



# Building Assessments

Duluth Airport Authority

Duluth, Minnesota

DULAI 150733 | September 13, 2021



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# Executive Summary

This report is an insert to the Airport Master Plan for the Duluth International Airport dated 2021 and is intended to provide insight into the building assessment conditions and projected maintenance and rehabilitation needs at the Duluth International Airport (DLH).

The building conditions were assessed visual inspection procedures through several site visits during the summer of 2019. Each report highlights critical information for the building, including age, size, tenant, use, construction type, and general condition. Each component of the building was assessed in detail, with deficiencies noted in each report. Photos of the structure are included for reference.

## **How the data and results contained in this report should be used**

It is assumed the needs and priorities of the DAA will change over time. It is essential for staff to review this report, along with developments in priority and building condition on an annual basis to select the appropriate project for repair or maintenance each year. The report should be updated periodically to update priorities, reallocate projects for future years, and update estimates as materials and labor costs increase over time.

## **Prioritization Methodology**

The prioritization of projects is linked to the overall Capital Improvement Plan (CIP). During 2022 and 2023 various building projects are named specifically in the CIP due to their poor condition, critical nature, or high usage of the building.

Starting in 2024, the CIP plans for a set amount of \$100,000 of funds annually to go towards DAA-owned building maintenance to account for the need to repair and maintain the airport's buildings. Costs are increased in 2030 and 2035 to \$125,000 and \$150,000 respectively to account for the aging condition of the Terminal facility.



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: -

Building Name: Terminal

Ownership: DAA

Age: 2011-2012

Size: 48,652 Sq. Ft. (ground floor, main building)

Tenant/ Owner Type: Operations

Use: Terminal

Construction Type: Metal Panel/ Steel Stud & Curtainwall Glazing System

**General Condition: 5**

### **BUILDING**

#### **Structural Systems**

Minor cracks visible on the mechanical room floor above the support beams, however these have little to no structural significance. The cracks in the architectural terrazzo flooring in lobby area along wall are due to the change in sub-flooring elevation. There should have been an expansion joint placed in this location. No structural deficiencies were observed with the building.

#### **Building Shell**

Typical exterior walls of the building are constructed of cold formed metal framing, batt insulation, vapor barrier, with an insulated metal wall panel cladding and appeared in good condition. No issues or concerns were reported at time of assessment.

The floor system consisted of a cast-in-place concrete slab on grade with an architectural terrazzo finish floor at main lobby/ circulation level with cast-in-place concrete on metal decking at second and third floor levels. There did not appear to be any signs of slab deterioration, or settlement of the building. Minor cracks in floor slab visible on the mechanical room floor above the support beams. Minor cracks were noticeable in the architectural terrazzo floor in lobby area located between mens and womens restroom and extending down to baggage claim area. As noted above, these cracks in terrazzo floor are likely due to a change in the subflooring condition along a construction joint that follows the interior wall/ column line located between the main lobby/ circulation area and the secured area. It was noted that some soil corrections had also taken place in this general area during original building construction. Some minor cracks in the terrazzo floor finish was also apparent adjacent to column 2E.

Exterior windows are of a prefinished aluminum curtain wall system with insulated glazing. These units appear to be in good condition.

Exterior doors at public main entrance/ exit vestibules are an aluminum automatic sliding door and frame assembly, and were in good working condition. Exterior pedestrian / service doors are painted hollow metal frames and doors, also in good condition. It is recommended to maintain exterior hollow metal doors and frames should be scheduled in the near future to be cleaned and re-painted before showing signs of corrossions or wear. The high-speed doors located at each end of Tug Tunnel causes some minor issues under conditions of high wind pressure. Wind blows doors inwards, but no major breakdowns were noted.

## **Roofing**

The roof structure consists of steel framing with steel deck. Roofing systems consist of an EPDM single-ply membrane most likely fully adhered to a protection board on rigid board roof insulation layered directly over the roof deck at high roofed area above third level. Roof drainage is achieved through a series of internal primary and secondary roof drains. Based on comments received from the Owner, there have been no significant leaking issues noted at the membrane roofed areas.

There is a section of standing seam aluminum curved roof system on rigid board roof insulation layered directly over a cast-in-place concrete roof deck above the second floor passenger waiting level and lobby/baggage claim areas on first floor level. The standing seam metal roof system has had constant maintenance issues to repair leaks likely due to fatigue from expansion and contraction of metal roof panels or possible metal corrosion, particularly apparent at hold down clip locations where secured to roof deck. Numerous locations of spot repairs have been completed, and currently consist of sealant and/or aluminum tape flashing. Roof drainage at the curved metal roof system is achieved through a number of internal roof drains located along a membrane roof drainage channel at a low point in curved roof. Roof leaks were also reported along this low point, likely due to low clearance between membrane section of roof at the roof drain channel and adjacent standing seam metal roof flashing. It was also noted that the metal flashing at this area extends only a minimum distance beneath the metal roof panel overhang. Snow/ ice dams build up and water likely finds its way beneath metal roof panels and back into building. There was noticeable damage along sections of the metal roof panel drip edge adjacent to membrane roof drainage channel. It is recommended to replace the existing standing seam metal roof system due to level of existing repairs/patches completed along with the constant maintenance required to prevent leaking. Replacement with a new fully adhered EPDM membrane roof system in the near future is recommended. (*Reference terminal roof memo document dated October 4<sup>th</sup>, 2019, along with terminal roof photos for further information on condition of existing standing seam aluminum curved roof assembly.*)

Replacement with new standing seam aluminum roof system: Given the complexity of this curved metal roof we would estimate replacement around \$42 a square foot (23,000 SF x \$42 = \$966,000). Add an additional 15% on for contingency and 20% soft costs to this particular item.

Replacement with new fully adhered EPDM membrane roof system: Given the complexity of this curved roof structure we would estimate replacement around \$32 a square foot (23,000 SF x \$32 = \$736,000). Add an additional 15% on for contingency and 20% soft costs.

## **MECHANICAL**

### **Building HVAC**

The building is heated by a combination of geothermal heat pumps and high efficiency hot water boilers, all in good condition, installed in about 2011 and with expected useful remaining life of 10-15 years. Air conditioning is provided by chillers coupled with the geothermal system, again in good condition with 10-15 years of remaining useful life. Newer air handlers and fans provide ventilation throughout the building all are in good condition with 10-12 years of expected remaining useful life.

Two recommendations should be considered to improve performance and energy efficiency. First, we recommended that re-commissioning be performed on all mechanical systems to ensure that they are operating optimally and efficiently. This should be done by an independent, third party agency. Second, there have been several premature bearing failures on pumps and fans. This has been due to stray voltage from Variable Speed Drives. This is a known phenomenon and we are surprised that grounding rings were not specified for this equipment. There are after-market kits to mitigate this issue and extend bearing life and we recommend that this be explored.

### **HVAC Controls**

Newer DDC controls are in place and working well, although re-commissioning could serve to ensure that optimal set-points are in place.

### **Plumbing**

All plumbing equipment is newer, approximately 2011, and in good condition. Water heaters are high efficiency, gas fired, with expected useful life of 5-10 years remaining.

### **Fire Protection**

This building is fully sprinkled with fire pump and related jockey pump. Full system is in good condition with significant remaining useful life of 10-15 years.

## **ELECTRICAL**

The electrical systems in this building are in good condition, with few obvious deficiencies. It was agreed that a full evaluation of electrical systems was unnecessary.

One area that could be improved is lighting system efficiency. The building was built just before LED lighting systems became economically feasible. Advances in LED technology and cost reductions since then have made LED lighting the system of choice in most applications. Utility companies provide rebates for LED lighting retrofits and other energy saving measures. An investigation into what programs and rebates are available for energy savings is recommended.

### **Lightning Protection System**

There is a roof vent that was missing a clamp to connect the lightning protection cable. (This may have been corrected by now.)

One of the dish antennas on the roof is bonded to the adjacent antenna with an insulated green ground wire. This would typically be connected with a UL listed lightning protection conductor.

### **Electrical Distribution System**

The distribution system is 8 years old, so another 17 years of service life is expected.

### **Emergency Generator**

This system should have a life span of at least 30 years, or another 22 years.

### **Fire Alarm System**

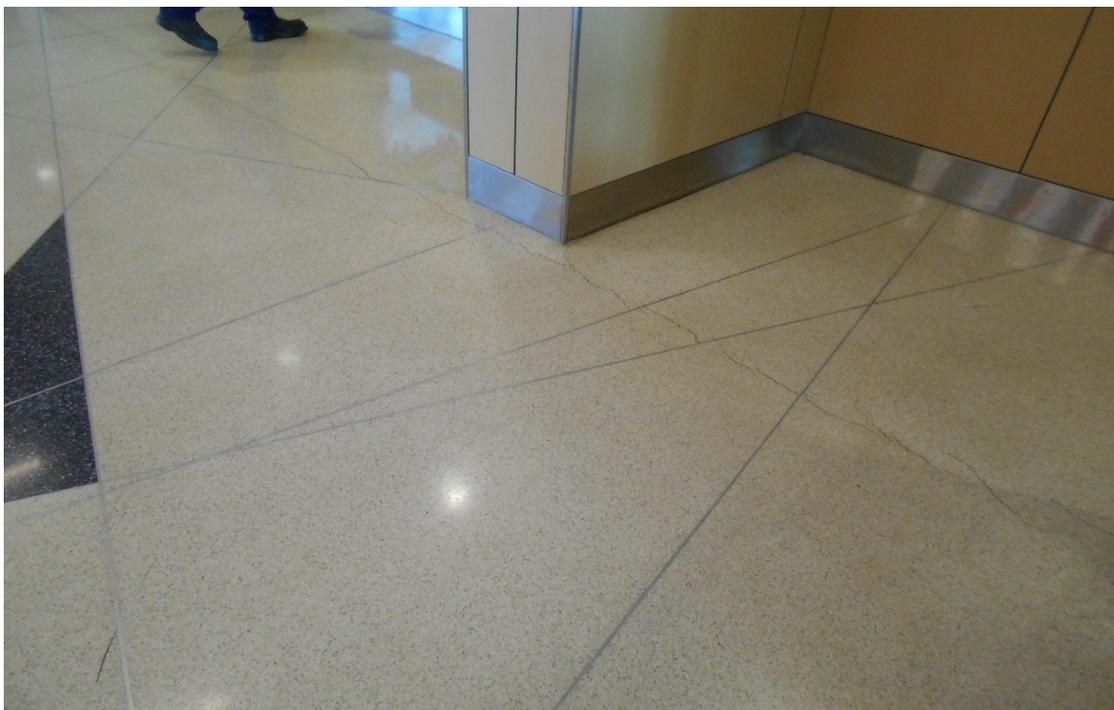
This system will likely be supported for the next 10 years. When the system is not supported or replacement parts are no longer available the system should be replaced.

## **RECOMMENDATIONS**

- Monitor existing cracks in the architectural terrazzo floor located in lobby area. If conditions worsen, an expansion joint filler would be recommended to be installed at the below change in subflooring condition. Also then suggest replacement of adjacent floor slabs between existing divider strip locations to bring floor appearance back to original conditions.
- Replace the existing standing seam metal roof system due to level of existing repairs/ patches completed along with the constant maintenance required, estimated \$1.3M for replacement with standing seam metal roof system /or \$1M for replacement with fully adhered EPDM roof membrane.
- Continue with recommended maintenance schedule for building components and utilities per original building O&M manual.
- Re-commissioning on all mechanical systems by an independent, third party agency, estimated cost of \$30,000
- Explore after-market kits to mitigate premature bearing failure and extend bearing life, estimated cost of \$2,000/motor.



**Photo 1** Terminal Exterior Building



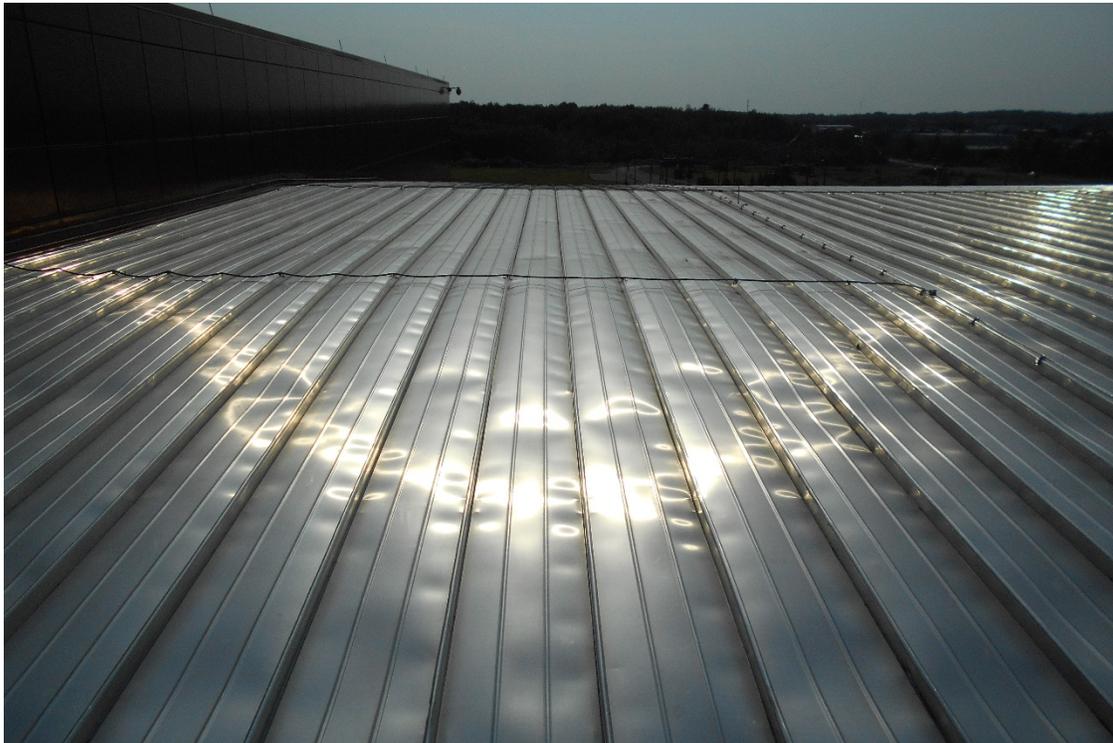
**Photo 2** Crack in architectural terrazzo floor slab (main level lobby area)



**Photo 3** Damage to ceiling panels due to water infiltration



**Photo 4** Spot repairs completed at standing seam metal roof system



**Photo 5** Oil canning in standing seam metal roof system



**Photo 6** Damage at standing seam metal roof at roof drainage channel



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 103

Building Name: Lake Superior College  
(LSC)

Ownership: DAA

Age: Mid to late 1950's

Size: 39,900 Sq. Ft. (ground floor)

Tenant/ Owner Type: Public

Use: Training / Classroom

Construction Type: Masonry / Metal Panel

**General Condition: 3**

### **BUILDING**

#### **Structural Systems**

No structural deficiencies were observed with the building. There are cracks in the hangar floor at the midpoint of slab joints, likely a result of the control joints being placed too far apart and a natural crack formed at the high stress locations. This is not a structural issue; it is noted as unsightly from an aesthetic perspective.

