$0.10	\$978						\$978
FREIGHT			10.00%	\$0	\$0.00	\$0						\$0
OVER TIME - SOME COMPLEXITY										12.50%	\$7,774.46	\$7,774
										15.00%	\$9,329.35	\$9,329
<b>SUBTOTAL</b>				\$0		\$10,759					\$62,195.66	\$90,059
<u>CONTRACTOR OVER HEAD</u>		15.0%										\$13,509
<b>SUBTOTAL</b>												\$103,568
<u>CONTRACTOR PROFIT</u>		10.0%										\$10,357
<b>SUBTOTAL</b>												\$113,924
<b>CIVIL CONTRACT TOTAL</b>												\$113,924

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	HOURS			TOTAL LABOR RATE
<b>DIRECT COSTS BY CSI DIVISIONS</b>												
<b><u>DIVISION 2 - SITE WORK</u></b>												
<b>02088 ACM ABATEMENT</b>												
<b>CLASS 1 ACM REMOVAL</b>												
TSI PIPE INSULATION	250	LF		\$1.00	\$250	0.750	1	187.50	\$74.06	\$13,887	\$56.55	\$14,137
Mastic - Wall	255	SF		\$1.50	\$383	0.100	1	25.50	\$74.06	\$1,889	\$8.91	\$2,271
AIR MONITORING	1	EACH		\$150.00	\$150	11.000	1	11.00	\$74.06	\$815	\$964.71	\$965
<b>CLASS II ACM REMOVAL</b>												
Vinyl Asbestos Tile + Mastic	4,800	SF		\$0.75	\$3,600	0.040	1	192.00	\$74.06	\$14,220	\$3.71	\$17,820
Asbestos Wrapped Wiring	1,000	LF		\$0.65	\$650	0.033	1	33.00	\$74.06	\$2,444	\$3.09	\$3,094
PREPARE ABATEMENT WORK PLANS	1	LS		\$350.00	\$350					\$0	\$350.00	\$350
				\$0	\$0							
<b>CLEARANCE AIR MONITORING</b>	1	EACH		\$150.00	\$150	10.000	1	10.00	\$74.06	\$741	\$890.65	\$891
<b>MOB/DEMOB</b>	1	EACH		\$1,000.00	\$1,000						\$1,000.00	\$1,000
<b>LANDFILL DISPOSAL (ACM TONS)</b>	3	each		\$600.00	\$1,800						\$600.00	\$1,800
<b>SUBTOTAL</b>				\$0	\$8,333			459.00		\$33,996		\$42,328
<b>LEAD BASE PAINT REMOVAL</b>												
Paint on Concrete Floors	300	sf		\$1.50	\$450	0.750	1	225.00	\$74.06	\$16,665	\$57.05	\$17,115
Paint on Trim / Windows / Doors	905	lf		\$0.75	\$679	0.150	1	135.75	\$74.06	\$10,054	\$11.86	\$10,733
<b>SUBTOTAL</b>				\$0	\$1,129			360.75	\$74.06	\$26,719		\$27,848
Fluorescent Bulbs	180	ea		\$0	\$180	8.000	1	8.00	\$74.06	\$593	\$4.29	\$773
Lead Acid Batteries	10	ea		\$0	\$100	4.000	1	4.00	\$74.06	\$296	\$39.63	\$396
High Intensity Lighting (Bays)	40	ea		\$1.00	\$40	8.000	1	8.00	\$74.06	\$593	\$15.81	\$633
<b>SUBTOTAL</b>				\$0	\$320			20.00		\$1,481		\$1,801
<b>DIRECT COST</b>				\$0	\$9,781			839.75		\$62,196		\$71,977



**CIVIL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGERS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: CIVIL CONSTRUCTION ESTIMATE- ALL ALTS WITH POV PARKING

PREPARED BY: LLT

10/19/2011

DESCRIPTION	QUANTITY	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	TOTAL HOURS	LABOR RATE		
TOTAL DIRECT COST, MATL & LAB			\$141,620.84		\$806,909.00		3,622		\$290,755.37	\$1,239,285
REGIONAL FACTOR		10.00%	\$14,162.08	\$0.10	\$80,690.90					\$94,853
FREIGHT		10.00%	\$14,162.08	\$0.00	\$0.00					\$14,162
OVER TIME - SOME COMPLEXITY								12.50%	\$36,344.42	\$36,344
								15.00%	\$43,613.31	\$43,613
<b>SUBTOTAL</b>			\$169,945.01		\$887,599.90				\$290,755.37	\$1,428,258
CONTRACTOR OVER HEAD	15.0%									\$214,239
<b>SUBTOTAL</b>										\$1,642,497
CONTRACTOR PROFIT	10.0%									\$164,250
<b>SUBTOTAL</b>										\$1,806,746
<b>CIVIL CONTRACT TOTAL</b>										\$1,806,746

DESCRIPTION	QUANTITY	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	TOTAL HOURS	LABOR RATE			LABOR COST	
<b>DIRECT COSTS BY CSI DIVISIONS</b>												
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>												
TRAFFIC CONTROL + MAINT.	90 DAY			\$200.00	\$18,000.00					\$200.00	\$18,000	
PERMANENT CONSTRUCTION SIGNING	1 SGN-DY	\$3.50	\$3.50	\$0.00	\$0.00	0.001	1	0.00	\$79.39	\$0.08	\$3.58	\$4
FIELD OFFICE	3 Months	\$350.00	\$1,050.00	\$0.00	\$0.00					\$0.00	\$350.00	\$1,050
MOB/DEMOB	2 Each	\$1,000.00	\$2,000.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$1,000.00	\$2,000
SUPERINTENDENT	90 DAY	\$90.20	\$8,118.00	\$0.00	\$0.00	8.000	1	720.00	\$79.39	\$57,159.04	\$725.30	\$65,277
<b>SUBTOTAL</b>			\$11,171.50		\$18,000.00			720.00		\$57,159.12		\$86,331
<b>DIVISION 2 - SITE WORK</b>												
<b>02200 - SITE DEMOLITION</b>												
9 YARD DUMP, DRIVER INCLUDED	630 HR	\$60.00	\$37,800.00	\$0.00	\$0.00	0.000	1	0.00	\$76.64	\$0.00	\$60.00	\$37,800
DUMPSTER PICK	40 EA	\$90.00	\$3,600.00	\$0.00	\$0.00	0.000	1	0.00	\$93.91	\$0.00	\$90.00	\$3,600
DUMPSTER RENTAL	120 DAY	\$60.00	\$7,200.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$60.00	\$7,200
HAUL MTRL OUT	230 TRIP	\$30.00	\$6,900.00	\$0.00	\$0.00	0.500	1	115.00	\$83.54	\$9,606.56	\$71.77	\$16,507
REMOVE AND RESET HYDRANT	4 Each	\$237.00	\$948.00	\$0.00	\$0.00	4.000	1	20.00	\$77.87	\$1,557.46	\$626.37	\$2,505
<b>SUBTOTAL</b>			\$56,448.00		\$0.00			135.00		\$11,164.02		\$67,612
<b>02300 EARTHWORK</b>												
02310-AREA GRADING	7,538 SY	\$0.28	\$2,110.64		\$0.00	0.010	1	75.38	\$82.97	\$6,253.93	\$1.11	\$8,365
STRUCTURAL FILL, COMPACT, IN-PLACE	1,000 CY	\$1.00	\$1,000.00	\$8.00	\$8,000.00	0.060	1	60.00	\$79.88	\$4,793.07	\$13.79	\$13,793
LOADING, 5CY, LOADER	2,513 CY	\$0.35	\$879.55	\$0.00	\$0.00	0.800	1	2010.40	\$82.97	\$166,793.72	\$66.72	\$167,673
COMPATION, VIBRATING ROLLER, RIDING, 2 X	1,000 CY	\$0.16	\$160.00	\$0.00	\$0.00	0.006	1	6.00	\$82.97	\$497.79	\$63.48	\$63,483
REMOVE 14" CONCRETE	2,513 CY	\$25.00	\$62,825.00	\$0.00	\$0.00		1					
<b>SUBTOTAL</b>			\$66,975.19		\$8,000.00			2151.78		\$178,338.52		\$253,314
<b>02580- ELECTRICAL STRUCTURES</b>												
HEADBOLT HTR. OUT, WOOD POST ONLY	12 EA	\$14.00	\$168.00	\$27.00	\$324.00	0.500	1	6.00	\$73.72	\$442.34	\$77.86	\$934
NEW LIGHT POLE BASE	8 EA			\$500.00	\$4,000.00				\$73.72	\$500.00	\$500.00	\$4,000
GROUNDING POINTS/ TIE-DOWNS	4 EA	\$50.00	\$200.00	\$200.00	\$800.00	1.000	1	4.00	\$73.72	\$294.89	\$323.72	\$1,295
CONDUIT TRENCHING, BEDDING, BACKFILL	350 LF	\$1.16	\$406.00	\$0.63	\$220.50	0.017	1	5.95	\$76.80	\$456.98	\$3.10	\$1,083
<b>SUBTOTAL</b>			\$774.00		\$5,344.50			15.95		\$1,194.21		\$7,313
<b>PIPE TRENCHING AND BACKFILL</b>												
PIPE TRENCHING AND BACKFILL	125 CY	\$1.87	\$233.75	\$0.00	\$0.00	0.035	1	4.38	\$82.97	\$362.97	\$4.77	\$597
CATCH BASIN	1 EA	\$118.00	\$118.00	\$1,500.00	\$1,500.00	15.000	1	15.00	\$76.80	\$1,152.06	\$2,770.06	\$2,770
3/4" GALV. THAW PIPE	210 LF	\$1.22	\$256.20	\$8.00	\$1,680.00	0.024	1	5.04	\$75.26	\$379.33	\$11.03	\$2,316
<b>SUBTOTAL</b>			\$607.95		\$3,180.00			24.42		\$1,894.36		\$5,682
<b>02750-CONCRETE PAVEMENT</b>												
EXPANSION JOINTS (BACKER ROD W/SEAL)	2,100 LF	\$0.00	\$0.00	\$1.10	\$2,310.00	0.036	1	75.60	\$54.63	\$4,130.03	\$3.07	\$6,440
TRANSVERSE SAWCUTS	2,100 LF	\$0.31	\$651.00	\$0.34	\$714.00	0.100	1	210.00	\$73.72	\$15,481.80	\$8.02	\$16,847
CONCRETE PAVEMENT, 14" THICK	7,540 SY	\$0.40	\$3,016.00	\$100.00	\$754,000.00	0.029	1	218.66	\$76.70	\$16,771.98	\$102.62	\$773,788
PARKING PAINT STRIPING, 4" (POV)	870 LF	\$0.02	\$17.40	\$0.25	\$217.50	0.030	1	26.10	\$74.21	\$1,936.86	\$2.50	\$2,172
<b>SUBTOTAL</b>			\$3,684.40		\$757,241.50			530.36		\$38,320.67		\$799,247
<b>02800-SITE IMPROVEMENTS</b>												
LANDSCAPING BOULDERS	35 EA	\$50.00	\$1,750.00	\$300.00	\$10,500.00	0.500	1	17.50	\$73.72	\$1,290.15	\$386.86	\$13,540
24" R1-1, STOP	2 EA	\$7.70	\$15.40	\$65.00	\$130.00	0.457	1	0.91	\$77.78	\$71.09	\$108.24	\$216
PST SIGN POST	1 EA	\$4.00	\$4.00	\$65.00	\$65.00	0.229	1	0.23	\$51.23	\$11.73	\$80.73	\$81
BOLLARDS	16 EA	\$11.90	\$190.40	\$278.00	\$4,448.00	1.600	1	25.60	\$51.23	\$1,311.49	\$371.87	\$5,950
<b>SUBTOTAL</b>			\$1,959.80		\$15,143.00			44.24		\$2,684.46		\$19,787
<b>COLUMN TOTALS:</b>			\$141,620.84		\$806,909.00			3621.75		\$290,755.37		\$1,239,285



**MECHANICAL CONSTRUCTION COST ESTIMATE**

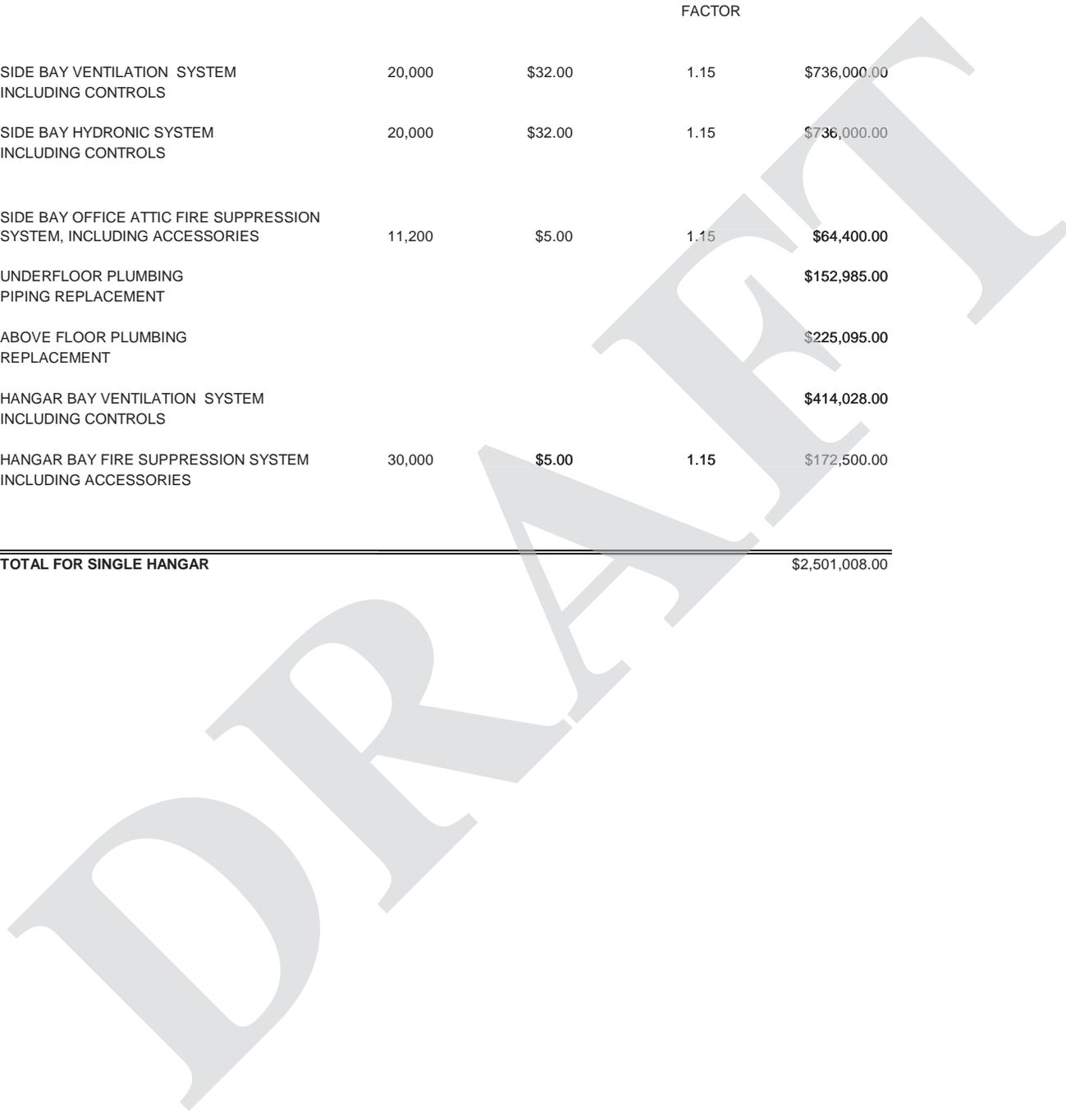
PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 5  
 DESCRIPTION: FIELD TRAINING

PREPARED BY: RJR  
 FOR: JMM

19-Oct-11

**MECHANICAL ESTIMATE SUMMARY**

SQUARE FOOTAGE COSTS:	SQ.FT	COST/SQ.FT	ESCALATION FACTOR	TOTAL
SIDE BAY VENTILATION SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY HYDRONIC SYSTEM INCLUDING CONTROLS	20,000	\$32.00	1.15	\$736,000.00
SIDE BAY OFFICE ATTIC FIRE SUPPRESSION SYSTEM, INCLUDING ACCESSORIES	11,200	\$5.00	1.15	\$64,400.00
UNDERFLOOR PLUMBING PIPING REPLACEMENT				\$152,985.00
ABOVE FLOOR PLUMBING REPLACEMENT				\$225,095.00
HANGAR BAY VENTILATION SYSTEM INCLUDING CONTROLS				\$414,028.00
HANGAR BAY FIRE SUPPRESSION SYSTEM INCLUDING ACCESSORIES	30,000	\$5.00	1.15	\$172,500.00
<b>TOTAL FOR SINGLE HANGAR</b>				<b>\$2,501,008.00</b>