#### **Building Shell**

The exterior walls of the original building consisted of load bearing concrete masonry units (CMU) and pre-finished metal wall panel construction. The masonry that was exposed and visually observed appeared to be in fair condition with no signs of structural deterioration. The pre-finished metal wall panels appeared to be in relatively good condition, with minimal locations of punctured or damaged wall panels. It is recommended that any punctured or damaged wall panels be patched or repaired in the coming year to prevent water infiltration and further deterioration of the building. The overhang from the roof had peeling paint at numerous locations along the soffit and should be cleaned and re-painted. The wood framing / paneling infills at existing openings along the service garage area were not properly flashed and sealed weather tight at the head, jambs, and sill. Sealant was either not present or showed signs of hardening and cracking and in need of replacement. It is recommended that the infilled openings be properly flashed and sealed in the coming year to prevent water infiltration. Ongoing maintenance will be required to paint the existing wood paneling at these infilled locations to prevent further deterioration of the building.

Exterior windows consist of aluminum framed units with insulated glazing throughout. These units appeared to be in good overall condition.

Exterior pedestrian doors consist of a combination of pre-finished aluminum entrance framing systems and painted steel frames and doors, of which both systems appear in good condition. It is recommended that exterior painted steel doors and frames be cleaned and painted in the near future as maintenance. There were a couple of assumed original wood doors and frames at the service garage area and appeared in fair condition. These doors are showing some signs of wear and deterioration beginning to form. It is recommended that these doors get replaced with hollow metal door and frame units in the near future.

The interior floor system consisted of cast-in-place concrete on grade throughout. It was noted that there is an existing in-floor heat system located in the hangar floor slab area. Cracks were noticeable in the hangar floor slab, particularly located near midpoints between existing slab floor joints, but did not appear to be structural in nature as noted in 'Structural Systems' above. There did not appear to be any signs of deterioration or settlement of the floor slab.

### **Roofing**

The roofing structure consists of steel joists/framing with steel deck. Direct roof access was not available at the time of the site assessment, however the roof was visually observed from the grade around the building. Roofing systems appeared to consist of an ethylene propylene diene terpolymer (EPDM) single-ply membrane, most likely fully adhered to a minimal layer of rigid board roof insulation substrate mechanically fastened directly over the existing metal roof deck. The areas of the roof that were visually observed appeared to be in good condition with no significant deterioration. Based on comments from DAA, this roof has had no significant leaking issues. It was mentioned that there is ongoing challenges with ice and snow on lower portions of the roof during winter months. Snow drifts and ice dams build up and if not removed, damages roof edges, drops on sidewalks, and occasionally damages wall panels or breaks windows. Snow guards have been secured at roof edges and placed directly over pedestrian traffic areas, but these have also been damaged from snow/ ice buildup and have been unsuccessful at keeping snow drifts and ice from falling off the roof. It is recommended to install multiple rows of an appropriate snowguard system specifically made for a low sloped membrane roof assembly. The snowguard system should be installed further up on the roof to help prevent additional damage and maintenance issues. This type of system should be installed with a target patch flashing and compressible sealant to create a water tight fitting. Roof drainage is achieved through sheet drainage off eaves of roof overhangs. There are no gutters or downspouts in place. The service garage area has a flat roof, along with a gutter and downspout system. This type of roof also creates ongoing maintenance with removal of ice and snow drift buildup from roof.

## **MECHANICAL**

### **Building HVAC**

The building is heated by two Weil-McLain low pressure steam boilers. The boilers are relatively new with replacement around 2008. Heating is done via direct use of steam and through hot water from a steam-to-water converter and pumps. In the hanger areas, steam unit heaters and steam heat in the floor slabs condition the space. In the classroom and office areas, hot water perimeter fin-tube and hot water coils in the air handling unit heat the spaces. Systems and equipment appear to be in fair condition. As with all steam based systems, there is significant ongoing maintenance required to keep the systems functional.

Cooling is provided to the offices and classrooms by an air cooled condensing unit and an indoor air handler. The condensing unit is an Aaon that was installed in 2015 and the air handler a Daikin installed at the same time. The air handler is a single zone unit which results in real difficulty in achieving occupant comfort in different spaces.

### **HVAC Controls**

The controls for the air handler and local heaters are stand-alone programmable thermostats. A Direct Digital Control (DDC) system could provide for system scheduling and alarms, which would offer an opportunity for enhanced energy savings and alert staff with any issues before potential for damage.

### **Plumbing**

The plumbing piping is insulated and appears to be in good condition. Cold water is routed to a high efficiency, condensing, gas fired water heater. An inline circulating pump ensures adequate hot water at all fixtures within 30 seconds.

Plumbing fixtures are vitreous china lavatories, toilets (floor mounted) and urinals. There are stainless drinking fountains and stainless steel drop in sinks. Flush valves are automatic and faucets are manual. The plumbing supplies under the lavatory have ADA insulating wrap, but the hot water is missing an ASSE 1070 hot water mixing valve which is a new code item for public lavatories. The plumbing fixtures appear to be newer and in good condition.

### **Fire Protection**

The building is fully sprinkled with wet pipe systems.

## **ELECTRICAL**

### **Power Distribution**

This building is supplied by two electrical services. One is fed from a bank of three pole mounted transformers by the street, and the other is fed by another bank of three pole mounted transformers by the street, but further to the east. One feeds a pole that supplies a pad mounted meter cabinet that was installed in 2015. Conduits run above grade from this cabinet and through the wall into a switchboard inside the building. The other service drop spans from the pole mounted transformers to a mast through the building roof.

Both services are located in an electrical room on the east side of the building. One service is 800 amps, 480/277 volts, 3 phase, 4 wire. This service was installed around 2003. The other is 1600 amps, 208/120 volts, 3 phase, 4 wire. This service apparently was installed in 2015.

The electrical services are oversized for the building load. There is a large amount of obsolete 400 HZ test equipment and associated electrical distribution equipment in the building. This equipment could be removed and salvaged. It appears to be fed from the 480 volt service via 4 switches ((3)-400 and (1) 100 amp) that are turned off.

The switchboards look to be in good condition. They have an expected life of 25 years, which means the 480 volt services has 9 years of life left, and the 208 volt service has 21 years of life remaining.

There are subpanels in the office area that are fed from the 208 volt service, and these are in good condition. The subpanels in the garage are fed from the 480 volt service and are in fair condition.

### **Interior Lighting**

There is High-Bay, LED lighting in the garage. Other areas have T-8 fluorescent lighting. The lighting appears to be in good condition.

### **Fire Alarm System**

The fire alarm system looks to be in good condition. When the system is not supported or replacement parts are no longer available the system should be replaced.

## **RECOMMENDATIONS**

- Patch and repair any punctured or damaged exterior metal wall panels, estimated \$6,500.
- Clean and re-paint roof overhang at locations along soffit, estimated \$1,500.
- Seal around perimeter of wood panel infilled openings, estimated \$450.
- Clean and paint exterior steel doors and frames, estimated \$2,000.
- Replace wood doors and frames at the service garage, estimated \$1,500.
- Install multiple rows of appropriate snowguards for membrane roof assembly, low sloped roof, estimated \$4,500.

- Consider replacement of steam-based heating system – this could be a very expensive change, exceeding \$200,000 but could have significant labor and energy savings over time
- Addition of a DDC for HVAC scheduling and alarms estimated costs of \$10,000
- Addition of an ASSE 1070 hot water mixing valve for the hot water supplies estimated at \$3,000
- Removal and salvage of obsolete 400 HZ test equipment and associated electrical distribution equipment



Photo 1 LSC Exterior Building



Photo 2 Peeling Paint at Soffit



**Photo 3** Wood framing / paneling infilled openings



**Photo 4** Cracks in hangar floor slab



**Photo 5** Wood door and frame at Service Garage



**Photo 6** Peeling Paint at underside of roof deck in Service Garage



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 104

Age: Mid 1950's, 1960's

Building Name: Hangar 104

Size: 37,992 Sq. Ft. (total)

(Bays 7/8,9/10,11/12,13/14)

Tenant/ Owner Type: Public

Ownership: DAA / Monaco

Use: Aircraft Hangar

Construction Type: Pre-engineered Metal Building

**General Condition: 1 (Electrical System)**

**2 (Building)**

### **BUILDING**

#### **Structural Systems**

No structural deficiencies were observed with the building. Some joint cracking in the concrete masonry units (CMU) base wall along the east end, but not considered a structural concern at the time of the inspection.

#### **Building Shell**

The exterior walls of the original building are constructed of a pre-engineered metal building frame with steel wall girts and a painted metal building wall panel exterior cladding with a painted CMU base. The painted metal exterior wall panels appeared to be in fair condition overall, but had a few locations with damaged panels around the hangar. The exposed steel framing inside of hangers had visible surface rust. It is recommended that any damaged wall panel locations be repaired or replaced and painted metal on exterior of building should be thoroughly cleaned and re-painted to prevent further deterioration of the metals.

The interior finish on the walls consisted of a painted metal wall liner panel and appeared in fair condition. It is recommended that the painted metal liner panel and the steel roof framing should be thoroughly cleaned and re-painted to prevent further deterioration of the metals.

The interior floor system consisted of cast-in-place concrete on grade. There did not appear to be any signs of significant cracks, deterioration or settlement of the floor slab.

The existing overhead hangar doors consisted of a pre-engineered metal frame with steel wall girts and a painted metal wall panel cladding that matched the building exterior. The painted metal wall panel cladding appeared to be in fair condition overall, but had multiple locations with damage more apparent nearest to ground level. Based on comments received from the DAA, the North side hangar doors were abandoned and currently do not operate. Parts have been removed from the North side hangar doors and installed on South hangar doors in order for these to remain operational. The existing hydraulic system that operates these doors commonly freezes during winter months due to the abandoned heat system in hangars, and use of a blow torch to thaw system is required. It was noted as being common for these hangar doors to break down. It would be recommended to remove and service existing hangar doors or replace doors if it is determined that the doors cannot be refurbished.

Replacement costs for these hydraulic controlled tilt-up hangar doors would be estimated at around \$20 per square foot of door area (3,000 SF x \$20 = \$60,000). Add an additional 10% on for contingency and 10% for soft costs, for a total around \$72,000 (each). Other options such as bi-fold and bottom rolling are available, and we can provide further detail upon request.

### **Roofing**

Direct roof access was not available at the time of the site visit, however the roof was partially visually observed from the exterior grade level. Roofing systems appeared to consist of a metal roof panel secured to metal purlins. It is assumed there is a minimal amount of roof insulation setting on roof deck. Based on comments received from the DAA, this roof was replaced in 2014 and has had no reported roof leaks. Surface rust was present on steel roof framing structure inside building and should be cleaned and touch-up painted to prevent further deterioration of metals. Roof drainage is achieved by sheet drainage off eaves of building, with no gutters or downspouts present.

## **MECHANICAL**

### **Building HVAC**

No active mechanical systems. Abandoned heating system to remain.

## **ELECTRICAL**

### **Power Distribution**

In a fenced area west of Hangar 104 is 13.8 KV switchgear, a bank of 13.8 KV transformers sitting on a slab on grade, and an 8-bay 480/277 volt, 3 phase, 4 wire volt pad mounted substation. This gear feeds several hangers via meter sockets mounted on the outside wall. This service equipment is very old and should be replaced by a pad mounted transformer and perhaps an exterior weatherproof switchboard.

The electrical service equipment in the hangers that are fed from this service is also very old, over 50 years old. The entire electrical distribution system for these hangers should be replaced. The total cost for replacement of the entire electrical distribution system would be on the order of \$150,000

### **Interior Lighting**

Interior lighting consists of HID high bay lighting. This is old and should be replaced by energy efficient LED lighting. The cost to replace the lighting is estimated to be \$38,000.

### **Exterior Lighting**

Exterior lighting is HID. This should be replaced by energy efficient LED lighting. The cost to replace the exterior lighting is approximately \$10,000.

## **RECOMMENDATIONS**

- Clean and re-paint exterior metal wall/ door panel cladding, CMU base, and exposed metals on building, estimated \$92,500.
- Clean and re-paint interior metal wall liner panel, estimated \$134,500.
- Clean surface rust present on interior steel roof framing structure and touch-up paint, estimated \$10,250.
- Service existing hangar doors and hydraulic operator.
- Replacement of power distribution system, electrical service equipment, and interior and exterior lighting



**Photo 1** 104-Hangar Exterior Building



**Photo 2** Peeling Paint at Interior Metal Liner Panel



**Photo 3** Damage at North Side Hangar Door / Peeling Paint at Interior Metal Liner Panel



**Photo 4** Hydraulic System That Operates Hangar Doors



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 105-108

Age: Mid 1950's, 1960's

Building Name: Hangars 105-108

Size: 5,100 Sq. Ft. (each)

Ownership: DAA (105-Cirrus, 106-Monaco, 107-John Hall)

Tenant/ Owner Type: Public

PKGG (108-Land lease)

Use: Aircraft Hangar

Construction Type: Pre-engineered Metal Building

**General Condition: 1 (Electrical System)  
2 (Building)**

### **BUILDING**

#### **Structural Systems**

Some surface rusting on steel members was present, but no significant section loss was apparent. One crack in floor slab was noted. No significant structural deficiencies were observed with any of these buildings.