**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: UNDERFLOOR PIPING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$45,750			722.60		\$49,240		\$94,990
REGIONAL FACTOR (MEANS)	10.0%				\$4,575							\$4,575
FREIGHT	10.0%				\$4,575							\$4,575
OVERTIME	12.5%									\$6,155		\$6,155
COMPLEXITY	15.0%									\$7,386		\$7,386
<b>SUBTOTAL</b>			\$0		\$54,900					\$62,781		\$117,680
CONTRACTORS OVERHEAD	15.0%											\$17,652
CONTRACTORS PROFIT	15.0%											\$17,652
<b>SUBTOTAL</b>												\$152,985
<b>MECHANICAL CONTRACT TOTAL</b>											<b>\$152,985</b>	

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>WASTE &amp; VENT SYSTEM</b>												
<b>PIPING</b>												
4" CAST IRON	600 Lin.Ft	\$0	\$0	\$16.33	\$9,800	0.29	1	174.60	\$69.06	\$12,057	36.4	\$21,857
FITTINGS	1 Elbow/20'		\$0	\$1.13	\$677	0.40	1	12.00	\$69.06	\$829		\$1,506
TRENCH DRAIN	200 Lin.Ft	\$0	\$0	\$96	\$19,200	1.00	1	200	\$67.82	\$13,565	163.8	\$32,765
CONCRETE DEMO	2800 Sq.Ft	\$0	\$0	\$0.24	\$672	0.06	1	168	\$67.82	\$11,395	4.3	\$12,067
CONCRETE PATCH & TRENCH	2800 Each	\$0	\$0	\$5.5	\$15,400	0.06	1	168	\$67.82	\$11,395	9.6	\$26,795
<b>COLUMN TOTALS:</b>			\$0		\$45,750			722.60		\$49,240		\$94,990



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: ABOVE GRADE PLUMBING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.				\$0		\$37,887		1,460.47		\$100,145		\$138,032
REGIONAL FACTOR (MEANS)	10.0%					\$3,789						\$3,789
FREIGHT	10.0%					\$3,789						\$3,789
OVERTIME	12.5%									\$12,518		\$12,518
COMPLEXITY	15.0%									\$15,022		\$15,022
SUBTOTAL				\$0		\$45,464				\$127,685		\$173,150
CONTRACTORS OVERHEAD	15.0%											\$25,972
CONTRACTORS PROFIT	15.0%											\$25,972
SUBTOTAL												\$225,095
MECHANICAL CONTRACT TOTAL												\$225,095

DESCRIPTION	QUANTITY	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>PLUMBING FIXTURES</b>												
TANK, WALL, 1 PIECE	3 Each	\$0	\$0	\$579.84	\$1,740	10.20	3	91.80	\$69.06	\$6,339	2693.0	\$8,079
FLUSH VALVE, WALL	4 Each	\$0	\$0	\$410.45	\$1,642	13.40	3	160.80	\$69.06	\$11,104	3186.5	\$12,746
WALL HUNG LAV	4 Each	\$0	\$0	\$853.47	\$3,414	12.00	3	144.00	\$69.06	\$9,944	3339.5	\$13,358
SERVICE, FLOOR, STONE	2 Each	\$0	\$0	\$650.20	\$1,300	16.30	3	97.80	\$69.06	\$6,754	4027.0	\$8,054
WALL SS, SINGLE COOLER	2 Each	\$0	\$0	\$963.57	\$1,927	10.00	3	60.00	\$69.06	\$4,143	3035.3	\$6,071
SHOWER	2 Each	\$0	\$0	\$865.19	\$1,730	16.00	3	96.00	\$69.06	\$6,629	4179.9	\$8,360
7360 BT EYEWASH, SS	1 Each	\$0	\$0	\$183.72	\$184	8.00	2	16.00	\$69.06	\$1,105	1288.6	\$1,289
8300 SHOWER/EYEWASH, SS	4 Each	\$0	\$0	\$658.02	\$2,632	8.00	2	64.00	\$69.06	\$4,420	1762.9	\$7,052
9202 TEMPERING VALVE	2 Each	\$0	\$0	\$1,710.00	\$3,420	4.00	2	16.00	\$69.06	\$1,105	2262.4	\$4,525
TEMPERING VALVE PANEL	2 Each	\$0	\$0	\$510.00	\$1,020	2.00	2	8.00	\$69.06	\$552	786.2	\$1,572
<b>DOMESTIC WATER MAINS</b>												
1" TYPE 'L' COPPER	200 Lin.Ft	\$0	\$0	\$5.88	\$1,176	0.12	1	23.60	\$69.06	\$1,630	14.0	\$2,806
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$41	0.50	1	5.00	\$69.06	\$345		\$386
2" TYPE 'L' COPPER	150 Lin.Ft	\$0	\$0	\$16.64	\$2,496	0.19	1	28.50	\$69.06	\$1,968	29.8	\$4,464
FITTINGS:	1 Elbow/20'	\$0	\$0	\$17.33	\$130	0.73	1	5.45	\$69.06	\$377		\$507
2 1/2" GALV. STEEL	200 Lin.Ft	\$0	\$0	\$18.40	\$3,679	0.26	1	51.60	\$69.06	\$3,563	36.2	\$7,242
FITTINGS:	1 Elbow/20'	\$0	\$0	\$12.68	\$127	0.89	1	8.89	\$69.06	\$614		\$741
<b>COMPRESSED AIR PIPING</b>												
3/4" BLACK STEEL	480 Lin.Ft	\$0	\$0	\$2.73	\$1,310	0.13	1	62.88	\$69.06	\$4,342	11.8	\$5,653
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.11	\$99	0.57	1	13.70	\$69.06	\$946		\$1,045
2" BLACK STEEL	550 Lin.Ft	\$0	\$0	\$8.32	\$4,576	0.25	1	137.50	\$69.06	\$9,495	25.6	\$14,071
FITTINGS:	1 Elbow/20'	\$0	\$0	\$14.56	\$400	0.89	1	24.48	\$69.06	\$1,690		\$2,091
<b>FIXTURE PIPING</b>												
3/4" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$4.11	\$1,233	0.11	3	94.50	\$69.06	\$6,526	25.9	\$7,759
FITTINGS:	1 Elbow/20'	\$0	\$0	\$1.62	\$24	0.42	1	6.32	\$69.06	\$436		\$460
1" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$5.88	\$1,764	0.12	3	106.20	\$69.06	\$7,334	30.3	\$9,098
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$61	0.50	1	7.50	\$69.06	\$518		\$579
<b>INSULATION - HYDRONIC SYSTEM</b>												
1" CW INSULATION	200 Lin.Ft	\$0	\$0	\$1.20	\$240	0.08	2	32	\$63.60	\$2,035	11.4	\$2,275
FITTINGS:	15% Allow	\$0	\$0	\$36	\$36	1	1	5	\$63.60	\$305		\$341
2" CW INSULATION	250 Lin.Ft	\$0	\$0	\$2.77	\$693	0.09	2	45	\$63.60	\$2,862	14.2	\$3,555
FITTINGS:	15% Allow	\$0	\$0	\$104	\$104	1	1	7	\$63.60	\$429		\$533
2 1/2" CW INSULATION	200 Lin.Ft	\$0	\$0	\$3.00	\$600	0.09	2	36	\$63.60	\$2,290	14.4	\$2,890
FITTINGS:	15% Allow	\$0	\$0	\$90	\$90	1	1	5	\$63.60	\$343		\$433
<b>COLUMN TOTALS:</b>				<b>\$0</b>		<b>\$37,887</b>		<b>1460.47</b>		<b>\$100,145</b>		<b>\$138,032</b>



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HANGAR BAY VENTILATION

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$87,606			2,491.14		\$167,338		\$254,944
REGIONAL FACTOR (MEANS)	10.0%				\$8,761							\$8,761
FREIGHT	10.0%				\$8,761							\$8,761
OVERTIME	12.5%									\$20,917		\$20,917
COMPLEXITY	15.0%									\$25,401		\$25,401
<b>SUBTOTAL</b>			\$0		\$105,127					\$213,357		\$318,483
CONTRACTORS OVERHEAD	15.0%											\$47,772
CONTRACTORS PROFIT	15.0%											\$47,772
<b>SUBTOTAL</b>												\$414,028
<b>MECHANICAL CONTRACT TOTAL</b>												<b>\$414,028</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>EQUIPMENT</b>												
16,000 CFM SUPPLY FAN	2 Each	\$0	\$0	\$23000	\$46,000	200.00	1	400	\$67.82	\$27,130	36564.9	\$73,130
8,000 CFM PROPELLER FAN	4 Each	\$0	\$0	\$2700	\$10,800	30.00	1	120	\$67.82	\$8,139	4734.7	\$18,939
ELECTRICAL CONNECTION	6 Each	\$0	\$0	\$500	\$3,000	30.00	1	180	\$67.82	\$12,208	2534.7	\$15,208
18" SUPPLY FAN PLATFORM	2 Each	\$0	\$0	\$500	\$1,000	40.00	1	80	\$67.82	\$5,426	3213.0	\$6,426
<b>PIPING</b>												
2" TYPE 'L' COPPER	240 Lin.Ft	\$0	\$0	\$15.71	\$3,771	0.19	1	45.60	\$69.06	\$3,149	28.8	\$6,920
FITTINGS	1 Elbow/20'	\$0	\$0	\$0.95	\$227	0.40	1	4.80	\$69.06	\$331		\$559
3" BLACK STEEL	600 Lin.Ft	\$0	\$0	\$14.50	\$8,697	0.37	1	223.20	\$69.06	\$15,413	40.2	\$24,110
FITTINGS	1 Elbow/20'	\$0	\$0	\$26.65	\$800	2.30	1	69.00	\$69.06	\$4,765		\$5,564
2" HYDRONIC INSULATION	240 Lin.Ft	\$0	\$0	\$2.77	\$665	0.09	1	22	\$63.60	\$1,374	8.5	\$2,039
FITTINGS	15% Allow	\$0	\$0		\$100		1	3	\$63.60	\$206		\$306
3" HYDRONIC INSULATION	600 Lin.Ft	\$0	\$0	\$3.54	\$2,124	0.10	1	60	\$63.60	\$3,816	9.9	\$5,940
FITTINGS	15% Allow	\$0	\$0		\$319		1	9	\$63.60	\$572		\$891
<b>DUCTWORK</b>												
36" dia.	400 Lin.Ft	\$0	\$0	\$7.75	\$3,100	1.55	1	620	\$67.82	\$42,051	112.9	\$45,151
110" SEMI-PERIMETER	80 Lin.Ft	\$0	\$0	\$33.67	\$2,693	3.13	1	250	\$67.82	\$16,963	245.7	\$19,656
2" RIGID INSULATION	1500 Sq.Ft	\$0	\$0	\$1.26	\$1,890	0.13	2	390	\$63.60	\$24,804	17.8	\$26,694
12"X48" SUPPLY REGISTERS	20 Each	\$0	\$0	\$121	\$2,420	0.73	1	15	\$67.82	\$990	170.5	\$3,410
<b>COLUMN TOTALS:</b>			\$0		\$87,606			2491.14		\$167,338		\$254,944



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 5  
 DESCRIPTION: FIELD TRAINING

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR				TOTAL		
	Electrical	Contractor	Unit	Equip	Unit	Material	Hrs/Unit	Units	Total Hrs.	Labor Rate	Labor Cost	Unit Cost	Total Cost
TOTAL DIRECT COST, MATL & LAB.						\$479,318			7,098.5		\$548,185		\$1,027,503
REGIONAL FACTOR (MEANS)	10.0%					\$47,932							\$47,932
FREIGHT	10.0%					\$47,932							\$47,932
OVERTIME	12.5%										\$68,523		\$68,523
COMPLEXITY	15.0%										\$82,228		\$82,228
<b>SUBTOTAL</b>						\$575,182					\$698,935		\$1,274,117
CONTRACTOR'S OVERHEAD	15.0%												\$191,118
CONTRACTOR'S PROFIT	10.0%												\$127,412
<b>SUBTOTAL</b>													\$1,592,646
<b>ELECTRICAL CONTRACT TOTAL</b>													\$1,592,646

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR				TOTAL		
	Electrical	Contractor	Unit	Equip	Unit	Material	Hrs/Unit	Units	Total Hrs.	Labor Rate	Labor Cost	Unit Cost	Total Cost
<b>CONDUIT - E.M.T.</b>													
1/2" E.M.T.	18,055	Lin.Ft	\$0	\$0	\$0.87	\$15,787	4.5	100	812.5	\$77.30	\$62,804	\$6.97	\$78,592
FITTINGS & ASSEMBLY	100%	Matl	\$0	\$0		\$15,787	50%	Lab	406.2	\$77.30	\$31,402		\$47,189
3/4" E.M.T.	2,708	Lin.Ft	\$0	\$0	\$1.76	\$4,778	5.0	100	135.4	\$77.30	\$10,467	\$11.17	\$15,246
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$7,167	75%	Lab	101.6	\$77.30	\$7,851		\$15,018
1 1/4" E.M.T.	200	Lin.Ft	\$0	\$0	\$4.60	\$919	6.2	100	12.4	\$77.30	\$959	\$19.87	\$1,878
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$1,379	75%	Lab	9.3	\$77.30	\$719		\$2,097
<b>CONDUIT - FLEX</b>													
1/2" FLEX	100	Lin.Ft	\$0	\$0	\$0.98	\$98	4.0	100	4.0	\$77.30	\$309	\$6.11	\$407
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$49	50%	Lab	2.0	\$77.30	\$155		\$204
3/4" LIQ. TIGHT	100	Lin.Ft	\$0	\$0	\$4.17	\$417	5.0	100	5.0	\$77.30	\$387	\$12.05	\$804
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$209	50%	Lab	2.5	\$77.30	\$193		\$402
<b>CONDUIT - R.S.C.</b>													
2" R.S.C.	200	Lin.Ft	\$0	\$0	\$17.06	\$3,412	11.0	100	22.0	\$77.30	\$1,701	\$25.56	\$5,112
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$1,706	40%	Lab	8.8	\$77.30	\$680	\$11.93	\$2,386
3" R.S.C.	500	Lin.Ft	\$0	\$0	\$38.79	\$19,393	20.0	100	100.0	\$77.30	\$7,730	\$54.25	\$27,123
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$9,696	40%	Lab	40.0	\$77.30	\$3,092	\$25.58	\$12,788
<b>CONDUCTORS</b>													
12 AWG THHN	68,700	Lin.Ft	\$0	\$0	\$0.34	\$23,388	6.0	1000	412.2	\$77.30	\$31,863	\$0.80	\$55,252
10 AWG THHN	10,305	Lin.Ft	\$0	\$0	\$0.54	\$5,547	7.0	1000	72.1	\$77.30	\$5,576	\$1.08	\$11,123
4/0 AWG THHN	3,000	Lin.Ft	\$0	\$0	\$12.28	\$36,829	29.0	1000	87.0	\$77.30	\$6,725	\$14.52	\$43,554
500 MCM XHHW	2,000	Lin.Ft	\$0	\$0	\$32.90	\$65,798	48.0	1000	96.0	\$77.30	\$7,421	\$36.61	\$73,218
<b>MULTI-OUTLET ASSEMBLY</b>													
WIREMOLD 3000	600	Lin.Ft	\$0	\$0	\$3.50	\$2,100	0.5	1	300.0	\$77.30	\$23,190	\$42.15	\$25,290
<b>RECEPTACLES</b>													
DUPLEX RECEPTACLE	480	Each	\$0	\$0	\$8.00	\$3,840	1.5	1	720.0	\$77.30	\$55,656	\$123.95	\$59,496
QUAD RECEPTACLE	40	Each	\$0	\$0	\$15.00	\$600	1.5	1	60.0	\$77.30	\$4,638	\$130.95	\$5,238
GFI RECEPTACLE	24	Each	\$0	\$0	\$25.00	\$600	1.5	1	36.0	\$77.30	\$2,783	\$140.95	\$3,383
WP GFCI RECEPTACLE	12	Each	\$0	\$0	\$45.00	\$540	1.5	1	18.0	\$77.30	\$1,391	\$160.95	\$1,931
<b>LIGHTING</b>													
TYPE 'A1'	71	Each	\$0	\$0	\$120.00	\$8,520	1.5	1	106.5	\$77.30	\$8,232	\$235.95	\$16,752
TYPE 'A2'	135	Each	\$0	\$0	\$130.00	\$17,550	1.5	1	202.5	\$77.30	\$15,653	\$245.95	\$33,203
TYPE 'C2'	41	Each	\$0	\$0	\$100.00	\$4,100	1.5	1	61.5	\$77.30	\$4,754	\$215.95	\$8,854
TYPE 'EX'	48	Each	\$0	\$0	\$85.00	\$4,080	1.5	1	72.0	\$77.30	\$5,566	\$200.95	\$9,646
TYPE 'I4'	41	Each	\$0	\$0	\$1,200.00	\$49,200	3.0	1	123.0	\$77.30	\$9,508	\$1,431.90	\$58,708
EXTERIOR LIGHTING	1	L.S.	\$0	\$0	\$20,000.00	\$20,000	400.0	1	400.0	\$77.30	\$30,920	\$50,920.00	\$50,920



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 5  
 DESCRIPTION: FIELD TRAINING

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>MOTORS</b>													
SINGLE PH MOTOR CONN.	12	Each	\$0	\$0	\$27.00	\$324	1.0	1	12.0	\$77.30	\$928	\$104.30	\$1,252
30A TT SWITCH	12	Each	\$0	\$0	\$35.00	\$420	1.5	1	18.0	\$77.30	\$1,391	\$150.94	\$1,811
THREE PH MOTOR CONN.	8	Each	\$0	\$0	\$15.00	\$120	2.0	1	16.0	\$77.30	\$1,237	\$169.60	\$1,357
COMB STARTER	8	Each	\$0	\$0	\$675.00	\$5,400	6.0	1	48.0	\$77.30	\$3,710	\$1,138.80	\$9,110
<b>DISTRIBUTION PANELBOARDS</b>													
NEW DIST PNL '480V 1200A'	1	Each	\$0	\$0	\$17,910.80	\$17,911	24.0	1	24.0	\$77.30	\$1,855	\$19,766	\$19,766
NEW DIST PNL '208V 800A'	1	Each	\$0	\$0	\$11,604.00	\$11,604	24.0	1	24.0	\$77.30	\$1,855	\$13,459	\$13,459
<b>BRANCH CIRCUIT PANELBOARDS</b>													
NEW BRANCH PNL '208V 225A'	4	Each	\$0	\$0	\$2,520.48	\$10,082	24.0	1	96.0	\$77.30	\$7,421	\$4,376	\$17,503
NEW BRANCH PNL '480V 100A'	2	Each	\$0	\$0	\$3,719.20	\$7,438	24.0	1	48.0	\$77.30	\$3,710	\$5,574	\$11,149
<b>TRANSFORMERS</b>													
300 kVA 480V-208Y/120V	1	Each	\$0	\$0	\$16,754.40	\$16,754	16.0	1	16.0	\$77.30	\$1,237	\$17,991.20	\$17,991
<b>FIRE ALARM AND MNS</b>													
FIRE ALARM SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
MNS SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
<b>NETWORK SYSTEMS</b>													
EQUIPMENT RACK	2	Each	\$0	\$0	\$250.00	\$500	8.0	1	16.0	\$77.30	\$1,237	\$868.40	\$1,737
CAT 6 CABLING	9,600	Lin.Ft	\$0	\$0	\$0.36	\$3,456	10.0	1000	96.0	\$77.30	\$7,420	\$1.13	\$10,876
DATA OUTLETS	240	Each	\$0	\$0	\$8.00	\$1,920	1.5	1	360.0	\$77.30	\$27,828	\$123.95	\$29,748
TERMINATE & TEST	0%	Matl	\$0	\$0	\$0	\$0	50% Lab		180.0	\$74.36	\$13,386		\$13,386
GROUND BUS	2	Each	\$0	\$0	\$150.00	\$300	2.0	1	4.0	\$77.30	\$309	\$304.59	\$609
PATCH PANELS	8	Each	\$0	\$0	\$200.00	\$1,600	4.0	1	32.0	\$77.30	\$2,473	\$509.18	\$4,073
<b>DEMOLITION</b>													
ELECTRICAL DEMO	1	Allow	\$0	\$0	\$6,000.00	\$6,000	480.0	1	480	\$77.30	\$37,102	\$43,101.95	\$43,102
<b>COLUMN TOTALS:</b>				\$0		\$479,318			7,098.5		\$548,185		\$1,027,503

# COST ESTIMATE

## ALTERNATIVE 6 - WARM STORAGE AND FLEX SPACE



### PROJECT CONSTRUCTION COST ESTIMATE

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: SUMMARY - BASE BID

15-Oct-11

Prepared by: JMM

DESCRIPTION	QUANTITY	UNIT	HRS/ UNIT	LABOR RATE	LABOR COST	TOTAL
GENERAL CONTRACTOR						
ARCHITECTURAL BASIC REHAB TOTAL						\$10,505,341
ARCHITECTURAL ALTERN 6 TOTAL						\$255,892
<b>SUBCONTRACTOR WORK</b>						
HAZ MAT CONTACTOR					\$113,924	\$113,924
CIVIL SITE WORK CONTRACTOR					\$1,806,746	\$1,806,746
STRUCTURAL CONTRACTORS					\$1,850,000	\$1,850,000
MECHANICAL CONTRACTOR & FIRE PROTECTION CONTRACTOR					\$1,294,928	\$1,294,928
ELECTRICAL CONTRACTOR					\$1,557,928	\$1,557,928
GEN.CONTRACTOR OHMARKUP	10.0%					\$650,960
SUBTOTAL					\$6,509,602	\$18,035,719
GENERAL CONDITIONS	15.0%					\$2,705,358
SUBTOTAL						\$20,741,077
ESTIMATING CONTINGENCY	35.0%					\$7,259,377
SUBTOTAL						\$28,000,454
ESCALATION-CONSTR.COST	15.0%	TO 2016				\$4,200,068
<b>TOTAL CONSTRUCTION COST</b>						<b>\$32,200,522</b>

**BASE BID (PER HANGER) \$32,200,522**  
**+ FIRE & STAIR TOWER REPAIRS (HANGAR 2 ONLY) \$1,190,000**

#### NOTES REGARDING THE PREPARATION OF THIS COST ESTIMATE

THIS ESTIMATE IS PREPARED USING CURRENT CONSTRUCTION COSTS & ASSUMES WILL RECEIVE AN OPEN COMPETITIVE BID.

THIS ESTIMATE DOES NOT CONTAIN AN ALLOWANCE FOR NEGOTIATED NON-COMPETITIVE CONTRACTS.

THIS ESTIMATE HAS AN ESCALATION ALLOWANCE.

THIS ESTIMATE DOES NOT HAVE AN ALLOWANCE TO TREAT / REMOVE ANY HAZARDOUS MATERIALS OR CONTAMINATED SOIL.

THIS ESTIMATE DOES NOT INCLUDE ANY PLAN CHECK FEES CHARGED BY THE STATE OF ALASKA OR ANY OTHER ENTITY CLAIMING JURISDICTION OVER THE WORK PAID DIRECTLY BY THE OWNER.

THIS ESTIMATE DOES NOT INCLUDE THE A/E FEES, SHOP EQUIPMENT OR COSTS FOR ANY WORK NOT INDICATED.

THIS ESTIMATE IS BASED ON A NORMAL WORK WEEK WITH SOME PROVISIONS FOR OVERTIME.

ESTIMATING CONTINGENCY - AN ALLOWANCE FOR CONSTRUCTION DOCUMENT REQUIREMENTS THAT ARE NOT INCLUDED

EITHER THE 2011 R.S. MEANS FACILITIES CONSTRUCTION COST DATA MANUAL, THE 2011 R.S. MEANS ASSEMBLIES COST DATA MANUAL, OR PAST HISTORICAL DATA HAVE BEEN USED AS RESOURCES TO COMPILE THIS ESTIMATE.



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS		

**SUMMARY OF COSTS**

GENERAL CONTRACTOR						
DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$21,107	\$2,135,504	56727	\$4,565,146	\$6,721,757
REGIONAL FACTOR (MEANS)	10.0%		\$213,550			\$213,550
FREIGHT	10.0%		\$213,550			\$213,550
OVERTIME	12.5%				\$570,643	\$570,643
COMPLEXITY	15.0%				\$684,772	\$684,772
<b>SUBTOTAL</b>		\$21,107	\$2,562,605		\$5,820,561	\$8,404,273
CONTRACTORS OVERHEAD	15.0%					\$1,260,641
CONTRACTORS PROFIT	10.0%					\$840,427
<b>SUBTOTAL</b>						\$10,505,341
<b>ARCHITECTURAL CONTRACT TOTAL</b>						<b>\$ 10,505,341</b>

DIRECT COSTS BY CSI DIVISIONS

**DIVISION 2 - SITE WORK**

**BUILDING**

demo finishes to studs-ext. walls	40,200	sf	0.00	0	0.000	0	.040	1	1608	\$73.72	118,546	3	\$118,546
demo walls- interior	5,000	sf	0.00	0	0.000	0	.040	1	200	\$73.72	14,745	3	\$14,745
demo roof epdm	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof recovery board	44,880	sf	0.00	0	0.000	0	.030	1	1346	\$86.43	116,371	3	\$116,371
demo roof insul. (below deck)	44,880	sf	0.00	0	0.000	0	.013	1	583	\$73.72	43,013	1	\$43,013
demo metal siding	32,850	lf	0.00	0	0.000	0	.030	1	986	\$73.72	72,654	2	\$72,654
demo metal flashing	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo wood fascia	1,500	lf	0.00	0	0.000	0	.013	1	20	\$73.72	1,438	1	\$1,438
demo concrete - support bays	5,000	sf	0.00	0	0.600	3,000	.050	1	250	\$73.72	18,431	4	\$21,431
demo concrete curbs at ext.dr.s.	1	ls	0.00	0	550.000	550	18.000	1	18	\$73.72	1,327	1877	\$1,877
demo mortar.conc.-restrooms	450	sf	0.00	0	0.600	270	.210	1	95	\$73.72	6,967	16	\$7,237
excavate restroom floors	50	bcy	1.40	70	0.000	0	2.660	1	133	\$73.72	9,805	198	\$9,875
demo entry canopy roof	3	ea	0.00	0	760.000	2,280	.035	1	0	\$73.72	8	763	\$2,288
demo int.wall finish- support bays	12,500	sf	0.00	0	0.000	0	.160	1	2000	\$73.72	147,446	12	\$147,446
demo tile	20,000	lf	0.00	0	0.000	0	.020	1	400	\$73.72	29,489	1	\$29,489
demo carpet	10,000	sf	0.00	0	0.000	0	.025	1	250	\$73.72	18,431	2	\$18,431
demo ceramic tile-floor	988	ls	0.00	0	0.000	0	.042	1	41	\$73.72	3,059	3	\$3,059
demo ceramic tile-wall	1,480	ea	0.00	0	0.000	0	.042	1	62	\$73.72	4,583	3	\$4,583
demo exterior drs & frames	16	ea	0.00	0	0.000	0	1.460	1	23	\$73.72	1,722	108	\$1,722
demo interior drs & frames	70	ea	0.00	0	0.000	0	1.500	1	105	\$73.72	7,741	111	\$7,741
demo hangar drs & frames(26'x72')	1,950	sf	1.10	2,145	0.000	0	.140	1	273	\$73.72	20,126	11	\$22,271
demo exterior windows	63	ea	0.00	0	0.000	0	1.500	1	95	\$73.72	6,967	111	\$6,967
demo interior relites	14	ea	0.00	0	0.000	0	.500	1	7	\$73.72	516	37	\$516
remove interior stair handrails	150	lf	0.00	0	0.000	0	.200	1	30	\$73.72	2,212	15	\$2,212
<b>SUBTOTAL</b>				\$2,215	\$6,100				9891		\$763,404		\$771,719

**DIVISION 3 - CONCRETE**

concrete floor- hangar-2" topping	30,400	sf	0.01	304	2.500	76,000	.022	1	669	\$79.38	53,092	4	\$129,396
concrete floor- 1st flr RRs/Lockrms	988	sf	0.01	10	2.500	2,470	.022	1	22	\$79.38	1,725	4	\$4,205
concrete floor- support bays-6"	5,000	sf	0.01	50	2.500	12,500	.022	1	110	\$79.38	8,732	4	\$21,282
<b>SUBTOTAL</b>				\$364	\$90,970				801		\$63,549		\$154,883

**DIVISION 5 - METAL**

floor exp.jts. (exist.jts.)	800	lf	0.01	8	25.000	20,000	.211	1	169	\$79.38	13,400	42	\$33,408
hangar dr.ext.rf.platforms-rebuild	240	sf	0.00	0	15.000	3,600	.010	1	2	\$79.39	191	16	\$3,791
hangar dr.ext.rf.guardrail-rebuild	184	lf	0.00	0	32.000	5,888	.200	1	37	\$79.39	2,921	48	\$8,809
stairs interior handrails- repair	140	lf	0.00	0	32.000	4,480	.200	1	28	\$79.39	2,223	48	\$6,703
catwalks - platforms - repair	2,500	sf	0.00	0	22.000	55,000	.010	1	25	\$79.39	1,985	23	\$56,985
catwalks - structure - repair	2,500	sf	0.00	0	28.000	70,000	.025	1	63	\$79.39	4,962	30	\$74,962
catwalks - guardrails - repair	200	lf	0.00	0	32.000	6,400	.200	1	40	\$79.39	3,176	48	\$9,576
catwalks - ladders/stairs	150	risers	0.00	0	250.000	37,500	.050	1	8	\$79.39	595	254	\$38,095
misc. connections	1	ls	0.00	0	2500.000	2,500	.000	1	0	\$79.39	0	2500	\$2,500
<b>SUBTOTAL</b>				\$8	\$205,368				371		\$29,452		\$234,828



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: ARCHITECTURAL - BASIC REHABILITATION

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS			LABOR RATE	LABOR COST
<b>DIVISION 7 - THERMAL AND MOISTURE</b>													
EPDM roof - hangar-R90	24,880	sf	0.00	0	8.150	202,772	.351	1	8733	\$86.43	754,795	38	\$957,567
EPDM roof - support bays-R90	20,000	sf	0.00	0	8.150	163,000	.351	1	7020	\$86.43	606,748	38	\$769,748
waterprfg/insul./flashing- wall base	3,200	sf	0.00	0	0.400	1,280	.400	1	1280	\$79.39	101,616	32	\$102,896
roof fascia	1,500	lf	0.00	0	2.260	3,390	.016	1	24	\$86.43	2,074	4	\$5,464
metal flashing	1,500	lf	0.00	0	2.100	3,150	.016	1	24	\$86.43	2,074	3	\$5,224
conc.flr.moisture barrier- hangar	30,400	sf	0.00	0	1.600	48,640	.030	1	912	\$79.38	72,398	4	\$121,038
conc.flr.moisture barrier- supp.bays	50,400	sf	0.00	0	1.600	80,640	.030	1	1512	\$79.38	120,028	4	\$200,668
new framing (hangar dr.overhang)	1	ls	0.00	0	5000.000	5,000	250.000	1	250	\$79.38	19,846	24846	\$24,846
new sheathing (hangar dr.overhang)	600	sf	0.00	0	1.260	756	.020	1	12	\$79.38	953	3	\$1,709
bird screen (hangar dr.overhang)	1,200	sf	0.00	0	0.300	360	.260	1	312	\$79.38	24,768	21	\$25,128
metal roof (hangar dr.overhang)	1,200	sf	0.00	0	3.500	4,200	.350	1	420	\$86.43	36,301	34	\$40,501
entry canopy roofs	3	ea	0.00	0	800.000	2,400	15.000	1	45	\$86.43	3,889	2096	\$6,289
snow guards	2,400	lf	0.00	0	2.600	6,240	.060	1	144	\$86.43	12,446	8	\$18,686
new insulated mtl.wall panels-R49	32,850	sf	0.00	0	25.000	821,250	.060	1	1971	\$79.39	156,473	30	\$977,723
new wall batts-R21	32,850	sf	0.00	0	0.360	11,826	.350	1	11498	\$79.39	912,758	28	\$924,584
<b>SUBTOTAL</b>				\$0		\$1,354,904			34156		\$2,827,167		\$4,182,071
<b>DIVISION 8 - DOORS &amp; WINDOWS</b>													
ADA barrier free entrances	10	ea	0.00	0	1000.000	10,000	32.000	1	320	\$79.39	25,404	3540	\$35,404
doors- ext.insul.-drs.,fr.,hardware	16	ea	0.00	0	1800.000	28,800	3.000	1	48	\$79.39	3,811	2038	\$32,611
doors- hangar int.-drs.,fr.,hdwre	22	ea	0.00	0	1325.000	29,150	3.000	1	66	\$79.39	5,240	1563	\$34,390
doors- nonrated supp.spaces int.	22	ea	0.00	0	1200.000	26,400	2.000	1	44	\$79.39	3,493	1359	\$29,893
doors- rated supp.spaces int.	26	ea	0.00	0	1500.000	39,000	2.000	1	52	\$79.39	4,128	1659	\$43,128
replace hangar doors (26'x75')	3,900	sf	0.00	0	28.000	109,200	.090	1	351	\$79.39	27,865	35	\$137,065
ext. insulated access drs., frames	16	ea	0.00	0	410.000	6,560	.900	1	14	\$79.39	1,143	481	\$7,703
new energy efficient windows	63	ea	0.00	0	800.000	50,400	.900	1	57	\$79.39	4,501	871	\$54,901
new relites to hangar from sidebays	192	sf	0.00	0	22.500	4,320	.178	1	34	\$79.39	2,713	37	\$7,033
<b>SUBTOTAL</b>				\$0		\$303,830			986		\$78,298		\$382,128
<b>DIVISION 9 - FINISHES</b>													
upgrade hangar walls to 2 hr.rated	26,752	sf	0.00	0	2.600	69,555	.120	1	3210	\$79.39	254,853	12	\$324,408
upgrade int.walls occup.separation	1,650	sf	0.00	0	0.800	1,320	.700	1	1155	\$79.39	91,693	56	\$93,013
upgrade ext.walls support bays	20,100	sf	0.00	0	2.700	54,270	.090	1	1809	\$79.39	143,612	10	\$197,882
vapor retarder - roof	44,880	sf	0.00	0	0.032	1,436	.003	1	135	\$79.39	10,689	0	\$12,125
vapor retarder - exterior walls	32,850	sf	0.00	0	0.032	1,051	.003	1	99	\$79.39	7,824	0	\$8,875
replace improperly framed walls	1	ls	0.00	0	5500.000	5,500	255.000	1	255	\$79.39	20,244	25744	\$25,744
floor clean and prep	70,400	sf	0.00	0	0.026	1,830	.009	1	634	\$71.36	45,217	1	\$47,047
rubber base	3,950	sf	0.00	0	0.470	1,857	.035	1	138	\$71.36	9,866	3	\$11,723
int.exit stair rubber tile	200	sf	0.00	0	5.000	1,000	.065	1	13	\$71.36	928	10	\$1,928
seal concrete - hangar floor	30,400	sf	0.00	0	0.070	2,128	.004	1	122	\$79.38	9,653	0	\$11,781
epoxy paint concrete- support bays	19,550	sf	0.00	0	0.026	508	.066	1	1290	\$71.36	92,082	5	\$92,590
paint ceilings - support bays	20,000	sf	0.00	0	0.030	600	.015	1	300	\$69.29	20,788	1	\$21,388
patch, prep walls for finish	1	ls	0	0	4100.000	4,100	125.000	1	125	\$69.29	8,662	12762	\$12,762
paint walls up to 12'- support bays	39,500	sf	0.00	0	0.011	435	.022	1	869	\$69.29	60,216	2	\$60,650
paint walls above 12'- hangar	14,820	sf	1.00	14,820	0.014	207	.015	1	222	\$69.29	15,404	2	\$30,431
repaint large hangar numbers	400	sf	1.00	400	0.014	6	.015	1	6	\$69.29	416	2	\$821
hangar draft curtains	3,300	sf	1.00	3,300	5.800	19,140	.030	1	99	\$79.39	7,859	9	\$30,299
<b>SUBTOTAL</b>				\$18,520		\$164,943			10480		\$800,004		\$983,467
<b>DIVISION 10 - SPECIALTIES</b>													
interior signs	50	ea	0.00	0	80.000	4,000	.600	1	30	\$79.39	2,382	128	\$6,382
window blinds	63	ea	0.00	0	3.000	189	.015	1	1	\$79.39	75	4	\$264
fire extinguishers	20	ea	0.00	0	260.000	5,200	.550	1	11	\$74.06	815	301	\$6,015
<b>SUBTOTAL</b>				\$0		\$9,389			42		\$3,271		\$12,660
<b>TOTAL DIRECT COST</b>				\$21,107		\$2,135,504			56727		\$4,565,146		\$6,721,757



**ARCHITECTURAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: ARCHITECTURAL - ALTERNATIVE 6

15-Oct-11

PREPARED BY: JMM

	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL HOURS		

**SUMMARY OF COSTS**

**GENERAL CONTRACTOR**

DESCRIPTION	%	EQUIPMENT COSTS	MATERIAL COSTS	LABOR HOURS	LABOR COSTS	MATERIAL & LABOR
TOTAL DIRECT COST, MATL & LAB		\$0	\$74,302	1261	\$90,629	\$164,931
REGIONAL FACTOR (MEANS)	10.0%		\$7,430			\$7,430
FREIGHT	10.0%		\$7,430			\$7,430
OVERTIME	12.5%				\$11,329	\$11,329
COMPLEXITY	15.0%				\$13,594	\$13,594
<b>SUBTOTAL</b>		\$0	\$89,162		\$115,551	\$204,714
CONTRACTORS OVERHEAD	15.0%					\$30,707
CONTRACTORS PROFIT	10.0%					\$20,471
<b>SUBTOTAL</b>						\$255,892
<b>ARCHITECTURAL CONTRACT TOTAL</b>						<b>\$ 255,892</b>

**DIVISION 9 - FINISHES**

ceramic tile - floor 2 colors	988.0	sf	0.00	0	6.50	6,422	.087	1	85.96	\$70.16	6,030	13	\$12,452
ceramic tile - wall 2 colors, 4' w/scot	650.0	sf	0.00	0	4.800	3,120	.070	1	45.50	\$70.16	3,192	9.71	\$6,312
VCT - 2nd floor, static dissipative	1,000.0	sf	0.00	0	2.500	2,500	.500	1	500.00	\$71.36	35,682	38.18	\$38,182
carpet tiles - 2nd floor, 26 oz., 18x18	10,000.0	sf	0.00	0	5.000	50,000	.053	1	530.00	\$71.36	37,823	8.78	\$87,823
<b>SUBTOTAL</b>				\$0		\$62,042			1161.46		\$82,728		\$144,770

**DIVISION 10 - SPECIALTIES**

toilet partitions	10.0	ea	0.00	0	320.00	3,200	2.286	1	22.86	\$79.39	1,815	501	\$5,015
privacy screens	10.0	ea	0.00	0	160.000	1,600	2.000	1	20.00	\$79.39	1,588	318.78	\$3,188
grab bars	10.0	ea	0.00	0	50.000	500	.400	1	4.00	\$79.39	318	81.76	\$818
undercounter lav piping protection	8.0	ea	0.00	0	50.000	400	.400	1	3.20	\$79.39	254	81.76	\$654
soap dispensers	8.0	ea	0.00	0	65.000	520	3.200	1	25.60	\$79.39	2,032	319.04	\$2,552
toilet tissue dispensers	10.0	ea	0.00	0	85.000	850	1.000	1	10.00	\$79.39	794	164.39	\$1,644
paper towel dispensers	8.0	ea	0.00	0	150.000	1,200	.800	1	6.40	\$79.39	508	213.51	\$1,708
waste receptacles	4.0	ea	0.00	0	180.000	720	.800	1	3.20	\$79.39	254	243.51	\$974
full mirrors	4.0	ea	0.00	0	750.000	3,000	.800	1	3.20	\$79.39	254	813.51	\$3,254
sanitary napkin dispenser	1.0	ea	0.00	0	135.000	135	.530	1	0.53	\$79.39	42	177.08	\$177
sanitary napkin disposal	1.0	ea	0.00	0	135.000	135	.530	1	0.53	\$79.39	42	177.08	\$177
<b>SUBTOTAL</b>				\$0		\$12,260			99.52		\$7,901		\$20,161

<b>TOTAL DIRECT COST</b>				\$0		\$74,302			1260.98		\$90,629		\$164,931
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**HAZMAT REMOVAL COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HAZARDOUS MATERIALS - PER HANGAR

PREPARED BY: WAP  
 FOR: LLT

10/20/2011

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS RATE		
TOTAL DIRECT COST, MATL & LAB				\$0		\$9,781			840	\$62,195.66	\$71,977
REGIONAL FACTOR			10.00%	\$0	\$0.10	\$978					\$978
FREIGHT			10.00%	\$0	\$0.00	\$0					\$0
OVER TIME - SOME COMPLEXITY									12.50%	\$7,774.46	\$7,774
									15.00%	\$9,329.35	\$9,329
<b>SUBTOTAL</b>				\$0		\$10,759				\$62,195.66	\$90,059
<u>CONTRACTOR OVER HEAD</u>		15.0%									\$13,509
<b>SUBTOTAL</b>											\$103,568
<u>CONTRACTOR PROFIT</u>		10.0%									\$10,357
<b>SUBTOTAL</b>											\$113,924
<b>CIVIL CONTRACT TOTAL</b>											\$113,924

DESCRIPTION: CIVIL CONTRACTOR	QUANTITY		EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR		
	No.	UNITS	UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS RATE				
<b>DIRECT COSTS BY CSI DIVISIONS</b>													
<b><u>DIVISION 2 - SITE WORK</u></b>													
<b>02088 ACM ABATEMENT</b>													
<b>CLASS 1 ACM REMOVAL</b>													
TSI PIPE INSULATION	250	LF			\$1.00	\$250	0.750	1	187.50	\$74.06	\$13,887	\$56.55	\$14,137
Mastic - Wall	255	SF			\$1.50	\$383	0.100	1	25.50	\$74.06	\$1,889	\$8.91	\$2,271
AIR MONITORING	1	EACH			\$150.00	\$150	11.000	1	11.00	\$74.06	\$815	\$964.71	\$965
<b>CLASS II ACM REMOVAL</b>													
Vinyl Asbestos Tile + Mastic	4,800	SF			\$0.75	\$3,600	0.040	1	192.00	\$74.06	\$14,220	\$3.71	\$17,820
Asbestos Wrapped Wiring	1,000	LF			\$0.65	\$650	0.033	1	33.00	\$74.06	\$2,444	\$3.09	\$3,094
PREPARE ABATEMENT WORK PLANS	1	LS			\$350.00	\$350					\$0	\$350.00	\$350
					\$0	\$0							
CLEARANCE AIR MONITORING	1	EACH			\$150.00	\$150	10.000	1	10.00	\$74.06	\$741	\$890.65	\$891
MOB/DEMOB	1	EACH			\$1,000.00	\$1,000						\$1,000.00	\$1,000
LANDFILL DISPOSAL (ACM TONS)	3	each			\$600.00	\$1,800						\$600.00	\$1,800
<b>SUBTOTAL</b>				\$0		\$8,333			459.00		\$33,996		\$42,328
<b>LEAD BASE PAINT REMOVAL</b>													
Paint on Concrete Floors	300	sf			\$1.50	\$450	0.750	1	225.00	\$74.06	\$16,665	\$57.05	\$17,115
Paint on Trim / Windows / Doors	905	lf			\$0.75	\$679	0.150	1	135.75	\$74.06	\$10,054	\$11.86	\$10,733
<b>SUBTOTAL</b>				\$0		\$1,129			360.75	\$74.06	\$26,719		\$27,848
Fluorescent Bulbs	180	ea			\$0	\$180	8.000	1	8.00	\$74.06	\$593	\$4.29	\$773
Lead Acid Batteries	10	ea			\$0	\$100	4.000	1	4.00	\$74.06	\$296	\$39.63	\$396
High Intensity Lighting (Bays)	40	ea			\$1.00	\$40	8.000	1	8.00	\$74.06	\$593	\$15.81	\$633
<b>SUBTOTAL</b>				\$0		\$320			20.00		\$1,481		\$1,801
<b>DIRECT COST</b>				\$0		\$9,781			839.75		\$62,196		\$71,977



**CIVIL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGERS 2 & 3

PREPARED BY: LLT

10/19/2011

LOCATION: FT. WAINWRIGHT, ALASKA

PHASE: CONCEPT

DESCRIPTION: CIVIL CONSTRUCTION ESTIMATE- ALL ALTS WITH POV PARKING

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB			\$141,620.84		\$806,909.00			3,622		\$290,755.37	\$1,239,285
REGIONAL FACTOR		10.00%	\$14,162.08	\$0.10	\$80,690.90						\$94,853
FREIGHT		10.00%	\$14,162.08	\$0.00	\$0.00						\$14,162
OVER TIME - SOME COMPLEXITY								12.50%	\$36,344.42		\$36,344
								15.00%	\$43,613.31		\$43,613
<b>SUBTOTAL</b>			\$169,945.01		\$887,599.90					\$290,755.37	\$1,428,258
CONTRACTOR OVER HEAD	15.0%										\$214,239
<b>SUBTOTAL</b>											\$1,642,497
CONTRACTOR PROFIT	10.0%										\$164,250
<b>SUBTOTAL</b>											\$1,806,746
<b>CIVIL CONTRACT TOTAL</b>											\$1,806,746

DESCRIPTION CIVIL CONTRACTOR	QUANTITY No. UNITS	EQUIP		MATERIAL		LABOR HOURS			UNIT COST	MATERIAL & LABOR	
		UNIT PRICE	COST	UNIT PRICE	COST	HRS	UNITS	TOTAL LABOR HOURS RATE			LABOR COST
<b>DIRECT COSTS BY CSI DIVISIONS</b>											
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>											
TRAFFIC CONTROL + MAINT.	90 DAY			\$200.00	\$18,000.00					\$200.00	\$18,000
PERMANENT CONSTRUCTION SIGNING	1 SGN-DY	\$3.50	\$3.50	\$0.00	\$0.00	0.001	1	0.00	\$79.39	\$0.08	\$3.58 \$4
FIELD OFFICE	3 Months	\$350.00	\$1,050.00	\$0.00	\$0.00					\$0.00	\$350.00 \$1,050
MOB/DEMOB	2 Each	\$1,000.00	\$2,000.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$1,000.00 \$2,000
SUPERINTENDENT	90 DAY	\$90.20	\$8,118.00	\$0.00	\$0.00	8.000	1	720.00	\$79.39	\$57,159.04	\$725.30 \$65,277
<b>SUBTOTAL</b>			\$11,171.50		\$18,000.00			720.00		\$57,159.12	\$86,331
<b>DIVISION 2 - SITE WORK</b>											
<b>02200 - SITE DEMOLITION</b>											
9 YARD DUMP, DRIVER INCLUDED	630 HR	\$60.00	\$37,800.00	\$0.00	\$0.00	0.000	1	0.00	\$76.64	\$0.00	\$60.00 \$37,800
DUMPSTER PICK	40 EA	\$90.00	\$3,600.00	\$0.00	\$0.00	0.000	1	0.00	\$93.91	\$0.00	\$90.00 \$3,600
DUMPSTER RENTAL	120 DAY	\$60.00	\$7,200.00	\$0.00	\$0.00	0.000	1	0.00	\$0.00	\$0.00	\$60.00 \$7,200
HAUL MTRL OUT	230 TRIP	\$30.00	\$6,900.00	\$0.00	\$0.00	0.500	1	115.00	\$83.54	\$9,606.56	\$71.77 \$16,507
REMOVE AND RESET HYDRANT	4 Each	\$237.00	\$948.00	\$0.00	\$0.00	4.000	1	20.00	\$77.87	\$1,557.46	\$626.37 \$2,505
<b>SUBTOTAL</b>			\$56,448.00		\$0.00			135.00		\$11,164.02	\$67,612
<b>02300 EARTHWORK</b>											
02310-AREA GRADING	7,538 SY	\$0.28	\$2,110.64		\$0.00	0.010	1	75.38	\$82.97	\$6,253.93	\$1.11 \$8,365
STRUCTURAL FILL, COMPACT, IN-PLACE	1,000 CY	\$1.00	\$1,000.00	\$8.00	\$8,000.00	0.060	1	60.00	\$79.88	\$4,793.07	\$13.79 \$13,793
LOADING, 5CY, LOADER	2,513 CY	\$0.35	\$879.55	\$0.00	\$0.00	0.800	1	2010.40	\$82.97	\$166,793.72	\$66.72 \$167,673
COMPATION, VIBRATING ROLLER, RIDING, 2 X	1,000 CY	\$0.16	\$160.00	\$0.00	\$0.00	0.006	1	6.00	\$82.97	\$497.79	\$63.48 \$63,483
REMOVE 14" CONCRETE	2,513 CY	\$25.00	\$62,825.00	\$0.00	\$0.00		1				
<b>SUBTOTAL</b>			\$66,975.19		\$8,000.00			2151.78		\$178,338.52	\$253,314
<b>02580- ELECTRICAL STRUCTURES</b>											
HEADBOLT HTR. OUT, WOOD POST ONLY	12 EA	\$14.00	\$168.00	\$27.00	\$324.00	0.500	1	6.00	\$73.72	\$442.34	\$77.86 \$934
NEW LIGHT POLE BASE	8 EA			\$500.00	\$4,000.00				\$73.72		\$500.00 \$4,000
GROUNDING POINTS/ TIE-DOWNS	4 EA	\$50.00	\$200.00	\$200.00	\$800.00	1.000	1	4.00	\$73.72	\$294.89	\$323.72 \$1,295
CONDUIT TRENCHING, BEDDING, BACKFILL	350 LF	\$1.16	\$406.00	\$0.63	\$220.50	0.017	1	5.95	\$76.80	\$456.98	\$3.10 \$1,083
<b>SUBTOTAL</b>			\$774.00		\$5,344.50			15.95		\$1,194.21	\$7,313
<b>PIPE TRENCHING AND BACKFILL</b>											
PIPE TRENCHING AND BACKFILL	125 CY	\$1.87	\$233.75	\$0.00	\$0.00	0.035	1	4.38	\$82.97	\$362.97	\$4.77 \$597
CATCH BASIN	1 EA	\$118.00	\$118.00	\$1,500.00	\$1,500.00	15.000	1	15.00	\$76.80	\$1,152.06	\$2,770.06 \$2,770
3/4" GALV. THAW PIPE	210 LF	\$1.22	\$256.20	\$8.00	\$1,680.00	0.024	1	5.04	\$75.26	\$379.33	\$11.03 \$2,316
<b>SUBTOTAL</b>			\$607.95		\$3,180.00			24.42		\$1,894.36	\$5,682
<b>02750-CONCRETE PAVEMENT</b>											
EXPANSION JOINTS (BACKER ROD W/SEAL)	2,100 LF	\$0.00	\$0.00	\$1.10	\$2,310.00	0.036	1	75.60	\$54.63	\$4,130.03	\$3.07 \$6,440
TRANSVERSE SAWCUTS	2,100 LF	\$0.31	\$651.00	\$0.34	\$714.00	0.100	1	210.00	\$73.72	\$15,481.80	\$8.02 \$16,847
CONCRETE PAVEMENT, 14" THICK	7,540 SY	\$0.40	\$3,016.00	\$100.00	\$754,000.00	0.029	1	218.66	\$76.70	\$16,771.98	\$102.62 \$773,788
PARKING PAINT STRIPING, 4" (POV)	870 LF	\$0.02	\$17.40	\$0.25	\$217.50	0.030	1	26.10	\$74.21	\$1,936.86	\$2.50 \$2,172
<b>SUBTOTAL</b>			\$3,684.40		\$757,241.50			530.36		\$38,320.67	\$799,247
<b>02800-SITE IMPROVEMENTS</b>											
LANSCAPING BOULDERS	35 EA	\$50.00	\$1,750.00	\$300.00	\$10,500.00	0.500	1	17.50	\$73.72	\$1,290.15	\$386.86 \$13,540
24" R1-1, STOP	2 EA	\$7.70	\$15.40	\$65.00	\$130.00	0.457	1	0.91	\$77.78	\$71.09	\$108.24 \$216
PST SIGN POST	1 EA	\$4.00	\$4.00	\$65.00	\$65.00	0.229	1	0.23	\$51.23	\$11.73	\$80.73 \$81
BOLLARDS	16 EA	\$11.90	\$190.40	\$278.00	\$4,448.00	1.600	1	25.60	\$51.23	\$1,311.49	\$371.87 \$5,950
<b>SUBTOTAL</b>			\$1,959.80		\$15,143.00			44.24		\$2,684.46	\$19,787
<b>COLUMN TOTALS:</b>			\$141,620.84		\$806,909.00			3621.75		\$290,755.37	\$1,239,285