#### **Building Shell**

The exterior walls of the original building are constructed of a pre-engineered metal building frame with steel wall girts and a painted metal building wall panel exterior cladding. This is a cold storage hangar, with no vapor barrier or insulation in the walls. The painted metal exterior wall panels appeared to be in fair condition overall, but had multiple locations with damaged panels around each hangar. The damaged panels vary in severity, but were more apparent nearest to the ground level. The exposed steel framing inside of hangers had presence of surface rust. It is recommended that any damaged wall panel locations be repaired or replaced and metal wall panels on exterior of building should be cleaned and re-painted to prevent further deterioration.

Exterior pedestrian doors are painted wood frames and doors, and are in poor condition. The doors are showing signs of wear and deterioration. It is recommended that exterior wood doors and frames be removed and replaced with painted hollow metal units in the near future.

The existing sliding hangar doors consisted of a pre-engineered metal frame with steel wall girts and a painted metal wall panel cladding that matches the building exterior. The painted metal wall panel cladding appeared to be in fair condition overall, but had multiple locations with damage more apparent nearest ground level. Based on comments received from the DAA, the north side hangar doors were abandoned and currently do not operate. Likely cause could be binding of the operable hangar doors with the top and bottom guide rails due to age and corrosion between metals, as well as the rollers not functioning. It would be recommended to remove and service existing hangar doors or replace doors if it is determined that they cannot be refurbished and reused.

The interior floor system consisted of cast-in-place concrete on grade. There did not appear to be any signs of significant cracks, deterioration or settlement of the floor slab.

### **Roofing**

Direct roof access was not available at the time of the site visit, however the roof was partially visually observed from the exterior grade level. Roofing systems appeared to consist of a metal roof panel secured to metal purlins. No vapor barrier or roof insulation present due to being a cold storage hangar. Based on comments received from the Owner, this roof is original construction and roof leaks have been reported. Surface rust was present on steel roof framing structure inside building and should be cleaned and touch-up painted to prevent further deterioration of metals. The existing metal roof panels should be replaced in their entirety to create a weather tight building enclosure before further damage and deterioration occurs. Roof drainage is achieved by sheet drainage off eaves of building, with no gutters or downspouts present.

### **MECHANICAL**

There is no mechanical in these hangers.

### **ELECTRICAL**

#### **Power Distribution**

The electrical services for these buildings are fed from the Switchgear to the west of Hanger 104. The electrical distribution equipment in these buildings is at least 50 years old, and is well past the end of its expected life. The service voltage is 480/277 volts, 3 phase, 4 wire. All of the existing electrical distribution system, including panels and distribution transformers, should be replaced, at a cost of about \$30,000.

#### **Interior Lighting**

These buildings appear to have High-bay HID lighting that is very old. New LED high bay fixtures should be installed for maintenance and energy savings. This would cost roughly \$20,000.

#### **Exterior Lighting**

There are HID wall packs and flood lights on the outside of the buildings. New LED fixtures should be installed for maintenance and energy savings, at an estimated cost of \$10,000.

### **RECOMMENDATIONS**

- Patch and repair any punctured or damaged exterior wall and hangar door metal panels, estimated \$15,000 (each bldg.).
- Clean and re-paint exposed metal wall panels on exterior of building, estimated \$16,500 (each bldg.).
- Replace exterior wood doors and frames, estimated \$3,000 (2 thus, each bldg.).
- Service existing sliding hangar doors and guide rail system.
- Clean surface rust present on interior steel roof framing structure and touch-up paint, estimated \$13,750.
- Replace existing metal roof panels, estimated \$190,000.
- Replace existing electrical distribution system, including panels and distribution transformers
- Replace interior lighting with LED high bay fixtures
- Replace exterior lighting with LED fixtures



**Photo 1** 105-108 Hangars Exterior Building



**Photo 2** Damaged Exterior Metal Wall Panels



**Photo 3** Damaged Exterior Metal Wall Panels / Wood Service Door



**Photo 4** Sliding Hangar Door Damage



**Photo 5** Surface Rust on Interior Structural Steel Framing



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 301

Building Name: Electrical Vault

Ownership: DAA

Construction Type: Masonry

Age: Unknown

Size: 1,682 Sq. Ft.

Tenant/ Owner Type: Operations

Use: Electrical Gear for Airfield Lighting

**General Condition: 3 (Building  
2 (Electrical System))**

### **BUILDING**

#### **Structural Systems**

Lintel above louver on east side of building has significant crack along reinforcement layer. Loose concrete should be removed and patched. Overall, the building has no other significant structural deficiencies that were observed.

#### **Building Shell**

The exterior walls of the building are constructed of load bearing concrete masonry units (CMU). This masonry is in overall fair condition. Minor cracks were noticeable in exterior masonry walls, where some limited grout joints are in need of repair to maintain a weather tight building enclosure. It is recommended that portions of the wall grout joints be re-pointed to prevent water infiltration and structural deterioration of the building. Some limited locations of minor efflorescence beginning to form at inside face of exterior masonry walls, more noticeable along lintel locations. It is recommended that exterior of building be cleaned and an exterior grade paint applied after re-pointing of grout joints is completed.

The exterior pedestrian door consists of a painted steel frame and door and is in fair condition. It is recommended that the exterior steel pedestrian door and frame be cleaned and painted along with the building. The overhead manual roll-up service door is prefinished metal, and both door and track appeared to be in good working condition.

The interior floor system consisted of cast-in-place concrete on grade. Minor cracks were noticeable in the floor slab, but were limited in locations and did not appear to be structural in nature. There did not appear to be any signs of deterioration or settlement of the floor slab.

#### **Roofing**

The roof structure consists of a cast in place concrete deck. Direct roof access was not available at the time of the site visit, however the roof was visually observed from the roof of an adjacent building. The roofing system appeared to consist of a ballasted single-ply EPDM membrane, most likely over loose laid rigid board roof insulation layered directly over the cast-in-place concrete roof structure. There was no evidence of roof leaks from inside of building at time of site visit. Based on comments received from maintenance personnel, there have been no significant roof leaking issues noted. The ballasted membrane roof system is unknown if original, or if building had been re-roofed in past. A ballasted membrane roof

system has a typical life expectancy of 20-25 years. Roof drainage is achieved through a series of metal scuppers and downspouts.

## **MECHANICAL**

### **Building HVAC**

The building is heated by the excess heat from the electrical gear and a few small electric unit heaters.

There are three exhaust fans, two on the roof and one on the wall that serve to remove excess heat. The wall mounted fan serves to exhaust the tunnel/vault below the floor slab.

### **Fire Protection**

There is no fire protection (sprinkler) system installed in the building.

## **ELECTRICAL**

### **Power Distribution**

A pad-mounted utility transformer is located south of the building. An underground feed goes from the transformer to a wall mounted metering cabinet on the exterior wall of the building. This feeds through the wall to an 800 amp, 480/277 volt, 3 phase, 4 wire disconnect inside the building. From there it feeds an 800 amp automatic transfer switch.

The transfer switch is also fed by a 450 KW, 562.5 KVA diesel generator, located in a weatherproof enclosure south of the building. This shows a manufacturing date of 9/99, and it should have an expected life of 30 years, or 11 more years.

The transfer switches feeds an 800 amp distribution panel that feeds regulators, transformers, and panelboards throughout the vault. The electrical service equipment appears to be about 20 years old, and should have another 5 years of expected life. There is one very old 100 amp panel that should be replaced, at an approximate cost of \$3,000. There is a large amount of airfield lighting equipment, such as constant current regulators and controllers. This equipment should have an expected life of 20 years, and much of it looks to be older than that, so that equipment should be replaced as airfield projects are completed.

### **Interior Lighting**

The lighting is new LED with occupancy sensors and is in good condition.

### **Exterior Lighting**

There are 3 HID flood lights and one incandescent flood light on the building exterior. These should be replaced by LED lighting at a cost of \$2000.

The exterior of the building requires code compliant exterior emergency egress lighting outside the exit door. This is a current code requirement and should be considered a life safety item.

### **Fire Alarm**

No fire alarm system was present.

## **RECOMMENDATIONS**

- Tuck-point approximately 5% of the exterior masonry grout joints to prevent further deterioration and water infiltration, estimated \$13,500.
- Clean and re-paint exterior building CMU and hollow-metal doors/ frames, estimated \$39,000.
- Structural repair of crack along lintel above louver with epoxy injection, estimated \$500.
- Perform roof inspection by a certified roof inspection company to observe conditions of existing roof system, and provide roof management report listing any deficiencies, recommendations, and

maintenance plan. Complete any repairs or re-roof building as recommended by roof inspection company.

- Install code compliant exterior emergency egress lighting throughout the building. This is a current code requirement and should be considered a life safety item.
- Update electrical equipment providing service to airfield electrical components as projects occur
- Provide proper grounding of the electrical system



**Photo 1** Electrical Vault Exterior



**Photo 2** Cracks / Grout Joints in Need of Repair



**Photo 3** Crack in Structural Concrete Lintel above Louver opening



**Photo 4** Cracks / Grout Joints in Need of Repair & Exterior Service Door



**Photo 5** Locations of Efflorescence Beginning to Form on Interior Masonry Surfaces (back wall)



**Photo 6** Ballasted Membrane Roof Assembly



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 303	Size: 36,000 Sq. Ft. (ground floor) w/ 3,000 Sq. Ft. (mezzanine)
Building Name: Snow Removal	General Condition: 5
Equipment (SRE)	Tenant/ Owner Type: Operations
Ownership: DAA	Use: Snow Removal Equipment Storage & Maintenance
Age: 2003	
Construction Type: Insulated Pre-cast Concrete Panel	

### **BUILDING**

#### **Structural Systems**

No structural deficiencies were observed with the building.

#### **Building Shell**

The exterior walls of the original building are constructed of load bearing insulated pre-cast concrete wall panels. The pre-cast wall panels appear to be in good condition, with no significant deterioration observed. The existing sealant between pre-cast concrete wall panel to panel joints has cracked, separated, or hardened at locations along exterior of main building and along wall panel joints up at high roof level over mezzanine. It is recommended to replace existing sealant at panel to panel joints as maintenance within the coming year to prevent water infiltration and further deterioration of the building. Primary areas in need of caulking replaced were along wall panel joints up at high roof level. Typical life-span of this sealant is around 15 years.

The interior floor system consisted of cast-in-place concrete on grade. There did not appear to be any signs of significant cracks, deterioration or settlement of the floor slab.

Exterior windows are fixed aluminum curtain wall system with insulated glazing throughout. These units appear in overall good condition. The horizontal and vertical sealant joints between the butt jointed sections of glass should be replaced as part of maintenance every 15 years, or as recommended by curtain wall manufacturer.

Exterior man doors consist of a combination of pre-finished aluminum entrance framing system and painted steel frames and doors, of which both systems appear in good condition. It is recommended that exterior painted steel doors and frames be cleaned and painted in the near future.

There are two 28'x18' painted steel sectional 4-fold garage doors, one on South end and other on North end of building, that open to the garage maintenance area. It has been noted that these 4-fold garage doors are currently experiencing ongoing maintenance issues, and manufacturing of replacement parts onsite to keep operations.

#### **Roofing**

Roofing system was consist of a EPDM single-ply fully adhered membrane over protection board and 3-layers of rigid board roof insulation layered directly over the metal roof deck. Based on comments from the Owner there have been no significant leaking issues reported or noticeable at this time. The areas of the roof that were visually accessible appeared to be in good condition with no significant deterioration. The existing roofing systems can be expected to function properly, with proper preventative maintenance, for another 15 years. Roof drainage is achieved through a series of primary internal roof drains with secondary overflow scuppers out exterior building wall panels.

## **MECHANICAL**

### **Building HVAC**

The building office area is heated and cooled via an indoor air handling unit with associated condensing unit on the roof. The vehicle bay is heated by overhead, gas fired, radiant heaters. Gas fired make-up air units provide fresh air to the bay and roof mounted exhaust fans remove contaminated air. All equipment is original to the building in 2002. Most equipment is in good to excellent condition with significant remaining expected life. The notable exception is the air cooled condensing unit which provides cooling to the office spaces, it has been subject to significant hail damage and should be replaced. Any replacement unit should be provided with hail guards to prevent future such damage.

A further issue was observed for the gas piping on the roof – the piping is mounted on sleepers and not anchored there has been significant movement of these pipes due to wind. It is recommended that the piping be anchored in some fashion to prevent excessive movement which could result in a failure of these pipes and a resulting gas leak.

The indoor air handling unit can be expected to have 10-15 years of remaining useful life with continued maintenance, the make-up air unit and radiant heaters can be expected to have 10 years of remaining useful life. The exhaust fans can be expected to last another 15 years with continuing proper maintenance.

### **HVAC Controls**

The controls for the units are stand-alone programmable thermostats. A DDC system could provide for system scheduling and alarms, which would provide an opportunity for enhanced energy savings and alert staff with any issues before potential for damage.

### **Plumbing**

The plumbing piping is insulated and appears to be in good condition.

Cold water is routed to a gas fired, condensing water heater that was installed in 2002, it is expected to be near, or at, expected useful life. Plans should be in place for replacement due to the age.

Plumbing fixtures are vitreous china lavatories, toilets (floor mounted) and urinals. There are stainless drinking fountains and stainless steel drop in sinks. Flush valves are automatic and faucets are manual. The plumbing supplies under the lavatory have ADA insulating wrap, but the hot water is missing an ASSE 1070 hot water mixing valve which is a new code item for public lavatories. The plumbing fixtures appear to be newer and in good condition.

### **Fire Protection**

There building is fully sprinklered and adequately protected, no anticipated issues.