**MECHANICAL CONSTRUCTION COST ESTIMATE**

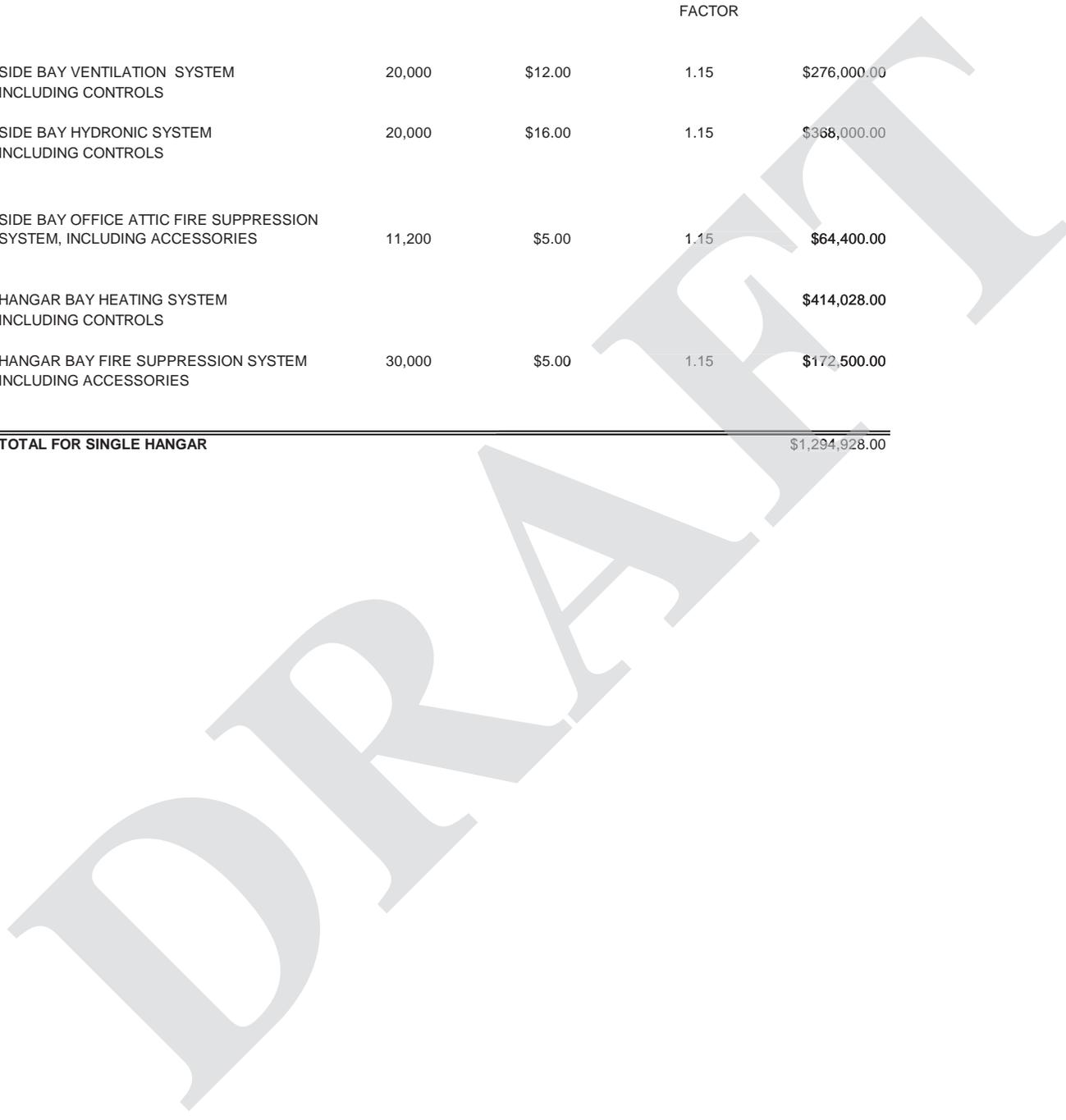
PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: WARM STORAGE AND FLEX SPACE

PREPARED BY: RJR  
 FOR: JMM

19-Oct-11

**MECHANICAL ESTIMATE SUMMARY**

SQUARE FOOTAGE COSTS:	SQ.FT	COST/SQ.FT	ESCALATION FACTOR	TOTAL
SIDE BAY VENTILATION SYSTEM INCLUDING CONTROLS	20,000	\$12.00	1.15	\$276,000.00
SIDE BAY HYDRONIC SYSTEM INCLUDING CONTROLS	20,000	\$16.00	1.15	\$368,000.00
SIDE BAY OFFICE ATTIC FIRE SUPPRESSION SYSTEM, INCLUDING ACCESSORIES	11,200	\$5.00	1.15	\$64,400.00
HANGAR BAY HEATING SYSTEM INCLUDING CONTROLS				\$414,028.00
HANGAR BAY FIRE SUPPRESSION SYSTEM INCLUDING ACCESSORIES	30,000	\$5.00	1.15	\$172,500.00
<b>TOTAL FOR SINGLE HANGAR</b>				<b>\$1,294,928.00</b>





**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: UNDERFLOOR PIPING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.			LABOR RATE
TOTAL DIRECT COST, MATL & LAB.			\$0		\$45,750			722.60		\$49,240	\$94,990
REGIONAL FACTOR (MEANS)	10.0%				\$4,575						\$4,575
FREIGHT	10.0%				\$4,575						\$4,575
OVERTIME	12.5%									\$6,155	\$6,155
COMPLEXITY	15.0%									\$7,386	\$7,386
<b>SUBTOTAL</b>			\$0		\$54,900					\$62,781	\$117,680
CONTRACTORS OVERHEAD	15.0%										\$17,652
CONTRACTORS PROFIT	15.0%										\$17,652
<b>SUBTOTAL</b>											\$152,985
<b>MECHANICAL CONTRACT TOTAL</b>											<b>\$152,985</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR			UNIT COST	TOTAL COST		
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.			LABOR RATE	LABOR COST
<b>WASTE &amp; VENT SYSTEM</b>												
<b>PIPING</b>												
4" CAST IRON	600 Lin.Ft	\$0	\$0	\$16.33	\$9,800	0.29	1	174.60	\$69.06	\$12,057	36.4	\$21,857
FITTINGS	1 Elbow/20'	\$0	\$0	\$1.13	\$677	0.40	1	12.00	\$69.06	\$829		\$1,506
TRENCH DRAIN	200 Lin.Ft	\$0	\$0	\$96	\$19,200	1.00	1	200	\$67.82	\$13,565	163.8	\$32,765
CONCRETE DEMO	2800 Sq.Ft	\$0	\$0	\$0.24	\$672	0.06	1	168	\$67.82	\$11,395	4.3	\$12,067
CONCRETE PATCH & TRENCH	2800 Each	\$0	\$0	\$5.5	\$15,400	0.06	1	168	\$67.82	\$11,395	9.6	\$26,795
<b>COLUMN TOTALS:</b>			\$0		\$45,750			722.60		\$49,240		\$94,990



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: ABOVE GRADE PLUMBING REPLACEMENT

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
TOTAL DIRECT COST, MATL & LAB.				\$0		\$37,887			1,460.47		\$100,145	\$138,032
REGIONAL FACTOR (MEANS)	10.0%					\$3,789						\$3,789
FREIGHT	10.0%					\$3,789						\$3,789
OVERTIME	12.5%										\$12,518	\$12,518
COMPLEXITY	15.0%										\$15,022	\$15,022
<b>SUBTOTAL</b>				\$0		\$45,464					\$127,685	\$173,150
CONTRACTORS OVERHEAD	15.0%											\$25,972
CONTRACTORS PROFIT	15.0%											\$25,972
<b>SUBTOTAL</b>												\$225,095
<b>MECHANICAL CONTRACT TOTAL</b>												<b>\$225,095</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR				UNIT COST	TOTAL COST	
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE			LABOR COST
<b>PLUMBING FIXTURES</b>												
TANK, WALL, 1 PIECE	3 Each	\$0	\$0	\$579.84	\$1,740	10.20	3	91.80	\$69.06	\$6,339	2693.0	\$8,079
FLUSH VALVE, WALL	4 Each	\$0	\$0	\$410.45	\$1,642	13.40	3	160.80	\$69.06	\$11,104	3186.5	\$12,746
WALL HUNG LAV	4 Each	\$0	\$0	\$853.47	\$3,414	12.00	3	144.00	\$69.06	\$9,944	3339.5	\$13,358
SERVICE, FLOOR, STONE	2 Each	\$0	\$0	\$650.20	\$1,300	16.30	3	97.80	\$69.06	\$6,754	4027.0	\$8,054
WALL SS, SINGLE COOLER	2 Each	\$0	\$0	\$963.57	\$1,927	10.00	3	60.00	\$69.06	\$4,143	3035.3	\$6,071
SHOWER	2 Each	\$0	\$0	\$865.19	\$1,730	16.00	3	96.00	\$69.06	\$6,629	4179.9	\$8,360
7360 BT EYEWASH, SS	1 Each	\$0	\$0	\$183.72	\$184	8.00	2	16.00	\$69.06	\$1,105	1288.6	\$1,289
8300 SHOWER/EYEWASH, SS	4 Each	\$0	\$0	\$658.02	\$2,632	8.00	2	64.00	\$69.06	\$4,420	1762.9	\$7,052
9202 TEMPERING VALVE	2 Each	\$0	\$0	\$1,710.00	\$3,420	4.00	2	16.00	\$69.06	\$1,105	2262.4	\$4,525
TEMPERING VALVE PANEL	2 Each	\$0	\$0	\$510.00	\$1,020	2.00	2	8.00	\$69.06	\$552	786.2	\$1,572
<b>DOMESTIC WATER MAINS</b>												
1" TYPE 'L' COPPER	200 Lin.Ft	\$0	\$0	\$5.88	\$1,176	0.12	1	23.60	\$69.06	\$1,630	14.0	\$2,806
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$41	0.50	1	5.00	\$69.06	\$345		\$386
2" TYPE 'L' COPPER	150 Lin.Ft	\$0	\$0	\$16.64	\$2,496	0.19	1	28.50	\$69.06	\$1,968	29.8	\$4,464
FITTINGS:	1 Elbow/20'	\$0	\$0	\$17.33	\$130	0.73	1	5.45	\$69.06	\$377		\$507
2 1/2" GALV. STEEL	200 Lin.Ft	\$0	\$0	\$18.40	\$3,679	0.26	1	51.60	\$69.06	\$3,563	36.2	\$7,242
FITTINGS:	1 Elbow/20'	\$0	\$0	\$12.68	\$127	0.89	1	8.89	\$69.06	\$614		\$741
<b>COMPRESSED AIR PIPING</b>												
3/4" BLACK STEEL	480 Lin.Ft	\$0	\$0	\$2.73	\$1,310	0.13	1	62.88	\$69.06	\$4,342	11.8	\$5,653
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.11	\$99	0.57	1	13.70	\$69.06	\$946		\$1,045
2" BLACK STEEL	550 Lin.Ft	\$0	\$0	\$8.32	\$4,576	0.25	1	137.50	\$69.06	\$9,495	25.6	\$14,071
FITTINGS:	1 Elbow/20'	\$0	\$0	\$14.56	\$400	0.89	1	24.48	\$69.06	\$1,690		\$2,091
<b>FIXTURE PIPING</b>												
3/4" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$4.11	\$1,233	0.11	3	94.50	\$69.06	\$6,526	25.9	\$7,759
FITTINGS:	1 Elbow/20'	\$0	\$0	\$1.62	\$24	0.42	1	6.32	\$69.06	\$436		\$460
1" TYPE 'L' COPPER	300 Lin.Ft	\$0	\$0	\$5.88	\$1,764	0.12	3	106.20	\$69.06	\$7,334	30.3	\$9,098
FITTINGS:	1 Elbow/20'	\$0	\$0	\$4.05	\$61	0.50	1	7.50	\$69.06	\$518		\$579
<b>INSULATION - HYDRONIC SYSTEM</b>												
1" CW INSULATION	200 Lin.Ft	\$0	\$0	\$1.20	\$240	0.08	2	32	\$63.60	\$2,035	11.4	\$2,275
FITTINGS:	15% Allow	\$0	\$0	\$36	\$36	1	5	5	\$63.60	\$305		\$341
2" CW INSULATION	250 Lin.Ft	\$0	\$0	\$2.77	\$693	0.09	2	45	\$63.60	\$2,862	14.2	\$3,555
FITTINGS:	15% Allow	\$0	\$0	\$104	\$104	1	7	7	\$63.60	\$429		\$533
2 1/2" CW INSULATION	200 Lin.Ft	\$0	\$0	\$3.00	\$600	0.09	2	36	\$63.60	\$2,290	14.4	\$2,890
FITTINGS:	15% Allow	\$0	\$0	\$90	\$90	1	5	5	\$63.60	\$343		\$433
<b>COLUMN TOTALS:</b>				<b>\$0</b>		<b>\$37,887</b>			<b>1460.47</b>		<b>\$100,145</b>	<b>\$138,032</b>



**MECHANICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FWA'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT  
 DESCRIPTION: HANGAR BAY VENTILATION

PREPARED BY: JMM  
 CHECKED BY: RJR  
 20-Oct-11

DESCRIPTION MECHANICAL CONTRACTOR	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR						
		UNIT PRICE	EQUIP COST	PRICE PER FT.	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.			\$0		\$87,606			2,491.14		\$167,338		\$254,944
REGIONAL FACTOR (MEANS)	10.0%				\$8,761							\$8,761
FREIGHT	10.0%				\$8,761							\$8,761
OVERTIME	12.5%									\$20,917		\$20,917
COMPLEXITY	15.0%									\$25,101		\$25,101
<b>SUBTOTAL</b>			\$0		\$105,127					\$213,357		\$318,483
CONTRACTORS OVERHEAD	15.0%											\$47,772
CONTRACTORS PROFIT	15.0%											\$47,772
<b>SUBTOTAL</b>												\$414,028
<b>MECHANICAL CONTRACT TOTAL</b>												<b>\$414,028</b>