## **ELECTRICAL**

### **Power Distribution**

A 300 KVA pad-mounted utility transformer is located south of the building. Service entrance conductors are routed underground to a wall mounted metering cabinet on the exterior wall, and from there to the service equipment. The service equipment is in an electrical room in the southwest corner of the building. The electrical equipment generally appears to be in good condition. The service is 1200 amps, 208/120 volts, 3 phase, 4 wire.

There is a 125 KW generator, an automatic transfer switch, and a generator control panel in the electrical room. The generator is old and should be replaced. The transfer switch is no more than 15 years old, and should last another 15 years if well maintained. The generator feeds selected loads in the building, including emergency lighting. If any upgrades to the generator are done, a second transfer switch, for emergency lighting only, would be required by the National Electrical Code.

There are additional electrical panels located in the mezzanine area to the north.

### **Interior Lighting**

The high-bay lighting in the vehicle storage area has been recently changed to LED, Lighting in the rest of the building appears to be fluorescent. The lighting appears to be in good working order.

### **Exterior Lighting**

Shoebox luminaires are installed on exterior walls. These appear to be HID and seem to be in good condition.

### **Fire Alarm System**

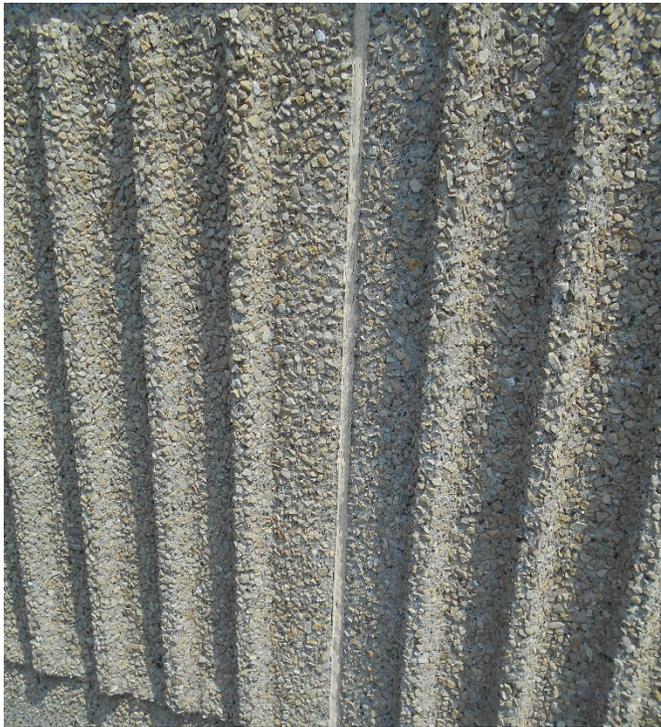
The fire alarm system looks to be in good condition, but is most likely 17 years old. When the system is not supported or replacement parts are no longer available the system should be replaced.

### **Recommendations**

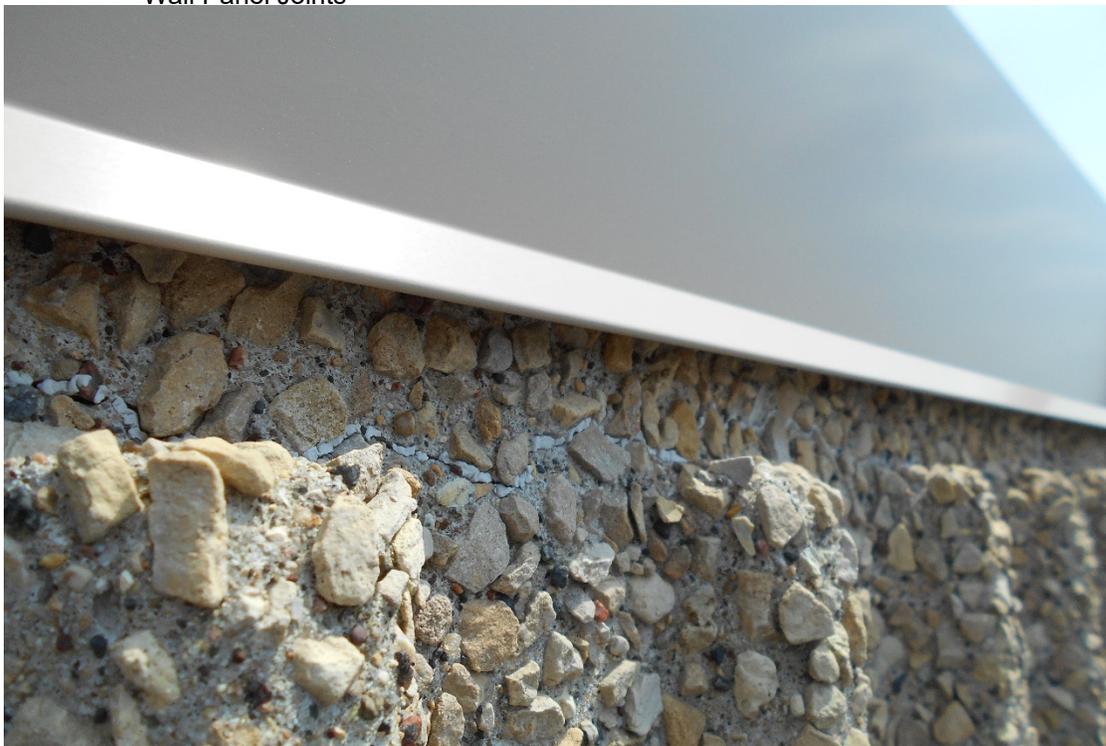
- Replace existing sealant at exterior precast concrete wall panel to panel joints
- Replace sealant joints between the butt jointed sections of glass at curtain wall systems
- Clean and re-paint exterior hollow-metal doors and frames
- Service sectional 4-fold garage bay service doors and operable components



**Photo 1** SRE Exterior Building



**Photo 2** Sealant Joint Showing Signs of Deterioration Between Precast Concrete Wall Panel Joints



**Photo 3** Hairline Cracks in Precast Concrete Exterior Wall Panels (high roof)



**Photo 4** Fixed Aluminum Curtain Wall Glazing System



**Photo 5** Sectional 4-fold Garage Bay Service Doors



**Photo 6** Membrane Roof Assembly



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 305

Age: 1954

Building Name: Hydro Solutions

Size: 15,000 Sq. Ft.

Ownership: DAA

Tenant/ Owner Type: Business

Age: 1954

Use: Manufacturing of Parts / Hydro Cutting

Construction Type: Masonry (CMU) / Cast-in-Place Concrete

**General Condition: 1**

### **BUILDING**

#### **Structural Systems**

Surface rust on joists, but no observable section loss was apparent. Coating has failed in some areas of the roof beams, and this should be removed and re-coated. A significant amount of concrete masonry unit (CMU) block has been added to the roof as ballast for the roofing membrane. There are no clear signs of roof distress due to the added dead load, but this should be monitored in the winter months as snow loads increase. There was a passage knocked out of a CMU wall to pass sheet metal through, this opening should be reinforced with a lintel plus jambs cleaned up and armored.

#### **Building Shell**

The exterior walls of the original building are constructed by a combination of load bearing concrete masonry and cast-in-place concrete. The interior condition of the masonry appeared to be in fair condition but several areas showed signs of water infiltration/efflorescence. Primary areas of water infiltration/efflorescence were at the exposed, unfinished masonry wall surfaces in the loading dock area. The exterior condition of the masonry was not visible at the time of the site visit for review. It is assumed there is a minimal amount of wall insulation present from original building construction, and that it would not meet current energy code requirements. It is unknown if there is a proper vapor barrier present in existing exterior wall system where furred out with gypsum board/ wall covering. The exposed masonry/ CMU exterior walls reflected having no vapor barrier present. The exterior building façade was re-cladded with minimal added insulation board and pre-finished metal wall panels, estimated by tenant to have been completed around 2009. The pre-finished metal wall panels currently extend to just beneath underside of soffit and down in connection with grades/ concrete pavement. These wall panels do not appear to have proper flashing at soffit or at grade level. The wall panels stop short of the soffit at numerous locations where there is exposed insulation board, and extend directly to grade / pavement. Typical construction would hold wall panels two inches off grade with cap/ drip flashing. The existing fascia and soffit has numerous locations of paint finish failure/ peeling paint, and is in need of repair. New flashing should also be installed to extend along soffit fascia and wrap beneath soffit and over wall panels with inside panel closure trim to provide a weather tight seal. Existing openings at exterior walls were infilled with studs and vinyl wall cladding. It was not visible if these infilled openings had a vapor barrier present on warm side of wall. They also did not have proper flashing at head and jambs, or at grade level. Sealant was either not present or showed signs of hardening and cracking, and in need of replacement. It is recommended that the exterior walls be properly flashed and sealed at both soffit and grade levels, along with infilled portions of walls be properly flashed, sided,

and sealed in the coming year to prevent water infiltration and further deterioration of the building. Installing additional wall insulation in place will help with condensation issues and heating/ cooling loss.

The interior floor system consisted of cast-in-place concrete on grade. Minor cracks were noticeable in the floor slab, but were limited in locations and did not appear to be structural in nature. There did not appear to be any signs of deterioration or settlement of the floor slab.

Exterior windows are painted wood units with non-insulated glazing throughout. These units are in poor condition and in need of replacement. It is recommended to replace existing units with an aluminum clad wood window with insulated glazing. Replacement windows will provide a tighter weather/ air tight enclosure along with better insulating R-value.

Exterior pedestrian doors are a combination of painted wood/ hollow metal frames with hollow metal doors. Both the wood/ hollow metal frames are in poor condition with doors in relatively fair condition. Several of the doors are showing signs of wear and corrosion, mainly along the bottom. It is recommended that exterior hollow metal frames be cleaned and painted, and replace existing wood framed door with a hollow metal unit in the near future. The hollow metal door bottoms should be repaired, any holes in door should be properly patched, and new paint finish applied to prevent further deterioration.

Overhead roll-up service doors were prefinished metal, and both door and track appeared to be in relatively good working condition. It was noted by tenant that these service doors were replaced around 2008. Original electric openers are still being used with no safety detection sensor system. These operators do not meet current building code requirements with no safety detection systems present, and pose a safety hazard to personnel. It is recommended to replace existing electric door operators that come with a safety detection system in the coming year to prevent work related injuries.

## **Roofing**

The roof structure consists of steel joists with precast plank for the deck. Roofing systems appeared to consist of an original built-up roof system with rigid board roof insulation layered directly over a combination of cast-in-place concrete or metal roof deck. It is assumed there is a minimal amount of roof insulation present from original building construction, but would not meet current energy code requirements. The original built-up roof system shows significant signs of deterioration. It is currently failing, in poor condition and in need of replacement. A built-up roof system has a typical life expectancy of 30 years. A section of this roof was re-roofed with a single-ply roof membrane and 1/4" insulation board laid directly over the existing built-up roof system, with an estimated completion date by tenant in 2008/09. This section was re-roofed with a singly-ply roof membrane and held in place by a significant amount of CMU block as ballast. The membrane wraps over existing roof edge flashing and is secured in place with non-treated wood blocking and wood screws, which has deteriorated and failed. Utilizing CMU as ballast is not a standard construction method nor is roof membrane edge at perimeter properly secured or flashed. Multiple locations of roof leaks were present along with reported condensation throughout interior space. Water intrusion was more noticeable near front reception area, receiving area, and at metal roof decked locations. Buckets and plastic drip blankets hung from ceiling structure to catch water at some critical locations throughout building. It was noted by tenant that roof leaks were more prevalent in spring after freeze/ thaw cycle, in winter months, and during heavy rains. An attempt to repair roof leaks with a pourable sealant has also failed.

A complete replacement of existing roof system with a new fully adhered EPDM roof system with added roof insulation to bring compliant with current energy code is recommended. Installing additional roof insulation in place will help with condensation issues and heating/ cooling loss. Installing proper fascia flashing with drip edge at perimeter of roofed areas along with replacement of flashing at roof penetration and expansion joint locations will provide a weather tight building enclosure. There is also what appeared could be mold/ mildew present on bottom side of concrete roof decked areas, more noticeable in the manufacturing area, and it is recommend that this be tested. The paint has also failed in these areas on the structural roof beams supporting the concrete roof deck, along with surface rust present on roof joists.

It is recommended that a complete deep cleaning at underside of concrete decked areas and at structural steel beams/ joists be performed, as well as an application of a new paint finish.

Roof drainage is currently achieved by sheet draining at edges of building. Minimal amount of gutters and downspouts were present, and it is assumed that some might have been taken down when attempting re-roof and never were reinstalled. Recommend replacement of a gutter and downspout system be installed at same time as re-roof to properly direct water off roof and away from building.

### **Overall Summary**

The building is overall poor condition. A significant number of recommended repairs are needed, or new systems installed in place of poor or failed components, in order to maintain building and provide a fully enclosed, weather tight enclosure. These repairs/ new systems should be set in place immediately.

## **MECHANICAL**

### **Building HVAC**

The building has old and inefficient electrical heat with minimal ventilation. No fire sprinklers. Consideration should be given to full replacement of a more efficient heating supply source and system.

## **ELECTRICAL**

### **Power Distribution**

There are two electrical services supplying this building. The older one is 208/120 volts, 3 phase, 4 wire, and is in poor condition. Some of the service equipment was inaccessible, but it is probably 600-800 amps. It is fed underground from a three phase pole mounted transformer bank. This service should be replaced, at an estimated cost of \$20,000.

The other is a 225 amp 480/277 volt, 3 phase, 4 wire service that is fed overhead from another 3-phase transformer bank. This is newer, circa 1997, so it is near the end of its expected life. It is in fair condition.

### **Interior Lighting**

Most of the lighting in the building is T-12 strip fluorescent. There is also some recessed and surface mounted fluorescent light, as well as some incandescent fixtures that have screw in LED or compact fluorescent lamps. Some of the lighting is in fair to good condition, but much of it is in poor condition due to age or water damage. Some or all of it should be replaced, and energy savings would justify a switch to LED.

### **Exterior Lighting**

WHID all packs are on the front of the building and there are HID flood lights mounted on three wooden poles in front of the building. One of the poles is noticeably leaning.