DESCRIPTION MECHANICAL DIRECT COST ITEM	QUANTITY No. UNITS UNITS	EQUIPMENT		MATERIAL		LABOR						
		UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/ UNIT	MULT FACT	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>EQUIPMENT</b>												
16,000 CFM SUPPLY FAN	2 Each	\$0	\$0	\$23000	\$46,000	200.00	1	400	\$67.82	\$27,130	36564.9	\$73,130
8,000 CFM PROPELLER FAN	4 Each	\$0	\$0	\$2700	\$10,800	30.00	1	120	\$67.82	\$8,139	4734.7	\$18,939
ELECTRICAL CONNECTION	6 Each	\$0	\$0	\$500	\$3,000	30.00	1	180	\$67.82	\$12,208	2534.7	\$15,208
18" SUPPLY FAN PLATFORM	2 Each	\$0	\$0	\$500	\$1,000	40.00	1	80	\$67.82	\$5,426	3213.0	\$6,426
<b>PIPING</b>												
2" TYPE 'L' COPPER	240 Lin.Ft	\$0	\$0	\$15.71	\$3,771	0.19	1	45.60	\$69.06	\$3,149	28.8	\$6,920
FITTINGS	1 Elbow/20'	\$0	\$0	\$0.95	\$227	0.40	1	4.80	\$69.06	\$331		\$559
3" BLACK STEEL	600 Lin.Ft	\$0	\$0	\$14.50	\$8,697	0.37	1	223.20	\$69.06	\$15,413	40.2	\$24,110
FITTINGS	1 Elbow/20'	\$0	\$0	\$26.65	\$800	2.30	1	69.00	\$69.06	\$4,765		\$5,564
2" HYDRONIC INSULATION	240 Lin.Ft	\$0	\$0	\$2.77	\$665	0.09	1	22	\$63.60	\$1,374	8.5	\$2,039
FITTINGS	15% Allow	\$0	\$0	\$1.00	\$100		1	3	\$63.60	\$206		\$306
3" HYDRONIC INSULATION	600 Lin.Ft	\$0	\$0	\$3.54	\$2,124	0.10	1	60	\$63.60	\$3,816	9.9	\$5,940
FITTINGS	15% Allow	\$0	\$0	\$319	\$319		1	9	\$63.60	\$572		\$891
<b>DUCTWORK</b>												
36" dia.	400 Lin.Ft	\$0	\$0	\$7.75	\$3,100	1.55	1	620	\$67.82	\$42,051	112.9	\$45,151
110" SEMI-PERIMETER	80 Lin.Ft	\$0	\$0	\$33.67	\$2,693	3.13	1	250	\$67.82	\$16,963	245.7	\$19,656
2" RIGID INSULATION	1500 Sq.Ft	\$0	\$0	\$1.26	\$1,890	0.13	2	390	\$63.60	\$24,804	17.8	\$26,694
12"X48" SUPPLY REGISTERS	20 Each	\$0	\$0	\$121	\$2,420	0.73	1	15	\$67.82	\$990	170.5	\$3,410
<b>COLUMN TOTALS:</b>			\$0		\$87,606			2491.14		\$167,338		\$254,944



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FTW'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: WARM STORAGE AND FLEX SPA

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
TOTAL DIRECT COST, MATL & LAB.						\$475,421			7,026.5		\$542,617		\$1,018,038
REGIONAL FACTOR (MEANS)	10.0%					\$47,542							\$47,542
FREIGHT	10.0%					\$47,542							\$47,542
OVERTIME	12.5%										\$67,827		\$67,827
COMPLEXITY	15.0%										\$81,393		\$81,393
<b>SUBTOTAL</b>						<b>\$570,505</b>					<b>\$691,837</b>		<b>\$1,262,342</b>
CONTRACTOR'S OVERHEAD	15.0%												\$189,351
CONTRACTOR'S PROFIT	10.0%												\$126,234
<b>SUBTOTAL</b>													<b>\$1,577,928</b>
<b>ELECTRICAL CONTRACT TOTAL</b>													<b>\$1,577,928</b>

DESCRIPTION	QUANTITY		EQUIPMENT		MATERIAL		LABOR			TOTAL			
	No. UNITS	UNITS	UNIT PRICE	EQUIP COST	PRICE PER UNIT	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>CONDUIT - E.M.T.</b>													
1/2" E.M.T.	17,630	Lin.Ft	\$0	\$0	\$0.87	\$15,416	4.5	100	793.4	\$77.30	\$61,326	\$6.97	\$76,742
FITTINGS & ASSEMBLY	100%	Matl	\$0	\$0		\$15,416	50%	Lab	396.7	\$77.30	\$30,663		\$46,079
3/4" E.M.T.	2,645	Lin.Ft	\$0	\$0	\$1.76	\$4,666	5.0	100	132.2	\$77.30	\$10,221	\$11.17	\$14,887
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$6,999	75%	Lab	99.2	\$77.30	\$7,666		\$14,664
1 1/4" E.M.T.	200	Lin.Ft	\$0	\$0	\$4.60	\$919	6.2	100	12.4	\$77.30	\$959	\$19.87	\$1,878
FITTINGS & ASSEMBLY	150%	Matl	\$0	\$0		\$1,379	75%	Lab	9.3	\$77.30	\$719		\$2,097
<b>CONDUIT - FLEX</b>													
1/2" FLEX	100	Lin.Ft	\$0	\$0	\$0.98	\$98	4.0	100	4.0	\$77.30	\$309	\$6.11	\$407
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$49	50%	Lab	2.0	\$77.30	\$155		\$204
3/4" LIQ. TIGHT	100	Lin.Ft	\$0	\$0	\$4.17	\$417	5.0	100	5.0	\$77.30	\$387	\$12.05	\$804
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$209	50%	Lab	2.5	\$77.30	\$193		\$402
<b>CONDUIT - R.S.C.</b>													
2" R.S.C.	200	Lin.Ft	\$0	\$0	\$17.06	\$3,412	11.0	100	22.0	\$77.30	\$1,701	\$25.56	\$5,112
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$1,706	40%	Lab	8.8	\$77.30	\$680	\$11.93	\$2,386
3" R.S.C.	500	Lin.Ft	\$0	\$0	\$38.79	\$19,393	20.0	100	100.0	\$77.30	\$7,730	\$54.25	\$27,123
FITTINGS & ASSEMBLY	50%	Matl	\$0	\$0		\$9,696	40%	Lab	40.0	\$77.30	\$3,092	\$25.58	\$12,788
<b>CONDUCTORS</b>													
12 AWG THHN	66,961	Lin.Ft	\$0	\$0	\$0.34	\$22,796	6.0	1000	401.8	\$77.30	\$31,057	\$0.80	\$53,853
10 AWG THHN	10,044	Lin.Ft	\$0	\$0	\$0.54	\$5,406	7.0	1000	70.3	\$77.30	\$5,435	\$1.08	\$10,841
4/0 AWG THHN	3,000	Lin.Ft	\$0	\$0	\$12.28	\$36,829	29.0	1000	87.0	\$77.30	\$6,725	\$14.52	\$43,554
500 MCM XHHW	2,000	Lin.Ft	\$0	\$0	\$32.90	\$65,798	48.0	1000	96.0	\$77.30	\$7,421	\$36.61	\$73,218
<b>MULTI-OULET ASSEMBLY</b>													
WIREMOLD 3000	600	Lin.Ft	\$0	\$0	\$3.50	\$2,100	0.5	1	300.0	\$77.30	\$23,190	\$42.15	\$25,290
<b>RECEPTACLES</b>													
DUPLEX RECEPTACLE	480	Each	\$0	\$0	\$8.00	\$3,840	1.5	1	720.0	\$77.30	\$55,656	\$123.95	\$59,496
QUAD RECEPTACLE	40	Each	\$0	\$0	\$15.00	\$600	1.5	1	60.0	\$77.30	\$4,638	\$130.95	\$5,238
GFI RECEPTACLE	24	Each	\$0	\$0	\$25.00	\$600	1.5	1	36.0	\$77.30	\$2,783	\$140.95	\$3,383
WP GFCI RECEPTACLE	12	Each	\$0	\$0	\$45.00	\$540	1.5	1	18.0	\$77.30	\$1,391	\$160.95	\$1,931
<b>LIGHTING</b>													
TYPE 'A1'	64	Each	\$0	\$0	\$120.00	\$7,680	1.5	1	96.0	\$77.30	\$7,421	\$235.95	\$15,101
TYPE 'A2'	125	Each	\$0	\$0	\$130.00	\$16,250	1.5	1	187.5	\$77.30	\$14,494	\$245.95	\$30,744
TYPE 'C2'	41	Each	\$0	\$0	\$100.00	\$4,100	1.5	1	61.5	\$77.30	\$4,754	\$215.95	\$8,854
TYPE 'EX'	48	Each	\$0	\$0	\$85.00	\$4,080	1.5	1	72.0	\$77.30	\$5,566	\$200.95	\$9,646
TYPE 'I4'	41	Each	\$0	\$0	\$1,200.00	\$49,200	3.0	1	123.0	\$77.30	\$9,508	\$1,431.90	\$58,708
EXTERIOR LIGHTING	1	L.S.	\$0	\$0	\$20,000.00	\$20,000	400.0	1	400.0	\$77.30	\$30,920	\$50,920.00	\$50,920



**ELECTRICAL CONSTRUCTION COST ESTIMATE**

PROJECT: REUSE STUDY OF FTW'S HANGARS 2 & 3  
 LOCATION: FT. WAINWRIGHT, ALASKA  
 PHASE: CONCEPT - ALTERNATIVE 6  
 DESCRIPTION: WARM STORAGE AND FLEX SPA

PREPARED BY: DLH  
 CHECKED BY:

20-Oct-11

DESCRIPTION ELECTRICAL CONTRACTOR	QUANTITY		EQUIPMENT		MATERIAL		LABOR				TOTAL		
	No.	UNITS	UNIT PRICE	EQUIP COST	UNIT PRICE	MATERIAL COST	HRS/UNIT	UNITS	TOTAL HRS.	LABOR RATE	LABOR COST	UNIT COST	TOTAL COST
<b>MOTORS</b>													
SINGLE PH MOTOR CONN.	12	Each	\$0	\$0	\$27.00	\$324	1.0	1	12.0	\$77.30	\$928	\$104.30	\$1,252
30A TT SWITCH	12	Each	\$0	\$0	\$35.00	\$420	1.5	1	18.0	\$77.30	\$1,391	\$150.94	\$1,811
THREE PH MOTOR CONN.	8	Each	\$0	\$0	\$15.00	\$120	2.0	1	16.0	\$77.30	\$1,237	\$169.60	\$1,357
COMB STARTER	8	Each	\$0	\$0	\$675.00	\$5,400	6.0	1	48.0	\$77.30	\$3,710	\$1,138.80	\$9,110
<b>DISTRIBUTION PANELBOARDS</b>													
NEW DIST PNL '480V 1200A'	1	Each	\$0	\$0	\$17,910.80	\$17,911	24.0	1	24.0	\$77.30	\$1,855	\$19,766	\$19,766
NEW DIST PNL '208V 800A'	1	Each	\$0	\$0	\$11,604.00	\$11,604	24.0	1	24.0	\$77.30	\$1,855	\$13,459	\$13,459
<b>BRANCH CIRCUIT PANELBOARDS</b>													
NEW BRANCH PNL '208V 225A'	4	Each	\$0	\$0	\$2,520.48	\$10,082	24.0	1	96.0	\$77.30	\$7,421	\$4,376	\$17,503
NEW BRANCH PNL '480V 100A'	2	Each	\$0	\$0	\$3,719.20	\$7,438	24.0	1	48.0	\$77.30	\$3,710	\$5,574	\$11,149
<b>TRANSFORMERS</b>													
300 kVA 480V-208Y/120V	1	Each	\$0	\$0	\$16,754.40	\$16,754	16.0	1	16.0	\$77.30	\$1,237	\$17,991.20	\$17,991
<b>FIRE ALARM AND MNS</b>													
FIRE ALARM SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
MNS SYSTEM	1	L.S.	\$0	\$0	\$36,000.00	\$36,000	600.0	1	600.0	\$77.30	\$46,380	\$82,380.00	\$82,380
<b>NETWORK SYSTEMS</b>													
EQUIPMENT RACK	2	Each	\$0	\$0	\$250.00	\$500	8.0	1	16.0	\$77.30	\$1,237	\$868.40	\$1,737
CAT 6 CABLING	9,600	Lin.Ft	\$0	\$0	\$0.36	\$3,456	10.0	1000	96.0	\$77.30	\$7,420	\$1.13	\$10,876
DATA OUTLETS	240	Each	\$0	\$0	\$8.00	\$1,920	1.5	1	360.0	\$77.30	\$27,828	\$123.95	\$29,748
TERMINATE & TEST	0%	Matl	\$0	\$0	\$0	\$0	50%	Lab	180.0	\$74.36	\$13,386		\$13,386
GROUND BUS	2	Each	\$0	\$0	\$150.00	\$300	2.0	1	4.0	\$77.30	\$309	\$304.59	\$609
PATCH PANELS	8	Each	\$0	\$0	\$200.00	\$1,600	4.0	1	32.0	\$77.30	\$2,473	\$509.18	\$4,073
<b>DEMOLITION</b>													
ELECTRICAL DEMO	1	Allow	\$0	\$0	\$6,000.00	\$6,000	480.0	1	480	\$77.30	\$37,102	\$43,101.95	\$43,102
<b>COLUMN TOTALS:</b>				\$0		\$475,421			7,026.5		\$542,617		\$1,018,038

## CONCLUSION

Hangars 2 and 3 at Fort Wainwright are building assets that have successfully contributed to the changing mission of the base since their original construction. Although the buildings were designed for a specific function, they are flexible enough to serve many alternative purposes.

While the functional requirements of aircraft maintenance may have pushed the ability of the historic hangars to meet current standards, the hangars still provide a usable and functional space for alternative uses. This assessment examines a small number of possible alternatives. These illustrate the flexibility of the structures in adapting to changing mission requirements and support of that mission at Fort Wainwright.

Although the Hangars are important contributing elements to the Ladd Field National Historic Landmark District, they are also assets that should be managed to the benefit of government. As such, proper maintenance of Hangars 2 and 3 will allow them to continue to serve the needs of the Army well into the future.

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# APPENDIX A—LIST OF PARTICIPANTS

## ATTENDEES AT PROJECT MEETINGS

### **Project Meeting #1 - July 2, 2010**

**Participants:** FWA Cultural Resources/ TYHS/ Design Alaska

Location:

#### **Attendees**

##### *FWA Cultural Resources*

Lisa Graham, FWA/FRA, Cultural Resources Manager  
Mary Shanks, FWA, Architectural Historian

##### *Tanana-Yukon Historical Society (TYHS)*

Renee Blahuta, TYHS

##### *Design Alaska*

Janet Matheson, Design Alaska, Historical Architect

### **Project Meeting #2 - July 7, 2010**

**Participants:** FWA Cultural Resources/ TYHS/ Design Alaska/ JCA

Location:

#### **Attendees**

##### *FWA Cultural Resources*

Lisa Graham, FWA/FRA, Cultural Resources Manager  
Mary Shanks, FWA, Architectural Historian  
Natalie Thomas, FWA Cultural Resource Specialist

##### *Tanana-Yukon Historical Society (TYHS)*

Renee Blahuta, TYHS

##### *Design Alaska*

Janet Matheson, Design Alaska, Historical Architect  
Skye Sturm, Design Alaska, Historical Architectural Intern

##### *John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

### **Project Meeting #3 - July 8, 2010**

**Participants:** FWA Cultural Resources/ FWA Departments/ TYHS/ Design Alaska/ JCA

Location:

#### **Attendees**

##### *FWA Cultural Resources*

Lisa Graham, FWA/FRA, Cultural Resources Manager  
Mary Shanks, FWA, Architectural Historian  
Natalie Thomas, FWA Cultural Resource Specialist

##### *FWA Departments*

Cliff Seibel, FWA/DPW, Chief, Environmental Division  
Carrie McEnteer, FWA, Chief, NEPA Branch  
Dan Thompson, FWA, NEPA Branch- FWA  
Michael Meeks, FWA/DPW, Director of Public Works  
Kate Siftar, FWA, Chief, Master Planning  
Charles Davis, FWA, General Engineer, Master Planning

##### *Tanana-Yukon Historical Society (TYHS)*

Renee Blahuta, Tanana-Yukon Historical Society (TYHS)

##### *Design Alaska*

Janet Matheson, Design Alaska, Historical Architect  
John Rowe, Design Alaska, Landscape Architect

##### *John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

### **Project Meeting #4 (Teleconference) - July 12, 2010**

**Participants:** FWA Cultural Resources/ TYHS/ Design Alaska/ JCA/ OHA/ NPS

Location: FWA Cultural Resources Office

#### **Attendees**

##### *FWA Cultural Resources*

Lisa Graham, FWA/FRA, Cultural Resources Manager  
Mary Shanks, FWA, Architectural Historian  
Carrie McEnteer, FWA, NEPA Branch Chief

##### *Tanana-Yukon Historical Society (TYHS)*

Renee Blahuta, TYHS  
John Cook, TYHS, Archaeologist (by phone)  
Liz Cook, TYHS (by phone)