### **Fire Alarm**

There was no fire alarm system.

## **RECOMMENDATIONS**

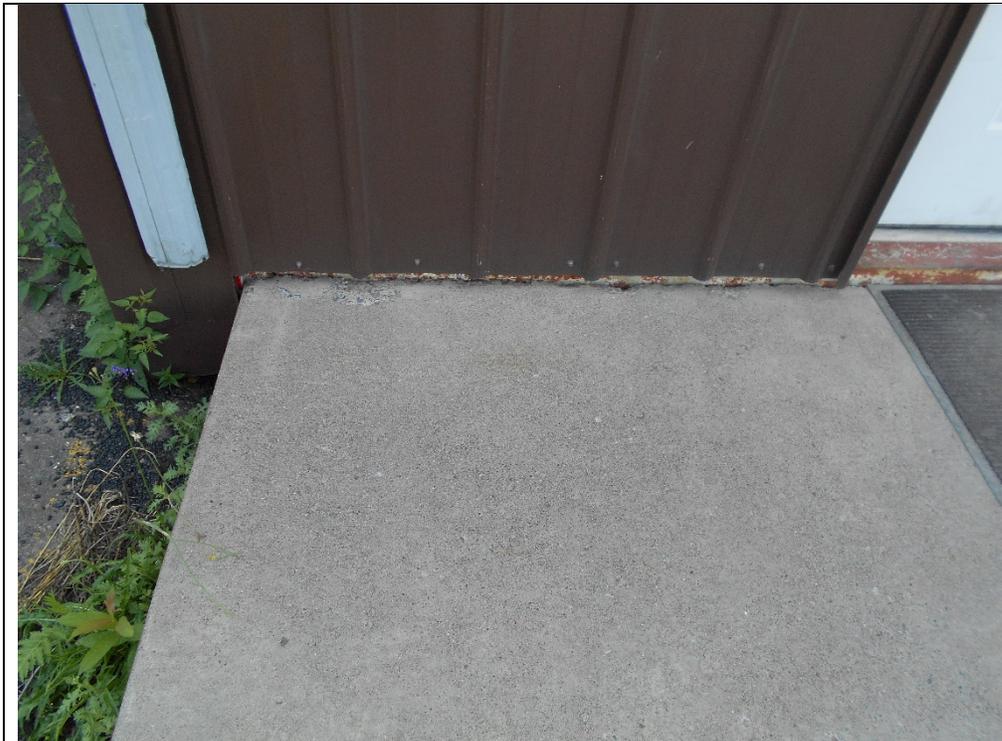
- Given the number of recommendations as noted above in the report, these recommendations are not repeated in this section. The general condition of the building, and the magnitude of repairs or replacement components needed, warrant consideration of demolition in lieu of any future repairs or replacement activities. Demolition costs are estimated at \$72,000.



**Photo 1** Hydro Solutions Exterior Building



**Photo 2** Efflorescence on Interior of Exterior Masonry Wall (loading dock area)



**Photo 3** Exterior Metal Wall Panels Not Flashed at Grades/ Concrete Pavement. Potential Water Infiltration



**Photo 4** Paint Finish Failure/ Peeling Paint at Soffit



**Photo 5** Exterior Metal Wall Panels Not Flashing at Soffit Exposing Insulation Board. Potential Water Infiltration



**Photo 6** Infilled Openings along Exterior Building Wall & Wood Framed Windows



**Photo 7** Original Built-up Roof System Deteriorating/ Failing



**Photo 8** Re-Roof Section with Membrane and Masonry (CMU) Used as Ballast



**Photo 9** Roof Edge Condition Not Properly Flashing/ Secured



**Photo 10** Roof Edge Condition Not Properly Flashing/ Secured & Failing



**Photo 11** Water Intrusion at Ceiling / Plastic Drip Curtains Placed to Catch and Divert Water into Plastic Buckets (multiple locations)



**Photo 12** Possible Mold/ Mildew and Paint Peeling from Structure at Underside of Concrete Roof Deck



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 311

Building Name: Cirrus Training Facility

Ownership: DAA

Age: Mid 1950 – 1960's

Size: 26,650 Sq. Ft. (ground floor)

Tenant/ Owner Type: Business

Use: Cirrus training and parachute inspections

Construction Type: Pre-engineered Metal Building

**General Condition: 3**

### **BUILDING**

#### **Structural Systems**

Rust is present on exterior roof overhangs above garage doors along south wall, and these should be re-coated. No structural deficiencies were observed with the building.

#### **Building Shell**

The exterior walls of the original building are constructed of a pre-engineered metal building frame with wall girts, metal stud framing, insulation and a pre-finished metal building panel exterior cladding. The pre-finished metal exterior panels appeared to be in fair condition. Exposed steel framing at underside of roof overhangs over dock doors has presence of surface rust. It is recommended that any painted steel on exterior of building be thoroughly cleaned and re-painted to prevent further structural deterioration of the metals.

The interior floor system consisted of cast-in-place concrete on grade. There did not appear to be any signs of significant cracks, deterioration or settlement of the floor slab. The floor joint between the original building and north expansion bay area had some sections of broken/ chipped concrete and should be cleaned and patched to prevent further deterioration of the concrete floor slab long this cold joint.

Exterior windows are fixed aluminum clad wood units with insulated glazing throughout. These units appear to be in good condition. It is recommended to replace sealant along perimeter of windows/ opening as on-going maintenance once showing signs of cracking, separation, or hardening of sealant to maintain a weather tight building envelope.

Exterior pedestrian doors are painted steel frames in fair condition. Several of the doors and frames are showing signs of wear and corrosion beginning to form along bottom. It is recommended that exterior doors and frames be cleaned and painted within the coming year. Any portions of rust on doors or frames should be treated prior to painting, or if significant deterioration is present, replace door or frame in its entirety. It is also suggested to remove and replace the existing door sill weather-stripping in contract with threshold to maintain a weather tight seal.

The receiving dock doors consisted of pre-finished metal sectional overhead doors, and appeared to be in fair condition. Damaged pre-finished metal jamb/ head flashing should be removed and replaced to

maintain a weather tight enclosure. Dock seals/ pads also had significant damage or are missing in their entirety, and should be replaced.

### **Roofing**

Direct roof access was not available at the time of the site visit however the roof was partially visually observed from the exterior grade level. Roofing systems appeared to consist of a pre-finished metal roof panel secured to metal purlins with batt insulation and exposed vapor barrier. Based on comments received from the Owner, this roof has been reported to have numerous roof leaks and these were noticeable throughout upon visual inspection. Roof insulation and vapor barrier is failing in some areas, likely due to roof leaks, and should be replaced and re-secured. Limited locations of surface rust were present on steel roof framing structure inside building, and should be cleaned and touch-up painted to prevent further deterioration of metals. The existing pre-finished metal roof system should be replaced in its entirety before further damage/ deterioration occurs, and create a weather tight building enclosure. Roof drainage is achieved by sheet drainage off eaves of building, with no gutters or downspouts present.

For replacement of a standard metal building roof system would be estimated to run around \$30 a square foot (27,350 SF x \$30 = \$820,000), not including additional 10% on for contingency and 10% for soft costs. This would include removal and replacement of metal roof panels and associated metal flashing only. It does not include replacement of insulation system or vapor barrier beneath. A full roof management report was previously completed by Jamar in 2015.

## **MECHANICAL**

### **Building HVAC**

The building is heated by a gas hot water boiler and a combination of fin tube radiation in the offices and unit heaters in the warehouse/fab areas. The unit heaters are old and past their expected useful life.

Exhaust fans interlocked with lights for the restrooms appear to be in working order.

Electric cabinet unit heaters are used for supplemental heat near exterior doors.

### **HVAC Controls**

There is a basic DDC system in the building that appears to be adequate for the use.

### **Plumbing**

A 3/4" or 1" domestic cold water entrance has a water meter, but no backflow preventer. Further investigation on site would need to be done to determine if backflow prevention is happening further upstream. The plumbing piping is insulated and appears to be in good condition.

Cold water is routed to a .5kW, 30 gallon, electric water heater. The domestic water heating system does not have a thermostatic mixing valve, which would allow the hot water storage at 140°F and distribution at a safer 110°F.

Plumbing fixtures are vitreous china lavatories, toilets (floor mounted) and urinals. There are stainless drinking fountains and stainless steel drop in sinks. Flush valves are automatic and faucets are manual. The plumbing supplies under the lavatory have ADA insulating wrap, but the hot water is missing an ASSE 1070 hot water mixing valve which is a new code item for public lavatories. The plumbing fixtures appear to be newer and in good condition.

### **Fire Protection**

There is no fire protection (sprinkler) system installed in the building.

## **ELECTRICAL**

### **Power Distribution**

A pad-mounted utility transformer is located north of the building. Service entrance conductors are routed underground to a metering cabinet on the rear exterior wall of the building. The transformer, meter cabinet, and meter socket are new.

The meter cabinet supplies service equipment in a mechanical room on the north side of the building. This equipment is at least 50 years old, and is well past the end of its expected life. The service voltage is 208/120, 3 phase, 4 wire. The service size is 400-600 amps. There are multiple main disconnect switches, switchboards, and panelboards in the mechanical room, and panelboards in the shop that are over 25 years old. All of the existing electrical panels should be replaced. The cost of the complete electrical distribution system replacement would be approximately \$75,000.

### **Interior Lighting**

The shop area has high bay fixtures with T-12 fluorescent lamps, and there are some T-12 fluorescent strip lights as well. These are in good condition. The training area has newer 2' x 4' recessed lay-in fixtures that are probably LED. There are also recessed flat lensed 2 x 4 lay-in troffers in good condition. The existing fluorescent lighting is in good working order, but could be replaced with LED for energy savings.

### **Exterior Lighting**

There are HID wall packs at the exterior doors on the front side of the building.

### **Fire Alarm**

There is some very old fire alarm equipment, and maybe one fire horn, but not a full system with horns and strobes throughout the building. A fire alarm system replacement is recommended, at a cost of \$40,000.

## **RECOMMENDATIONS**

- Clean and touch-up paint exposed steel at roof overhangs along exterior of building, estimated \$3,200.
- Patch any broken/ chipped sections of concrete floor slab at interior floor joints, estimated \$300.
- Replace sealant along perimeter of windows and door framed openings, estimated \$2,100.
- Clean and re-paint exterior steel man doors and frames, estimated \$5,000. Replace door weather stripping if torn, deteriorated or missing, estimated \$4,500.
- Replace damaged sections of metal jamb/ head flashing at receiving dock sectional overhead door, estimated \$500 (each). Replace dock seals/ pads, estimated \$3,500 (each).
- Re-secure roof insulation coming down overhead and re-establish vapor barrier weathertight roof enclosure, estimated \$750.
- Clean locations of surface rust present and touch-up paint steel roof framing structure inside building, estimated \$4,000.
- Replace existing metal roof panel system in its entirety, estimated \$984,000.
- Replace existing unit heaters with new and provide new thermostats for control estimated cost of \$20,000.
- Replace electrical service equipment and electrical panels
- Replace fire alarm system



**Photo 1** Cirrus Training Facility Exterior Building



**Photo 2** Surface Rust Beginning to Form on Exterior Steel at Underside of Canopy Overhangs



**Photo 3** Loading Dock Seals/ Pads Damaged or Missing



**Photo 4** Roof Insulation and Vapor Barrier Failing



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 608

Building Name: West T-Hangars

Ownership: DAA

Age: 50's-60's (era)

Size: 5,100 Sq. Ft.

Tenant/ Owner Type: Public / Lease

Use: Aircraft Hangar

Construction Type: Pre-engineered Metal Building

**General Condition: 2**

### **BUILDING**

#### **Structural Systems**

Some surface rust on steel members was present, but no significant section loss was apparent. No significant structural deficiencies observed.

#### **Building Shell**

The exterior walls are constructed of a pre-engineered steel building frame with steel wall girts and a painted metal wall panel exterior cladding. This is a cold storage hangar, with no vapor barrier or insulation in the walls. The painted metal exterior wall panels appeared to be in fair condition overall, but had multiple locations with damaged panels around each hangar. The damaged panels varied in severity, but were more apparent nearest the ground level. There were wall panels that had punctures/ damage also located mid-level and along top of wall near roof overhang. The exposed steel framing inside of hangars was covered in surface rust. It is recommended that any damaged wall panel locations be repaired or replaced and painted finish on exterior of building should be thoroughly cleaned and re-painted to prevent further deterioration of the metals.

Replacement cost for this cold storage hangar (non-insulated, pre-engineered metal building) would be estimated around \$95 per square foot for similar construction (5,100 SF x \$95 = \$484,500), not including an additional 10% on for contingency and 10% for soft costs. This would include demolition of the existing building.

The interior floor system consisted of bituminous pavement, generally in fair condition, with some minor cracks and spawling. There did not appear to be any signs of significant cracks or deterioration of the floor slab.

Exterior pedestrian doors consisted of painted wood frames with hollow metal doors. The doors appeared in fairly good condition, some starting to show signs of wear and deterioration beginning to form. It is recommended that exterior wood frames and hollow metal doors be cleaned and painted in the near future to prevent further deterioration.

The existing hangar doors consisted of a metal frame with steel wall girts and painted metal wall panel exterior cladding. The painted metal wall panel cladding appeared to be in fair condition overall, but also had multiple locations with damaged panels nearest to ground, at mid-level hinged joint and at top near

roof overhang. Bottom seals on hangar doors were ripped, torn, and missing in some locations. Based on comments received, the hangar doors currently still function. It would be recommended to service the existing hangar doors, replace bottom seals and damaged wall panel locations and re-paint.

### **Roofing**

Direct roof access was not available at the time of the site visit however the roof was partially visually observed from the exterior grade level. Roofing systems appeared to consist of a metal roof panel secured to metal purlins. No vapor barrier or roof insulation present due to being a cold storage hangar. Based on comments received, this metal roof is original, has failed in numerous locations, reported leaks, and in need of replacement. The exposed steel roof framing inside of hangers were covered in surface rust. It is recommended the existing metal roof panels should be replaced in their entirety before further damage/deterioration occurs and to create a weather tight building enclosure. Roof drainage is achieved by sheet drainage off eaves of building, with no gutters or downspouts present.

### **Electrical**

The electrical systems generally appeared to be in good condition from what was observed. Some of the existing interior lighting is fluorescent, and some is incandescent. An upgrade to LED interior lighting should be considered, at a cost on the order of \$10,000. Exterior lighting is provided by small wall packs that have a significant amount of yellowing in the polycarbonate lenses. Exterior lighting should be replaced at a cost of roughly \$4,000.

## **RECOMMENDATIONS**

- Patch and repair any punctured or damaged exterior metal wall and hangar door panels, estimated \$13,500.
- Clean and re-paint exterior metal wall panel and hangar door cladding, estimated \$9,700.
- Clean and re-paint exterior wood frames and hollow metal doors, estimated \$3,000.
- Service the existing hangar doors and operator, along with replacing bottom seals, estimated \$3,000.
- Replace existing metal roof panel system, estimated \$190,000.
- Replace exterior wall pack lighting.



**Photo 1** DAA West T-Hangars Exterior Building



**Photo 2** Damaged exterior metal wall panels near ground level



**Photo 3** Damage near bottom of hangar door



**Photo 4** Damaged exterior metal wall panels near top of hangar door



**Photo 5** Interior steel framing / hangar door seals missing



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 614

Building Name: DAA Ranch Hangars

Ownership: DAA

Age: Late 80's / early 90's (era)

Size: 9,650 Sq. Ft. (7 units)

Tenant/ Owner Type: Public / Lease

Use: Aircraft Hangar

Construction Type: Pre-engineered Metal Building

**General Condition: 3**

### **BUILDING**

#### **Structural Systems**

No structural deficiencies were observed with the building.

#### **Building Shell**

The exterior walls are constructed of a pre-engineered steel building frame with steel wall girts and a finished metal wall panel exterior cladding. The exterior walls were insulated, and there was a small gas fired unit heater suspended in the back corner of the hangar unit assessed. There were limited locations where the exposed insulation face sheet had been punctured, but minor in severity. The metal exterior wall panels appeared to be in good condition overall, with only limited locations of some minor damage around each hangar. The exposed steel framing inside of hangers had shop primed finish intact, with no noticeable surface rust.

The interior floor system consisted of cast-in-place concrete on grade, generally in good overall condition. There did not appear to be any signs of significant cracks or deterioration of the floor slab. In the hangar unit assessed, it appeared there was a coating applied over the surface of the concrete floor slab. This coating was failing and noticeably wearing off throughout the hangar. The joint between the interior concrete floor slab and exterior bituminous pavement had weeds along length of hangar door. It is recommended that these weeds be pulled and dirt be removed from joint, and joint properly filled with an expansion material along with a sealant to prevent further growth and deterioration of concrete/ bituminous from occurring.

Exterior pedestrian doors consisted of painted wood frames with hollow metal doors. The doors appeared in fairly good condition, some starting to show signs of wear and deterioration beginning to form particularly on the north side of building near the bottom. It is recommended that exterior wood frames and hollow metal doors be cleaned, repaired and painted in the near future to prevent further deterioration.

The existing hangar doors consisted of a metal frame with steel wall girts and a finished metal wall panel exterior cladding. The metal wall panel cladding appeared to be in good condition overall, with only limited locations of some minor damage. Bottom seals on hangar doors were ripped, torn, and missing in some locations. Based on comments received, the bottom of the hangar doors often freeze to the concrete floor slab in winter months, particularly during freeze/ thaw or due to moisture present. Door cables have snapped and had been replaced in the past as a result from doors freezing to floor slab. At time of extreme

cold weather, the door operator limit switch trips and has to be manually re-set. It would be recommended to service the existing hangar doors and operator, along with replacing bottom seals and damaged wall panel locations.

There was also an overhead service door present in the north wall opposite side of hangar door. This overhead door was manually operated, with no door opener present. The door, frame, and guide rails appeared in good working condition, but the finish is wearing off on exterior. It is recommended that exterior be cleaned and painted in the near future to prevent further deterioration.

### **Roofing**

Direct roof access was not available at the time of the site visit, however the roof was partially visually observed from the exterior grade level. Roofing systems appeared to consist of a metal roof panel secured to metal purlins. Roof insulation was present and located between the metal roof purlins and roof panels. There were limited locations where the exposed insulation face sheet had been punctured, but minor in severity. Based on comments received, this metal roof is original and in fair shape with no reported issues on leaking. The exposed steel roof framing inside of the hangars had a shop primed finish intact, with no noticeable surface rust. Roof drainage is achieved by sheet drainage off eaves of building, with no gutters or downspouts present. A full roof management report was previously completed by Jamar in 2015.

### **RECOMMENDATIONS**

- Patch and repair any punctured or damaged exterior metal wall and hangar door panels, estimated \$6,000.
- Remove overgrowth and fill joint between the interior concrete floor slab and exterior bituminous pavement with an expansion material and sealant, estimated \$5,000.
- Clean and re-paint exterior wood frames and hollow metal doors, estimated \$7,000. Repair damaged doors.
- Service the existing hangar doors and operator, along with replacing bottom seals, estimated \$3,500.
- Clean and re-paint exterior overhead service doors, estimated \$4,000. Adjust door/ track as necessary.



**Photo 1** DAA Ranch Hangars Exterior Building



**Photo 2** Interior building steel framing and exposed insulation. Coating applied over concrete floor slab wearing



**Photo 3** Joint between concrete floor slab and bituminous pavement



**Photo 4** Hangar doors



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 615

Building Name: DAA T-Hangars

Ownership: DAA

Age: Late 80's / early 90's (era)

Size: 15,000 Sq. Ft. (14 units)

Tenant/ Owner Type: Public / Lease

Use: Aircraft Hangar

Construction Type: Pre-engineered Metal Building

**General Condition: 3**

### **BUILDING**

#### **Structural Systems**

No structural deficiencies were observed with the building.

#### **Building Shell**

The exterior walls are constructed of a pre-engineered steel building frame with steel wall girts and a finished metal wall panel exterior cladding. It appears this is a cold storage hangar, with no vapor barrier or insulation present in the walls. The metal exterior wall panels appeared to be in fair condition overall, but had multiple locations with damaged panels around each hangar. The damaged panels varied in severity, but were more apparent nearest the ground level or lower portions of the walls. The exposed steel framing inside of hangars had shop primed finish intact, with minimal locations showing some surface rust. It is recommended that any damaged wall panel locations be repaired or replaced on exterior of building to prevent water infiltration and further deterioration of the metals.

The interior floor system consisted of bituminous pavement, generally in fair condition, with some minor cracks and spawling. There did not appear to be any signs of significant cracks or deterioration of the floor slab.

Exterior pedestrian doors consisted of painted wood frames with hollow metal doors. The doors appeared in fairly good condition, some starting to show signs of wear and deterioration beginning to form particularly near the bottom. It is recommended that exterior wood frames and hollow metal doors be cleaned and painted in the near future to prevent further deterioration.

The existing hangar doors consisted of a metal frame with steel wall girts and a finished metal wall panel exterior cladding. The metal wall panel cladding appeared to be in good condition overall, but had multiple locations with damaged panels around each hangar. The damaged panels varied in severity, but were more apparent nearest to the ground level or lower portions of the doors. Bottom seals on hangar doors were ripped, torn, and missing in some locations. Based on comments received, the bottom of the hangar doors often freeze to the pavement in winter months, particularly during freeze/ thaw or due to moisture. Door cables have snapped and had been replaced in the past as a result from doors freezing to floor slab. At time of extreme cold weather, the door operator limit switch trips and has to be manually re-set. It would be recommended to service the existing hangar doors and operator, along with replacing bottom seals and damaged wall panel locations.

There was a wood framed window located on the east end of the building in poor shape, with the frame falling apart. It is recommended that this window, along with the wood frame and trim, be removed in its entirety and replaced with an aluminum clad window unit and frame.

### **Roofing**

Direct roof access was not available at the time of the site visit, however the roof was partially visually observed from the exterior grade level. Roofing systems appeared to consist of a metal roof panel secured to metal purlins. No vapor barrier or roof insulation present due to being a cold storage hangar. Based on comments received, this metal roof is original and in fair shape with no reported significant leaking issues noted. The exposed steel roof framing inside of hangars had a shop primed finish intact, with no noticeable surface rust. Roof drainage is achieved by sheet drainage off eaves of building, no gutters or downspouts present. A full roof management report was previously completed by Jamar in 2015.

### **RECOMMENDATIONS**

- Patch and repair any punctured or damaged exterior metal wall and hangar door panels, estimated \$30,000.
- Clean and re-paint exterior wood frames and hollow metal doors, estimated \$7,000.
- Service the existing hangar doors and operator, along with replacing bottom seals, estimated \$7,000.
- Replace existing wood framed window located on east end of building, estimated \$600.



**Photo 1** DAA T-Hangars Exterior Building



**Photo 2** Damaged exterior metal wall panels



**Photo 3** Damaged exterior metal wall panels



**Photo 4** Exterior service door showing signs of deterioration (north side)



**Photo 5** Hangar door bottom seal ripped and torn



**Photo 6** Interior steel framing



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 616

Building Name: Old Terminal / Tower

Ownership: DAA

Age: Approximately 1954

Size: 8,120 Sq. Ft. (ground floor)

Tenant/ Owner Type: Public / Operations

Use: Multi-use building include FAA, Engineers, & Lake Superior Helicopter tenants

Construction Type: Combination of Brick, Pre-cast Concrete Panel, and Metal Panel

**General Condition: 2-Building / 5-Roof and RTU's**

### **BUILDING**

#### **Structural Systems**

No structural deficiencies were observed with the building.

#### **Building Shell**

The exterior walls of the original building consist of a combination of load bearing brick masonry at main first floor level and third floor level (at west end), with precast concrete double-T wall panels at second floor level, and brick masonry and pre-finished metal wall panels at the air traffic control tower (ATCT) end. This brick masonry is in fair condition considering its age, but there are some locations with minor cracking and deterioration that were found in the brick masonry and at mortar joints in need of tuck-pointing. It is recommended that portions of the walls be re-pointed in the coming year to prevent water infiltration and further deterioration of the building. The upper precast concrete panels overall also appeared in fair condition, but paint finish and sealant were in poor shape. The paint finish was peeling at limited locations and sealant joint between panels is deteriorated, cracking, hardened and needs replacement. It is recommended to clean and re-paint upper precast concrete panel walls, and replace existing sealant at panel joints in the coming year to prevent water infiltration and further deterioration. The pre-finished metal wall panel cladding on the tower building appeared in good condition.

There were a number of existing openings in lower brick masonry portion of wall on the north side of the old terminal building that appeared to be infilled with studs and wood cladding. It was not visible if these infilled openings had a proper vapor barrier or insulation present within the wall. They were also not properly flashed at head and jambs meeting the brick masonry or at grade level. Sealant at head and jambs in contact with brick masonry was either not present or had failed, and in need of replacement. It is recommended that the walls be properly flashed and sealed to existing brick masonry construction at both head and jamb, along with flashing and sealant installed at base meeting concrete slab in the coming year to prevent water infiltration. Ongoing maintenance will be required to paint wood cladding at these infilled wall locations to prevent further deterioration. Recommendation would be to replace wood cladding with a pre-finished composite wood panel material, and install vapor barrier (warm side of room) and batt insulation in wall cavity if found to be not present.

Water intrusion was noted coming in along pipe/ conduit penetrations through the concrete foundation wall in the basement mechanical room and ponding on existing concrete floor slab, more prevalent at spring/

ground thaw cycle. There is no floor drain or sump located in this room. Attempts at sealing penetrations from inside of building have been unsuccessful. Recommend cleaning and sealing penetrations from outside building where they first penetrate the exterior foundation wall, which is believed to be located beneath a manhole near northwest corner of building. The interior concrete masonry units (CMU) wall in the basement mechanical room also had signs of efflorescence, possibly due to moisture getting in through the cavity of the wall. It is unknown the exact cause, and this could possibly be resolved when the building is re-roofed. Recommend cleaning of this masonry wall to remove current efflorescence, and monitor for signs of any new efflorescence coming through.

The interior floor system consisted of cast-in-place concrete. Minor cracks were noticeable in the floor slab, but were limited in locations and did not appear to be structural in nature. There did not appear to be any signs of deterioration or settlement of the floor slab.

Exterior windows are painted wood units with non-insulated glazing throughout. These units are in poor condition, deteriorated and in need of replacement. It is recommended to replace existing units with an aluminum clad window with insulated glazing. Replacement windows will provide a better weather/ air tight enclosure along with an increased insulating R-value. Existing window sills consisted of either wood or pre-cast concrete. The existing wood sills were in poor shape along with the windows, and in need of replacement. The existing pre-cast concrete sill should be cleaned, repaired if needed and apply a new paint application finish.

Exterior pedestrian doors are a combination of original painted wood doors and frames and replacement hollow metal doors with original wood frames at limited locations. Both the wood doors and wood frames show signs of deterioration and are in poor condition. It is recommended that existing exterior wood doors and frames be replaced with a hollow metal unit in the near future. The existing hollow metal doors previously replaced appear in good condition, and a new paint finish should be applied to prevent deterioration.

## **Roofing**

Current roofing systems appeared to consist of an EPDM single-ply membrane, most likely fully adhered to rigid board roof insulation layered directly over the roof deck. Based on comments from the Owner, this building has been re-roofed in 2014 and there have been no significant leaking issues noted. The areas of the roof that were visually observed appeared to be in good condition with no significant deterioration. This type of roofing system can be expected to function properly, with proper preventative maintenance, for 20-25 years. It is unknown what year the re-roof was completed, nor what the original roof system consisted of. Roof drainage is achieved through a number of internal primary roof drains with overflow off both north and south sides of building.