##### *John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

##### *Design Alaska*

Janet Matheson, Design Alaska, Historical Architect  
(by phone)

Erskin Rhoades, Design Alaska, Architect (by phone)

##### *State of Alaska Office of History & Archaeology (OHA)*

Doug Gasek, OHA, Architectural Historian (by phone)  
Summer Rickman, OHA, Historian (by phone)

##### *National Park Service (NPS)*

Grant Crosby, NPS, Architectural Historian (by phone)  
Ted Birkedal, NPS, Team Manager – Cultural Resources  
Team (by phone)

Janet Clemens, NPS, Historian (by phone)

Derrell Lewis, NPS (by phone)

### **Project Meeting #5 (Teleconference) - August 13, 2010**

**Participants:** FWA USAG, TSS Division/ Design Alaska/ JCA

Location: N/A

#### **Attendees**

##### *FWA USAG, TSS Division*

Michael Bonnell, Chief, TSS Division

##### *Design Alaska*

Janet Matheson, Design Alaska, Historical Architect

##### *John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

### **Project Meeting #6 - September 24, 2011**

**Participants:** FWA USAG, TSS Division/ Design Alaska

Location: FWA Battle Command Training Center (BCTC)

#### **Attendees**

##### *FWA USAG, TSS Division*

Arlie Nethken, Training Support Officer

Jim McConnell, FWA BCTC, Director

Dave Sanches, FWA Master Planning

##### *Design Alaska*

Janet Matheson, Design Alaska, Historical Architect

## ***ATTENDEES AT SITE VISITS***

### ***Site Visit #1 - July 7, 2010***

***Participants: FWA Cultural Resources/ Design Alaska/ JCA***

Purpose: Fort Wainwright National Historic Landmark

#### **Attendees**

*FWA Cultural Resources*

Mary Shanks, FWA, Architectural Historian

*Design Alaska*

Janet Matheson, Design Alaska, Historical Architect

*John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

### ***Site Visit #2 - July 8, 2010***

***Participants: FWA Cultural Resources/ Design Alaska/ JCA***

Purpose: Tour of Hangar 3

#### **Attendees**

*FWA Cultural Resources*

Mary Shanks, FWA, Architectural Historian

*Design Alaska*

Janet Matheson, Design Alaska, Historical Architect

*John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

### ***Site Visit #3 - July 9, 2010***

***Participants: FWA USAG, TSS Division/ FWA Cultural Resources/ Design Alaska/ JCA***

Purpose: Existing Simulator Tours

Location(s): Blackhawk Flight Simulator (RUTT), Building 3000

AVCATT Simulator, Building 2118

Battle Command Training Center, Building 3437

#### **Attendees**

*FWA USAG, TSS Division*

Arlie Nethken, Training Support Officer @ BCTC

Scott Ackerman, TSS, @ Building 2118

Tom O'Neal, AVCATT Vendor, @ Building 2118

*FWA Cultural Resources*

Lisa Graham, FWA/FRA, Cultural Resources Manager

*Design Alaska*

Janet Matheson, Design Alaska, Historical Architect

*John Cullinane Associates (JCA)*

John Cullinane, JCA, Consultant

### ***Site Visit #4 - February 28, 2011***

***Participants: FWA Departments/ Design Alaska***

Purpose: Inspection of Hangar 2 after fire incident

#### **Attendees**

*FWA Departments*

Scott Haan, FWA/DPW, Structural Engineer

*Design Alaska*

Michael Dean, Design Alaska, Structural Engineers

Billy Brookins, Design Alaska, Structural Engineers

Janet Matheson, Design Alaska, Historical Architect

# APPENDIX B—PROGRAMMATIC AGREEMENT

**PROGRAMMATIC AGREEMENT  
AMONG  
THE UNITED STATES DEPARTMENT OF THE ARMY,  
THE ALASKA STATE HISTORIC PRESERVATION OFFICER, AND  
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION  
REGARDING  
AVIATION STATIONING  
AT  
FORT WAINWRIGHT, ALASKA**

WHEREAS, the United States Department of the Army (the Army), acting through the United States Army Garrison-Fort Wainwright (USAG FWA), determined that Aviation Stationing constitutes an Undertaking (the “Undertaking”) subject to Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, 36 C.F.R. Part 800, as amended; and

WHEREAS, this Undertaking will provide local integrated aviation support training for US Army Alaska (USARAK) Brigade Combat Teams and enhance current aviation training capabilities to better support the Army mission (Exhibit 1 lists the construction projects by phase); and

WHEREAS, the Undertaking includes new construction and the potential change-in-use of Hangar 2 (FAI – 00482) and Hangar 3 (FAI – 00485) within the Ladd Field National Historic Landmark (NHL) (FAI-00236) and the Ladd Air Force Base Cold War Historic District (HD) (FAI-01288) identified in Exhibit 1 hereto, by or on behalf of USAG FWA, which will be performed in accordance with the stipulations of this Programmatic Agreement (as amended, modified, or supplemented from time to time, this “Agreement”); and

WHEREAS, through early consultation with the Alaska State Historic Preservation Officer (SHPO) and the National Park Service (NPS), USAG FWA substantially changed the undertaking to not include the demolition of Hangar 2 and Hangar 3.

WHEREAS, the USAG FWA, in consultation with SHPO and the Advisory Council on Historic Preservation (ACHP), defined the Undertaking’s area of potential effects (APE) to include the NHL and the HD; and

WHEREAS, the USAG FWA, in consultation with the SHPO, determined that the NHL and HD are properties listed in or eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, effects to NHL and HD include: 1) infill construction in the NHL that is not similar in scale or massing to contributing historic properties; 2) a proposed new hangar that will impede on the viewshed between Hangars 2 and 3 and North Post; 3) a potential change-in-use of Hangars 2 and 3; 4) construction of a Barracks near the HD affecting the viewshed; and 5) construction of a fence that will affect the setting; and

WHEREAS, USAG FWA determined that the Undertaking will have an adverse effect on the NHL and the HD and consulted with SHPO and ACHP in accordance with Section 106 of the NHPA; and

WHEREAS, USAG FWA invited the ACHP to participate in the consultation and they accepted (23 February 2009); and

WHEREAS, USAG FWA invited NPS to participate in consultation as a concurring party in accordance with 36 C.F.R. § 800.10(c) and they accepted (23 February 2009); and

WHEREAS, the USAG FWA consulted with the Upper Tanana Intertribal Coalition (UTIC) pursuant to 36 C.F.R. § 800.6(c)(2) and invited the members of UTIC to be a concurring party to this Agreement pursuant to 36 C.F.R. § 800.6(c)(3) and none of the tribes responded to the invitation ( 8 November 2008); and

WHEREAS, the USAG FWA continued consultation with the UTIC through discussions during the UTIC Quarterly Meetings and updates in the USAG FWA and FRA Quarterly Newsletter to Alaska Native Tribes; and

WHEREAS, USAG FWA consulted with the Fairbanks North Star Borough, a Certified Local Government, pursuant to 36 C.F.R. § 800.2(c)(3) and invited the Fairbanks North Star Borough to be a concurring party to this agreement pursuant to 36 C.F.R. § 800.6(c)(3) and they accepted (8 November 2008); and

WHEREAS, the USAG FWA consulted with the Tanana-Yukon Historical Society (TYHS) pursuant to 36 C.F.R. § 800.2(c) (5) and invited them to be a concurring party to this Agreement pursuant to 36 C.F.R. § 800.6(c) (3) and they accepted (8 November 2008); and

WHEREAS, the USAG FWA afforded the public an opportunity to provide input on the undertaking through the National Environmental Policy Act (NEPA) process and through the USAG FWA public website pursuant to C.F.R. § 800.6(a)(4).

WHEREAS, through Section 106 consultation with the consulting parties (hereinafter, the consulting parties shall refer to both Signatories and Concurring Parties to this Agreement), USAG FWA elected to fulfill its Section 106 obligations for this Undertaking through execution and implementation of this Agreement pursuant to 36 C.F.R. § 800.14(b)(3); and

WHEREAS, USAG FWA completed a Siting Analysis in January 2009 that studied multiple potential locations surrounding the airfield for the siting of the new Chinook Hangar and concluded that the best site is the area east of Hangar 3; and

WHEREAS, USAG FWA completed a Conditional Assessment and Rehabilitation Plan (CARP) for Hangars 2 and 3 in January 2008, which identified maintenance and necessary health and human safety concerns and provided a cost estimate for the required repairs; and

WHEREAS, all other actions related to the NHL and the HD, not included in this agreement, shall comply with 36 C.F.R. Part 800, as amended; and

NOW, THEREFORE, the USAG FWA, SHPO, and ACHP agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

## STIPULATIONS

USAG FWA shall ensure that the following measures are carried out:

I. USAG FWA will utilize a sympathetic design for the facilities listed below under Stipulation

II. New construction shall acknowledge the NHL and adhere to the Secretary of the Interior's Standards for Rehabilitation of Historic Properties to the maximum extent possible.

II. USAG FWA shall invite consulting parties to consult on the Request for Proposal (RFP) language and participate in the source selections as outlined in Stipulations III and IV for the construction of facilities of particular interest, including the following properties:

- A. Headquarters Company Operations Facility (COF) (first) (Phase II)
- B. Alaskan Air Command Hangar with COFs (Phase II)
- C. Warm Storage Facility (Phase II)
- D. Maintenance Hangar with COFs (Phase III)
- E. Headquarters COF (second) (Phase III)
- F. Battalion Operation Facility (BOF) (Phase IV)

II. Creation of Language for RFP

A. Each year prior to the appropriation of funds, USAG FWA will submit the proposed RFP language for the exterior appearance of the buildings and preferred architectural characteristics, including signage, to consulting parties wishing to participate for the facilities listed under Stipulation II. These dates are subject to change depending upon funding and military need. USAG FWA will notify interested consulting parties of any necessary timetable adjustments due to funding or need constraints.

1. Phase II. Submittal of RFP language to consulting parties in October 2009.

2. Phase III. Submittal of RFP language to consulting parties in October 2010.

3. Phase IV. Submittal of RFP language to consulting parties in October 2011.

B. USAG FWA will determine, in consultation with consulting parties, if there is a need for meetings to discuss the RFP language. Should meetings be necessary, USAG FWA will hold two (2) meetings to discuss the proposed RFP language within sixty (60) days of submittal of the proposed RFP language.

1. USAG FWA will submit proposed language to consulting parties that focus on the sections of the RFP pertaining to the exterior appearance of the buildings and preferred architectural characteristics, including signage.

2. Language proposed by consulting parties cannot be overly prescriptive to the point where it jeopardizes operational functionality of the facilities, conflicts with the Army standards, or results in excessive costs, which may exceed the programmed amount of funding for the construction.

C. USAG FWA will collect input, in writing and verbally, from interested consulting parties within sixty (60) days of receiving the initial draft language.

D. USAG FWA will incorporate comments into the proposed RFP language that meet the criteria listed in Stipulation III.B.1 and III.B.2. The RFP language will be submitted for internal Army review, including United States Army Corps of Engineers (USACE).

1. If the proposed RFP language is acceptable, USAG FWA will incorporate the language in the RFP.

2. If the proposed RFP language is not acceptable, USAG FWA will consult with interested consulting parties to make the necessary changes within thirty (30) days of notification that the language was not accepted. Consultation may include at least two (2) meetings held by USAG FWA to discuss the changes to the RFP language if USAG FWA and consulting parties determine there is a need for meetings.

E.If the proposed language is not accepted or an agreement cannot be reached on language, prior to the RFP being released, USAG FWA will notify consulting parties in writing that the language will not be incorporated and why it will not be incorporated.

#### IV.Source Selection Evaluation Board

A. To the maximum extent feasible, USAG FWA will ensure that one (1) member of the USAG FWA Cultural Resources Management staff, who meets the Secretary of the Interior's Professional Qualification Standards for Architectural History, will participate in the first day of the Source Evaluation Board for the facilities listed under Stipulation II. The architectural detailing for the facilities shall be reviewed on this day.

1. The USAG FWA Cultural Resources Management representative will address historic preservation values and the Secretary of the Interior's Standards for Rehabilitation.

2.The USAG FWA Cultural Resources Management representative will participate as a non-voting member on the Source Selection Evaluation Board. Participation will be limited to providing comments on the architectural characteristics of the proposed designs with respect to compatibility with the NHL and HD.

B. USAG FWA shall invite two (2) representatives from the interested consulting parties to participate in the first day of Source Selection Evaluation Board for the facilities listed under Stipulation II. The architectural detailing for the facilities shall be reviewed on this day. Consulting parties' representatives must commit to a full day and sign a confidentiality agreement.

1. The consulting party representatives, as identified by consulting parties, will be notified by electronic mail of the meeting day a month prior to the date.

2. The consulting party representatives will participate as non-voting members on the Source Selection Evaluation Board. Participation will be limited to providing comments on the architectural characteristics of the proposed designs with respect to compatibility with the NHL and HD.

3. All input from consulting party representatives must be provided on the first day of the source selection. If any consulting party representative is unable to participate in the first day, they will not be able to provide input on the source selection.

#### V. Reuse Study for Hangers 2 and 3

A. The reuse study will include, but is not limited to, the following:

1. Multiple potential cost effective uses that fit within the needs of USAG FWA; and

2. Applicable historic building treatments using the Secretary of the Interior's Standards for the Treatment of Historic Properties based on potential uses; and

3. An outline of the limitations and requirements of Hangers 2 and 3; and

4. A discussion of cost and needed improvements that will be based on the information gathered in the 2008 CARP.

B. Submittals

1. USAG FWA will hold a preliminary meeting with consulting parties to identify potential reuses within a year of execution of this Agreement.
2. USAG FWA will provide a draft of the reuse study to the interested consulting parties within two (2) years of execution of this Agreement.
3. The interested consulting parties shall have sixty (60) days from receipt of the draft reuse study to review and provide input. USAG FWA shall consider any timely input received in developing a second submittal of the draft reuse study.
4. USAG FWA shall provide the second submittal to the interested consulting parties within ninety (90) days from the close of the first review period.
5. The interested consulting parties shall have thirty (30) days from receipt of the draft study to review and provide final input on the second submittal.
6. USAG FWA shall consider any timely input received in developing the final reuse study.

C. USAG FWA will incorporate the final reuse study into the planning process for the future use of Hangars 2 and 3.

1. The study will be utilized during any subsequent NEPA analysis for the hangars' future use.
  - a) USAG FWA shall meet with consulting parties during any subsequent NEPA analysis to consult on the Reuse Study's utilization.
2. This analysis shall include integration of the study into the internal Master Planning review.

D. Contingent on funding, the CARP will be implemented to provide for the interim preservation of Hangars 2 and 3.

1. At the annual meeting, USAG FWA shall review any plans of implementation or partial implementation of the CARP prior to commencing work.

VI. General Mitigation

A. USAG FWA will provide assistance to SHPO to update and finalize The Coldest Front: Cold War Military Properties in Alaska. The report will serve as a historic context for resources associated with the Cold War in Alaska.

1. USAG FWA shall develop an agreement with SHPO outlining SHPO's retention of editorial authority over The Coldest Front: Cold War Military Properties in Alaska within six months of execution of this Agreement.

B. USAG FWA shall develop design guidelines to preserve the integrity of the NHL and the HD, and to ensure new construction and rehabilitation of existing buildings and structures within the NHL and HD adhere to the Secretary of the Interior's Standards for Rehabilitation. Design guidelines shall emphasize maintaining all aspects of historic integrity. It shall also provide an opportunity for the Army to strengthen the NHL's appearance when maintenance of existing buildings requires replacement of non-historic materials.

C. USAG FWA shall write a historic context for the Army's cold weather research in Alaska. This context statement shall provide the basis for evaluating resources in Alaska involved in an important but relatively understudied historic military mission. At a minimum, the context shall, include a historic overview, subthemes, associated Army property types, and registration requirements.

D. USAG FWA shall develop a Teaching with Historic Places (TwHP) lesson plan to impart knowledge of and instill value for the NHL in the Fairbanks community. USAG FWA will work to make access to the NHL easier for students on school-sponsored field trips, as part of these

lesson plans and by developing an interpretive website. The lesson plan shall follow the TwHP format so it can be submitted to NPS.

E. USAG FWA shall construct a viewing platform with interpretive panels from which visitors may view the NHL and parts of the HD. The viewing platform's design will be sympathetic to the NHL and will be designed to facilitate viewing of the NHL and HD over the proposed airfield fence. In consultation with the interested consulting parties, USAG FWA will develop a location, plans for the platform, and a minimum of three permanent interpretive panels using the existing format of the North Post interpretive panels.

F. USAG FWA will update the HABS Level I documentation for Hangars 2 and 3.

## VII. Submittal Process for General Mitigation

A. Submittals for The Coldest Front: Cold War Military Properties in Alaska, the design guidelines, the cold weather research context, HABS documentation, and the Teaching with Historic Places lesson plan; as each mitigation project is funded and subsequently initiated USAG FWA will provide drafts of each of the mitigation documents to the interested consulting parties. All products will be completed within four (4) years of the execution of this Agreement.