## **MECHANICAL**

### **Building HVAC**

The building is heated and cooled via conventional, gas fired, rooftop units for second and third floors. These units are from 2015 and appears to be in good condition and working well. First floor and basement have no air conditioning and heating is provided by an older cast iron steam boiler combined with a steam-to-water heat exchanger and a pump. The equipment appears to be past its expected useful life and is due for replacement. It is recommended to plan and budget for replacement with a more efficient hot water boiler and pumps.

### **HVAC Controls**

The controls for the upper floors are newer DDC controls and are in good condition. The first floor and basement have rudimentary pneumatic thermostats and it is recommended that new DDC controls be added when the boiler is replaced.

### **Plumbing**

The plumbing piping is insulated and appears to be in reasonable condition for its age. Plumbing fixtures are vitreous china lavatories, toilets (floor mounted) and urinals, and are in reasonable condition.

### **Fire Protection**

There is no fire protection (sprinkler) system installed in the building.

## **ELECTRICAL**

### **Power Distribution**

A pad-mounted utility transformer is located north of the building. Service feeders are routed underground to the basement. The electrical service equipment is in an electrical room in the basement. The service entrance conduits feed a wireway and the services for the FAA Tower and the DAA are fed from the wireway. The service consists of the wireway, the meter cabinet, 3 meter sockets, and 5 fused disconnect switches. The disconnect switches are probably at least 50 years old. This equipment should all be replaced, at a cost of \$30,000.

### **Interior Lighting**

Interior lighting is older fluorescent and should be replaced with LED for energy and maintenance savings, at a ballpark cost of \$50,000.

### **Exterior Lighting**

Parking lot lighting in front of the building is provided by pole mounted fixtures west of the building. This lighting appears to be old and should be replaced. The lighting on the back of the building is mostly HID and should also be replaced with LED. Total exterior lighting replacement cost: \$15,000.

### **Fire Alarm**

The fire alarm system is in good repair, but is reaching the point where parts availability and support are becoming an issue. It should be replaced. Expected cost: \$50,000.

## **RECOMMENDATIONS**

- Tuck-point approximately 10% of the existing brick masonry and mortar joints on North side of building that have deteriorated or have cracks in the mortar joints, estimated \$5,000.
- Clean and re-paint upper precast concrete panel walls, estimated \$15,000.; and replace existing sealant at precast panel joints, estimated \$5,500.
- Properly flash and seal around openings along brick masonry façade on North side of building, estimated \$1,000.
- Replace wood paneling with a pre-finished composite wood panel cladding material at infilled openings along North side of building, estimated \$1,500.
- Clean and seal pipe/ conduit penetrations from outside building at water infiltration in lower mechanical room, estimated \$5,000.
- Clean masonry walls in lower mechanical room to remove current efflorescence, estimated \$1,200.
- Replace existing exterior painted wood window units with an aluminum clad window system, estimated \$45,000.
- Replace existing exterior wood doors and frames with a hollow metal door and frame, estimated \$4,500.
- Replace older cast iron steam boiler and steam-to-water heat exchanger and a pump with more efficient equipment estimated cost of \$30,000
- Replace first floor and basement pneumatic thermostats with new DDC controls when the boiler is replaced estimated cost of \$10,000
- Replace existing electrical disconnect switches
- Replace interior and exterior lighting
- Replace fire alarm system



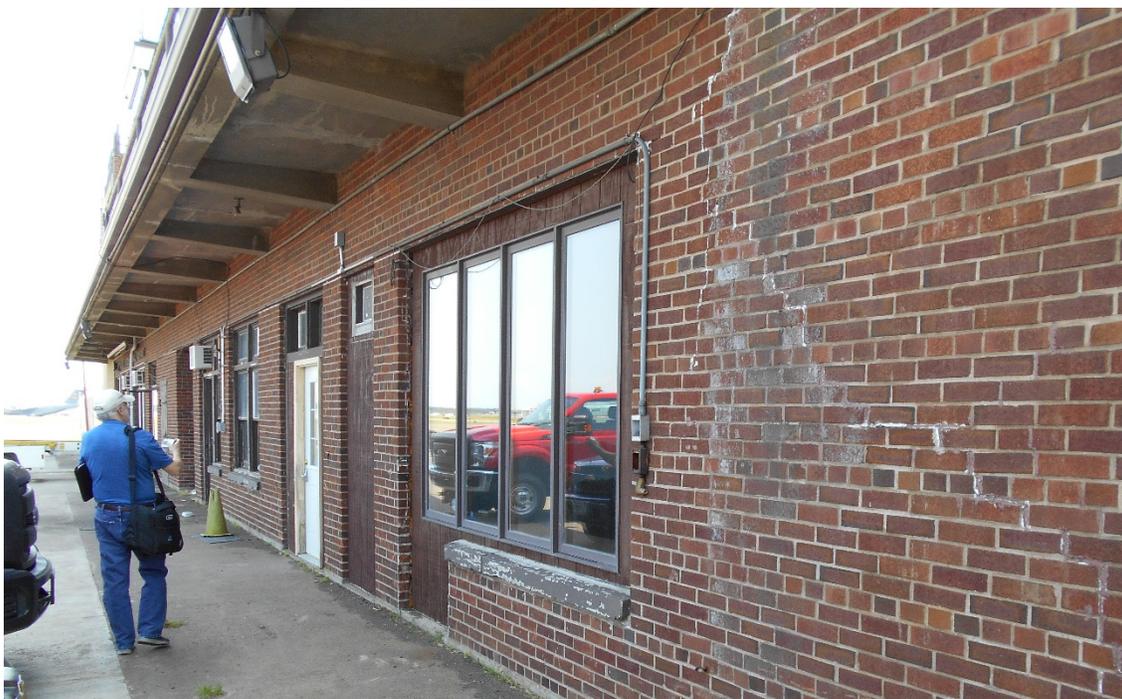
**Photo 1** Old Terminal-Tower Exterior Building



**Photo 2** Cracks in brick masonry and mortar joints in need of tuck-pointing



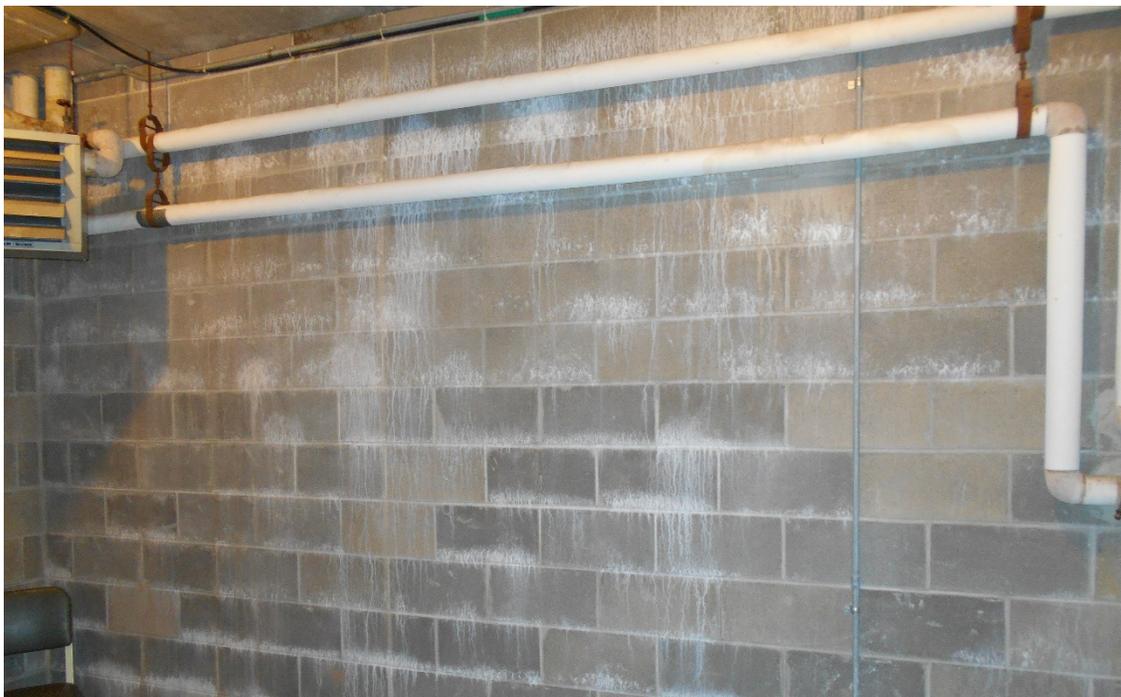
**Photo 3** Upper precast concrete wall panels paint finish peeling



**Photo 4** Infilled openings along North wall had no flashing or sealant present



**Photo 5** Water Intrusion coming in along pipe/ conduit penetrations in lower mechanical room



**Photo 6** Efflorescence on masonry (CMU) wall in mechanical room



**Photo 7** Exterior painted wood framed windows in need of replacement



**Photo 8** Exterior painted wood framed windows in need of replacement



**Photo 9** Exterior painted wood door and frame in need of replacement



**Photo 10** EPDM single-ply roof membrane



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: ---  
Building Name: AAR  
Ownership: DEDA

Age: Unknown  
Size: 159,600 Sq. Ft.  
Tenant/ Owner Type: Business  
Use: Aircraft maintenance and repair

Construction Type: Large engineered (super-truss) metal building with sliding hangar doors, adjacent office/ support/ mechanical spaces, membrane roof, metal wall panel exterior with cast in place concrete at lower portion of wall

**General Condition: 4**

### **BUILDING SUMMARY**

Older building, appears to be well maintained and in overall good shape. Exterior repairs currently underway from storm damage.

### **RECOMMENDATIONS**

- Continue with recommended maintenance schedule for building components and utilities.
- Repair/ fill any cracks in concrete at lower portion of wall to prevent further deterioration and maintain weather tight enclosure.



**Photo 1** AAR Exterior Building



**Photo 2** Exterior building



**Photo 3** Crack in exterior cast-in-place concrete wall



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: ---

Building Name: ARFF

Ownership: DAA/ 148th

Age: 2017

Construction Type: Utility brick with metal wall panel exterior, curved membrane roof, cast-in-place concrete floor slab.

Age: 2017

Size: 20,658 Sq. Ft.

Tenant/ Owner Type: Fire Station

Use: Fire Station

**General Condition: 5**

### **BUILDING SUMMARY**

Newer building, appears to be in great condition. No known issues reported with the building.

### **RECOMMENDATIONS**

- Continue with recommended maintenance schedule for building components and utilities.



**Photo 1** ARFF Exterior Building



**Photo 2** Exterior building



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: ---

Age: 2016-17

Building Name: Cirrus Completion

Size: 69,135 Sq. Ft.

Center

Tenant/ Owner Type: Business

Ownership: Cirrus

Use: Aircraft Factory

Construction Type: Combination of precast concrete and metal wall panel exterior, membrane roof, cast-in-place concrete floor slab.

**General Condition: 5**

### **BUILDING SUMMARY**

New building, great condition overall. No visible or known issues reported.

### **RECOMMENDATIONS**

- Continue with recommended maintenance schedule for building components and utilities.



**Photo 1** Cirrus Completion Center Exterior Building



**Photo 2** Exterior building



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: ---

Building Name: Israel Malachi Hangar

Ownership: Malachi

Age: Unknown

Size: 1,065 Sq. Ft.

Tenant/ Owner Type: Private storage

Use: Aircraft Storage

Construction Type: Small portable trailer mounted hangar, with metal panel exterior wall cladding and roof.

**General Condition: 2**

### **BUILDING SUMMARY**

Trailer mounted small aircraft portable hangar (Port-a-Port), in poor condition and in need of maintenance. Some visible rust, paint finish on wall panels worn/fading. Condition of roof or floor unknown, not accessible at time of site visit. Unknown if roof leaks or any other issues.

### **RECOMMENDATIONS**

- Building is functional, but in poor condition. Consideration should be given to removal or significant maintenance of exterior, and possibly interior.



**Photo 1** Malachi Hangar Exterior Building



**Photo 2** Exterior building



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: ---

Building Name: West Garage (Chad's Pad)

Ownership: DAA

Construction Type: Masonry (CMU) building with flat roof and cast-in-place concrete floor slab. Post frame addition with metal roof and wall panels

Age: Unknown

Size: 1,550 Sq. Ft.

Tenant/ Owner Type: Storage

Use: Aircraft Storage

**General Condition: 2**

### **BUILDING SUMMARY**

Older masonry building, in poor condition and in need of work. Some face shells damaged and missing from masonry at corner of building. Paint is peeling off from doors and masonry walls. Window systems appear to be original and in need of replacement. Visible rust on hollow metal doors and frames. Weather stripping pulling away around overhead service doors. Caulking around door and window frames either missing or dry/cracked. Post frame addition starting to pull away from original masonry building. Condition of roof or floor unknown, not accessible at time of site visit. Unknown if roof leaks or any other issues.

### **RECOMMENDATIONS**

- Extensive restorative work would be required to maintain building.
- Replace damaged masonry face shells. Locations of masonry and mortar joints in need of tuck-pointing at original building.
- Replace existing doors and windows (paint), along with replacing sealant joints along exterior openings/ frames.
- Thoroughly clean and remove any peeling paint, and provide new painted finish at exterior masonry walls.
- Repair/ replace weather stripping at overhead service doors.
- Evaluate construction type and condition at post frame addition. Re-position, properly flash and secure post frame addition to original masonry building to provide weathertight enclosure (if feasible).
- Assess existing roof conditions and make necessary repairs/ replacement.



**Photo 1** West Garage (Chad's Pad) Exterior Building



**Photo 2** Damaged concrete masonry block (CMU) / original windows



**Photo 3** Masonry block (CMU) and grout joints in need of tuck-pointing



**Photo 4** Addition starting to pull away from original masonry (CMU) building



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 4

Building Name: Monaco Hangar

Ownership: Monaco

Age: Estimated to be around 2006

Size: 10,000 Sq. Ft.

Tenant/ Owner Type: Business

Use: Aircraft storage hangar

Construction Type: Pre-engineered metal building, prefinished exterior metal panel wall cladding and roof, concrete floor slab, prefinished interior metal wall and ceiling liner panel, bi-fold hangar doors.