1. The interested consulting parties shall have sixty (60) days from electronic receipt of the each draft document to review and provide input.
2. USAG FWA shall consider any timely input received in developing a second submittal of the draft mitigation projects within ninety (90) days.
3. USAG FWA shall provide the second submittal to the interested consulting parties within ninety (90) days from the close of the first review period.
4. The interested consulting parties shall have thirty (30) days from receipt of the draft documentation to review and provide input on the second submittal.
5. USAG FWA shall consider any timely input received in developing the final mitigation documents.

B. Submittals for viewing platform: USAG FWA will provide draft viewing platform designs and draft interpretive plans to the interested consulting parties within four (4) years of the execution of this Agreement.

1. The interested consulting parties shall have sixty (60) days from receipt of the initial draft of the viewing platform designs to review and provide input.
2. USAG FWA shall consider any timely input received in developing a second submittal of the draft viewing platform designs and draft interpretive plans.
3. USAG FWA shall provide the second submittal to the interested consulting parties within ninety (90) days from the close of the first review period.
4. The interested consulting parties shall have thirty (30) days from receipt of the draft program to review and provide input on the second submittal.
5. USAG FWA shall consider any timely input received in developing the final viewing platform designs and interpretive panels.

## VIII. POST REVIEW UNANTICIPATED DISCOVERIES

A. In the course of conducting approved activities, USAG FWA and/or their contractors shall not intentionally or knowingly affect (such as remove, disturb, or cause to be removed or disturbed) any historic properties outside the approved scope of work.

B. In the event that a previously unidentified archaeological resource is discovered during ground disturbing activities, all ground disturbing activity shall immediately cease in the area of the discovery until the USAG FWA Cultural Resource Manager (CRM) can evaluate the resource in coordination with USAG FWA personnel who meets the Secretary of the Interior's Professional

Qualification Standards in Archaeology. If approved by the CRM, subsurface work may continue in areas where subsurface archaeological resources are not reasonably expected to be encountered. In addition, work may resume in affected areas after approved by the CRM. USAG FWA shall notify the SHPO and appropriate Alaska Native Villages regarding such discoveries and related actions within three (3) business days and USAG FWA shall ensure that any archaeological work that may be necessary shall be completed in accordance with the NHPA, and the Archaeological Resources Protection Act, codified at 16 U.S.C. § 470, et seq., as amended (ARPA). Construction work may continue in the project area outside the archaeological resource area;

C. USAG FWA, the SHPO, and the Alaska Native Tribes, if they so request, shall immediately inspect the work site to determine the nature and area of the affected archaeological resource. Within ten (10) business days of the original notification of the discovery, USAG FWA, in consultation with the SHPO, and the Alaska Native Tribes where appropriate, shall determine the NRHP eligibility of the resource;

D. If it is determined that the archaeological resource does not meet the NRHP Criteria as set forth at 36 C.F.R. Part 60.4, as amended (the NRHP Criteria), USAG FWA may resume work in the affected area;

E. If USAG FWA determines that the resource meets the NRHP Criteria, USAG FWA shall comply with 36 C.F.R. § 800.13(b) as expeditiously as possible;

F. If human remains are inadvertently discovered, USAG FWA shall cease all work and ensure that the remains are secured from further disturbance or vandalism until a plan for treatment has been developed. If USAG FWA determines that the remains are Native American, the Garrison Commander shall immediately undertake any actions necessary under the Native American Graves Protection and Repatriation Act, as amended. If USAG FWA determines that the remains are not Native American, and do not warrant criminal investigation, USAG FWA shall immediately notify the SHPO and consult with the SHPO to identify descendants or other interested parties, if any. USAG FWA, in consultation with the SHPO and any interested parties, shall develop a plan for the respectful treatment and disposition of the remains.

G. If during the course of the Undertaking any unforeseen or unanticipated effects are discovered, USAG FWA shall initiate consultation pursuant to 36 C. F. R. § 800.13 to resolve unforeseen the effect.

## IX. EMERGENCY ACTIVITIES

A. In the case of an emergency (as defined below), USAG FWA shall perform those actions reasonably necessary, using commercially reasonable efforts, to protect historic properties, with on-site monitoring by staff meeting the Secretary of the Interior's Standards for Professional Qualifications. Where possible, such emergency measures shall be undertaken in a manner that is consistent with Secretary of the Interior's Standards for Preservation. This emergency provision is limited to work initiated within ten (10) calendar days of, and in direct response to, an emergency. As used in this Agreement, the term "emergency" means (i) a disaster or emergency declared by the President of the United States or by the Governor of a State or (ii) other immediate threats to life or property;

B. If emergency action is required and undertaken, USAG FWA shall provide such information to the SHPO as soon as practicable. The SHPO shall have ten (10) days to review and comment on any such proposed plan for further actions to address the emergency.

## X. DISPUTE RESOLUTION

A. Should any Signatory to this PA object to the manner in which the terms of this PA are implemented, USAG FWA shall consult with the objecting party to resolve the objection. If any Concurring Party to this PA disagrees with the manner in which the terms of this PA are being

implemented, that party may appeal to a Signatory party to invoke the dispute resolution process. If USAG FWA cannot resolve the objection, the following shall apply;

1. USAG FWA shall forward all documentation concerning the dispute to the SHPO. The SHPO shall provide USAG FWA a proposed resolution to the dispute within thirty (30) days of receiving adequate documentation. If USAG FWA agrees with the SHPO's resolution, then the proposed undertaking may proceed accordingly;

2. If the SHPO does not provide its advice regarding the dispute within the thirty (30) day time period, or USAG FWA and the SHPO cannot resolve the dispute within the sixty (60) day time period, then USAG FWA shall forward all documentation relevant to the dispute, including USAG FWA's proposed resolution, to the ACHP. The ACHP shall provide USAG FWA with its advice on the resolution of the objection within forty-five (45) days of receiving adequate documentation;

3. If the ACHP does not provide its advice regarding the dispute within the forty-five (45) day time period, USAG FWA may make a final decision on the dispute and proceed accordingly;

4. Prior to reaching a final decision on the dispute, USAG FWA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the SHPO, ACHP, Signatories and Concurring Parties, and provide them with a copy of this written response;

5. USAG FWA's responsibilities to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

## XI. REPORTING REQUIREMENTS AND MONITORING

A. USAG FWA shall coordinate an annual meeting with the consulting parties within twelve (12) months of the execution of this Agreement, and every twelve (12) months thereafter. The purpose of the annual meeting is to review implementation of the terms of this Agreement;

## XII. ANTI-DEFICIENCY ACT

USAG FWA's obligations under this Agreement are subject to the availability of appropriated funds, and the stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act. USAG FWA shall make reasonable and good faith efforts to secure the necessary funds to implement its obligations under this Agreement. If compliance with the Anti-Deficiency Act alters or impairs USAG FWA's ability to implement its obligations under this Agreement, USAG FWA shall consult in accordance with the amendment and termination procedures found at Stipulations XIV and XV.

## XIII. NOTICES

All notices, submissions, consents, demands, requests, or other communications which may or are required to be given hereunder to any Signatory shall be sent by (a) hand delivery (which shall be deemed to have been received upon delivery), (b) reputable overnight courier (which shall be deemed to have been received one business day after the date sent), (c) United States mail, registered or certified, return receipt requested, postage prepaid (which shall be deemed to have been received upon receipt by the sender of the return receipt), (d) facsimile, with a copy sent by reputable overnight courier (which shall be deemed to have been received when the sender receives a confirmation of successful transmission of the facsimile) or (e) electronic mail (which shall be deemed to have been received when the sender received a confirmation of successful transmission). Such documents shall be sent to the following addresses:

If to USAG FWA:

Garrison Commander  
U.S. Army Garrison Fort Wainwright  
Fort Wainwright, AK 99703  
with a copy to:

Directorate of Public Works  
Attn: IMPC-FWA-PWE (CR Manager)  
1060 Gaffney Road, #4500  
Fort Wainwright, AK 99703-4500

If to SHPO:

State Historic Preservation Officer  
Office of History and Archaeology  
550 West 7th Avenue, Suite 1310  
Anchorage, AK 99501

If to ACHP:

Director  
Office of Federal Agency Programs  
Advisory Council on Historic Preservation  
1100 Pennsylvania Avenue, NW, Suite 803  
Washington, DC 20004

#### XIV. AMENDMENTS

A. Any Signatory may propose in writing to all parties that this Agreement be amended, whereupon the Signatories will consult to consider such amendment. In addition, if the terms of this Agreement are not carried out within a stated time frame, the Signatories shall convene to determine if amendments to this Agreement are necessary or appropriate. This Agreement may be amended when such an amendment is agreed to in writing by all Signatories. The amendment will be effective on the date a copy signed by all of the Signatories is filed with the ACHP. USAG FWA shall notify Concurring Parties of any effective Amendments.

B. If siting substantially changes for any remainder of the facilities currently proposed or if additional facilities are proposed as the construction for Aviation Stationing progresses, USAG FWA will notify consulting parties and consult on the need to amend the Agreement.

1. Substantial changes could include re-siting a facility inside the viewshed of the NHL or HD that had not previously been sited in the area, or re-siting the entire footprint of a facility already sited in the NHL or HD.

#### XV. TERMINATION

A. Any Signatory to this Agreement may terminate it by providing ninety (90) days written notice to each of the other Signatories, provided that the Signatories shall have consulted prior to termination to seek agreement on possible amendments or other actions that would avoid termination.

1. Specific circumstances under which termination would be appropriate include a substantial change to the undertaking that cannot be addressed through amending the

Agreement or the inability to secure the necessary funds to implement its obligations under this Agreement.

B. If the agreement is terminated, USAG FWA shall notify Concurring Parties. Termination hereunder shall render this Agreement without further force or effect and require USAG FWA either to (a) consult to develop a new Programmatic Agreement pursuant to 36 C.F.R. § 800.14(b), (b) comply with 36 C.F.R. Part 800 for individual undertakings, or (c) request, consider, and respond to ACHP comments per 36 C.F.R. § 800.7.

#### XVI. DURATION

A. This Agreement becomes effective on the date when the last of the Signatories has signed the same. The Agreement will remain in effect for ten (10) years from the date of the last signature;

B. Six (6) months prior to the Agreement expiring, USAG FWA shall initiate consultation with the Signatories to determine whether the Agreement should be amended to extend its duration in accordance with stipulation XIV.

Execution of this Programmatic Agreement by the USAG FWA, SHPO, and ACHP and implementation of its terms evidence that USAG FWA has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

# APPENDIX C — AFTER FIRE STRUCTURAL REPORT

Post Fire Condition Assessment

3/22/2011

Hangar 2 (Building 3005)

## Hangar 2 (Building 3005) After Fire Structural Inspection Report



**Jason L. Webb P.E.**

**FT. WAINWRIGHT-DPW**

Hangar 2 (Building 3005)

**The Event**

At approximately 11:45 on Thursday February 17<sup>th</sup> a fire was reported by employees of Tatidek Inc. who were working on removing the door overhangs. Due to deployments no soldiers or helicopters were present in Hangar 2 (Building 3005). Firefighters from Fort Wainwright, Fairbanks and North Star departments worked to extinguish the blaze.



The fire was extinguished about 2 p.m. and the building was cleared for entry by the fire chief about 4 p.m.



**Hangar 2 (Building 3005)****History**

Hangar 2 was constructed in 1942 by the US Army Air Corps on what was Ladd Field. The National Registry of Historic Places first listed Hangar 2 as a contributor to the National Historic Landmark District in 1984 and was listed as a Cold War Historic District contributor but not individually eligible in 2007. The construction of this structure is Birchwood bowstring trusses and walls with a concrete foundation.

**Damage Due to Fire**

**Hangar 2 siding and sheathing removed to ensure fire was fully extinguished**

The fire was concentrated in the west end of the hangar. Trusses in earlier reports (US Army Corps of Engineers-Truss Inspection Report 2007) were numbered 1-8 going from east to west. I will use the same notation system as the USACE report as it will be referenced again in this report. The easternmost truss (#8) sustained the most damage and is a total structural loss; many of the connections have up to 2" of charring. Damage to the webs is most critical at the connection to the top cord of the truss. The main ridge line beam that spans from truss #7 to truss #8 was also heavily damaged at the connection and is no longer supported by truss #8 and is currently being carried by truss #7.

Hangar 2 (Building 3005)



Ridge beam is no longer supported by truss #8



Fire damage on truss #8

## Hangar 2 (Building 3005)

Truss #7 shows minor charring and the connections have no physically apparent damage. The roof deck shows significant fire damage eastward to truss #7 with minor charring to truss #6. Much of the exterior cladding on the west end of the hangar was damaged in the fighting of the fire.



Damage to truss #8 shows loss of connectivity between members

To this point only physical damage has been discussed. However the greater damage to the structure might not be visible. One contributing factor to the unseen damage is the high heat in the adjacent truss bays. Even when the surface of the wood doesn't reach the flash point, the heat can cause property changes in the wood. The same goes for the steel that holds the wood together; it could see even greater stresses due to its large capacity for thermal expansion coupled with the quenching from the fire hoses. Sudden changes in the temperature of the steel causes the steel to stress and become brittle. The thermal expansion of the steel is between 4 and 5 times that of wood, this additional expansion may have caused the holes the bolts go through to stretch beyond the cooled size of the steel bolts. This damage is difficult to assess as there was no baseline assessment for the connections before the fire.

## Hangar 2 (Building 3015)



Ridge beam damage with truss #7 beyond and roof deck damage is visible

### Pre-fire Building Condition

There was significant structural damage to the structure before the fire. A copy of the Hangar 2 portion of the Truss Inspection Report 2007 is included in Appendix A at the end of the report. The structural section of the Condition Assessment and Rehabilitation Plans, Hangars 2 and 3, Ladd Field National Historic Landmark Fort Wainwright, Alaska report is included as Appendix B. The key elements of the existing damage are covered in the two mentioned reports. Key items will be discussed in the repair sections. The pre-fire condition is best summed up in one sentence from the Truss Inspection Report 2007, "This Building has substantial structural deficiencies and needs replacing as soon as possible."

### Repair

The entire west wall of the building will have to be replaced due to the fire damage, this includes truss #8, the roof beams, the interior cladding, exterior cladding, and the roof deck will need to be replaced for at least the last two truss bays between truss #6 and truss #7 and between truss #7 and truss #8. The ridge beam and all secondary beams that were damaged in the fire will need to

## Hangar 2 (Building 3005)

be replaced to their nearest current splice location. This may necessitate the need for further roof decking removal.

Due to the fire and the pre-fire condition an evaluation must establish whether the damaged building if repaired to its predamaged state would comply with the provisions in the current building code, because we are in Seismic Design Category D. Gravity and snow loads must be brought current because there is substantial damage to the gravity load carrying components. Current material properties must be used and there has been a change in allowable design strength. For example until 1955 the allowable tensile strength of the Birchwood framing members would have been set equal to the allowable bending strength which would have been 1450 psi depending on what grade of timbers were used. The current design values for Birchwood timbers would be in the ranges of 1450 to 1000 psi for bending and 850 to 600 psi in tension. Truss analysis shows that the tensile value is the most critical in determining capacity of trusses.

Prior to this fire, Hangar 2's structural condition and ability to stand safely was assessed against historical criteria. The International Building Code 2009 (IBC 2009) and previous editions allowed this under Section 3409.1 entitled *Historic Buildings*. Section 3409.1 reads:

**"Historic buildings. The provision of this code relating to the construction, repair, alteration, addition, restoration and movement of structures, and changes in occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard."**

The fire, along with the substantial pre-fire structural deficiencies detailed in the 2007 truss inspection report, makes this building a *distinct life safety hazard*. Construction to repair the fire damage will be considered significant and comprehensive enough to warrant applying current and more stringent modern codes to the entire building.

A building structural analysis and repair will be required for all structural elements in the building. All truss connections will have to be inspected to determine to what extent they will have to be rehabilitated. It is likely the entire roof would have to be removed to properly rehabilitate the structure.

## Hangar 2 (Building 3005)



Separated conduit with charred wires is the point of ignition

The Ft. Wainwright Fire Department inspector determined that the fire was caused by separation of an electrical conduit. The inspectors report is included as Appendix C at the end of this report. This is a situation that could continue to happen again. If the building is to be rehabilitated the entire electrical system should be brought up to current code standards to reduce the risk of additional fires.

**Recommendation**

Although the overall visual damage to the structure appears to be about 20% of the roof structure the damage may be the end of Hangar 2. Hangar 2 cannot be put back in use until the structure is brought up to current design standards.

Hangar 2 can be saved, however this would only replace the hangar to the current functional standard. As it stood before the fire the hangar no longer met the mission needs as an aircraft hangar. This amount of funding could provide a brand new state of the art hangar that will meet the mission needs now and for the foreseeable future.

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