**General Condition: 4**

### **BUILDING SUMMARY**

Overall, the building appeared to be in good condition. Some minor cracking in hangar concrete floor slab. Minor damage to pre-finished metal wall panels at base of hangar door meeting concrete slab. No other reported issues during visit.

### **RECOMMENDATIONS**

- None



**Photo 1** Monaco Hangar (4) Exterior Building



**Photo 2** Minor damage to wall panels at base of hangar door



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 6 & 7

Building Name: Monaco Hangar

Ownership: Monaco

Age: Estimated to be 2006-2007

Size: 6,500 Sq. Ft.

Tenant/ Owner Type: Business

Use: Aircraft storage hangar

Construction Type: Pre-engineered metal building, prefinished exterior metal panel wall cladding and roof, concrete floor slab, prefinished interior metal wall and ceiling liner panel, bi-fold hangar doors.

**General Condition: 4**

### **BUILDING SUMMARY**

Overall, the building appeared to be in good condition. Some minor cracking in hangar floor slab. Some cracks/spawling in exterior concrete apron. Concrete apron pulling away from hangar floor slab exposing expansion material and dislodging sealant with nearly a 2" void space between the two slabs. Likely cause of slab separation is no reinforcing bar placed in concrete that ties the two slabs together along this expansion joint. Some fragments of concrete broken off at hangar floor slab edges near far corners. No other reported issues during visit.

### **RECOMMENDATIONS**

- Fill void space created between hangar floor slab and concrete apron with an expansion material full depth along with sealant to bridge gap and prevent further deterioration of concrete from occurring. Selection of the right expansion material and sealant along with installation is crucial to allow for further expansion/contraction deflection between the existing concrete slabs yet prevent joint material from expanding up from void getting above slab surface.



**Photo 1** Monaco Hangars (6&7) Exterior Building



**Photo 2** Concrete apron pulling away from hangar floor slab



**Photo 3** Cracks in exterior concrete apron



**Photo 4** Fragments of concrete broken off at corners of floor slab



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 100

Building Name: Hermantown Hydraulics

Ownership: DAA

Age: Unknown

Size: 3,350 Sq. Ft.

Tenant/ Owner Type: Business

Use: Hydraulics repair (hoses, pumps, cylinders, etc.)

Construction Type: Older wood framed building, wood siding, wood framed windows and doors, wood trusses, wood roof deck.

**General Condition: 3**

### **BUILDING SUMMARY**

Older building, exterior only in fair condition. Paint flaking along exterior wood siding and in need of touchup or fresh coat of paint applied. Interior of office/ parts storage appeared in good condition. Paint flaking off different material surfaces overhead. There were multiple locations in shop where ceiling insulation/ vapor barrier was torn or missing. Shop space, floor slab has cracks. No other issues reported during visit.

### **RECOMMENDATIONS:**

- Clean and paint existing wood siding and wood framed windows and doors to prevent further deterioration. Replace any exterior sealant that shows signs of separation, cracking, or hardening of material. Replace missing ceiling insulation/ vapor barrier in shop (multiple locations). Roof was not accessible at time of site visit, so condition of existing roof system not observed.



**Photo 1** Hermantown Hydraulics Exterior Building



**Photo 2** Paint finish peeling/ failing on wood siding and wood framed windows (East side)



**Photo 3** Paint finish failing (West side)



**Photo 4** Paint flaking on overhead surfaces. Ceiling insulation/ vapor barrier torn & missing (multiple locations)



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 101

Building Name: Commemorative

Airforce Hangar

Ownership: DAA

Age: Mid 1940s, 1950s

Size: 35,870 Sq. Ft.

Tenant/ Owner Type: Public

Use: Aircraft Storage, maintenance, and business

Construction Type: Hangar: cast in place concrete walls/pilasters, wood siding, wood/timber barrel vault trusses, wood roof deck, rubber roof. Addition: wood framed walls, wood/ prefinished metal siding, wood roof joists, wood deck.

**General Condition: 1 (main hangar)**  
**0 (surrounding addition)**

### **BUILDING SUMMARY**

Hangar has been condemned and is scheduled to be demolished. Hangar portion of building appears to be in relatively good condition, but has fallen into disrepair. Surrounding addition/ shop/ office spaces has wood built structure, and roof has failed. Taken on heavy snow loads from adjacent higher roof. Office space has encountered heavy storm damage and there is an old parachute hanging in opening of wall. Building has structural issues and determined unsafe.

### **RECOMMENDATIONS**

- Possible salvage value with existing wood/timber barrel vault trusses, wood beams, wood roof deck at Hangar.



**Photo 1** Commemorative Airforce Hangar Exterior Building



**Photo 2** Exterior damage



**Photo 3** Interior of hangar space



**Photo 4** Wood/timber barrel vault trusses, beams and roof deck



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 102

Building Name: Cirrus Maintenance

Hangar

Ownership: Cirrus

Construction Type: Metal building, prefinished metal siding, low slope metal roof, bi-fold hangar doors.

Age: Approx 2010

Size: 15,100 Sq. Ft.

Tenant/ Owner Type: Business

Use: Aircraft maintenance

**General Condition: 4**

### **BUILDING SUMMARY**

Building appears to be in good condition overall, with no reported issues during site visit. Minor damage to hangar door and to pre-finished metal panel siding at limited locations. Bottoms of hollow metal service pedestrian doors beginning to deteriorate, showing visible rust. No other visible issues with building. Asphalt along concrete apron is cracking/ settling. Unable to gain access to interior at time of site visit.

### **RECOMMENDATIONS**

- Clean and re-paint hollow metal service door and frames to prevent further deterioration



**Photo 1** Cirrus Maintenance Hangar Exterior Building



**Photo 2** Damage along bottom of prefinished metal hangar door



**Photo 3** Damage along bottom of prefinished metal wall panels



**Photo 4** Cracks in asphalt along joint with concrete apron



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 117

Building Name: Jet Duluth

Ownership: Jet Duluth

Age: Around 2002 (era)

Size: 9,160 Sq. Ft.

Tenant/ Owner Type: Business

Use: Aircraft storage

Construction Type: Metal building, pre-finished metal siding and roof. Bi-fold hangar doors. Office addition on back.

**General Condition: 4**

### **BUILDING SUMMARY**

Building appeared to be in good condition overall, with no reported issues during site visit. Unable to gain access to interior space or roof at time of site visit. Some cracking in concrete apron. Minor damage to prefinished metal wall panels at limited locations.

### **RECOMMENDATIONS**

- Repair and fill cracks in exterior concrete apron with appropriate material to prevent further deterioration.



**Photo 1** Jet Duluth Exterior Building



**Photo 2** Cracks in concrete apron / minor damage to exterior metal wall panel



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 221, 122, & 127  
Building Name: POL  
Ownership: 148th  
Age: N/A  
Construction Type: N/A

Size: N/A  
General Condition: Demolished  
Tenant/ Owner Type: N/A  
Use: N/A

### **BUILDING SUMMARY**

Buildings were demolished at time of site visit.



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 123  
Building Name: DRMO  
Ownership: 148th

Age: Unknown  
Size: 6,140 Sq. Ft.  
Tenant/ Owner Type: Military  
Use: Aircraft storage

Construction Type: Metal building, painted corrugated metal siding, standing seam metal roof, sliding hangar doors. Painted concrete masonry (CMU) walls at back 1/3 of building.

**General Condition: 3 (exterior)**

### **BUILDING SUMMARY**

Older 1960's era hangar with newer standing seam metal roof. Siding appears to be painted galvanized corrugated steel, paint finish is currently flaking. Back one-third of building has concrete masonry exterior walls that appear to be in good structural condition overall, but could use tuck-pointing, cleaning and paint application. There appears to be an abandoned boiler as seen through window at back door. (Unable to gain access to interior space or roof at time of site visit.)

### **RECOMMENDATIONS**

- Clean off existing peeling/ flaking paint from corrugated metal siding and re-paint exterior. Clean and tuck-point damaged masonry and grout locations, and re-paint concrete masonry portion of building.
- Remove and reinstall failed sealant at joints between dissimilar material connections, door/ window frames, and at through wall penetrations.



**Photo 1** DRMO Exterior Building / painted finish failing



**Photo 2** Concrete masonry (CMU) along back portion of building deteriorating



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 125  
Building Name: DRMO  
Ownership: 148th

Age: Unknown  
Size: 9,830 Sq. Ft.  
Tenant/ Owner Type: Storage/ business  
Use: Storage/ administration

Construction Type: Storage: Pre-engineered metal building, prefinished metal siding, standing seam metal roof. Administration addition: Brick masonry exterior, asphalt shingle roof, unsure of wall or roof structure.

**General Condition: 3 (exterior)**

### **BUILDING SUMMARY**

Overall, the building appears to be in good condition. Standing seam metal roof appears to be of same age as other DRMO building 123. No visible evidence of leaks from exterior. Some minor damage to pre-finished metal wall panels. Brick administrative portion appears to have been added at a later point, but difficult to tell with all the overgrowth. Shingled roof is older, assumed in need of replacement soon. Fascia wrap missing at soffit. Unable to gain access to interior space or roof at time of site visit.

### **RECOMMENDATIONS**

- Repair/ replace damaged sections of prefinished metal wall panel siding.
- Clean and paint exterior hollow metal doors and frames.
- Replace existing asphalt shingles
- Replace missing fascia wrap, and clean and paint underside of soffit at administrative addition.
- Remove and reinstall failed sealant at joints between dissimilar material connections, door/ window frames, and at through wall penetrations.



**Photo 1** DRMO Exterior Building



**Photo 2** Damage to prefinished metal wall panel



**Photo 3** Brick administrative building addition



**Photo 4** Fascia wrap missing at administrative building



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 306

Building Name: DHL

Ownership: DAA

Age: 1970's (era)

Size: 6,720 Sq. Ft. (ground floor)

Tenant/ Owner Type: Business

Use: Storage

Construction Type: Storage: Pre-engineered metal building, painted metal siding, corrugated metal roof.

Office: Wood framed addition, painted metal siding, corrugated metal roof.

**General Condition: 2**

### **BUILDING SUMMARY**

Pre-engineered metal cold storage building with wood framed addition for office. Paint is flaking/wearing from exterior metal wall panels, and has some fairly damaged sections of panels most apparent along bottom of wall. Roof has been reported to have leaking, and most noticeable around furnace vent stack. Additional roof leaks likely in both storage and office areas as visible water stains on ACT lay-in ceiling tiles. The exposed steel building framing inside of storage space had presence of surface rust. Combination of wood and hollow metal doors, both in poor condition. Second floor mezzanine level in office area has some water damage, and floor found unsafe in some locations. Concrete floor slab in storage area has cracked, but did not appear to be any signs of significant deterioration or settlement of the floor slab.

### **RECOMMENDATIONS**

- Repair/ replace damaged sections of exterior metal wall panel siding.
- Clean and paint exterior metal wall panel siding.
- Replace existing wood and hollow metal doors and frames with new hollow metal units.
- Replace existing windows and frames at office areas with pre-finished metal units.
- Replace existing roof with new pre-finished metal roof panels and seal all through roof penetrations weather tight.
- Remove and reinstall failed sealant at all exterior joints, door/ window frames, and at through wall penetrations.
- Reconstruct second level mezzanine floor framing.



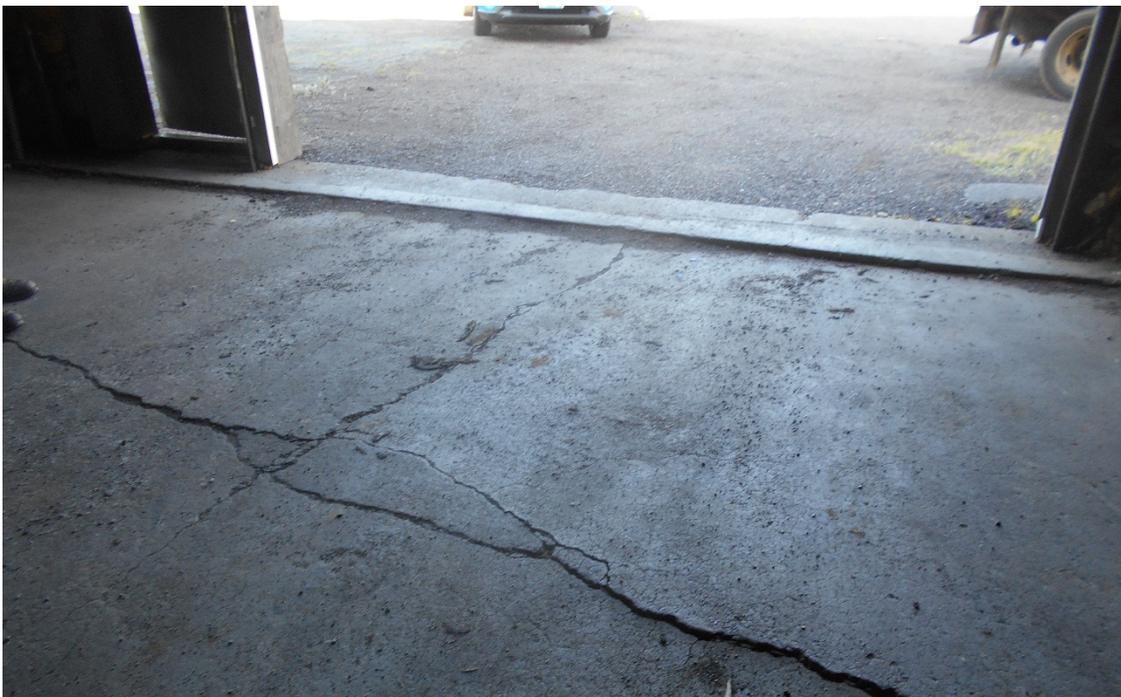
Photo 1 DHL Exterior Building



Photo 2 Damaged exterior metal wall panels



**Photo 3** Interior condition



**Photo 4** Cracks in hangar floor slab



**Photo 5** Water intrusion



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 308

Building Name: 911 (CAP, QMS)

Ownership: DAA

Age: 1950's (era)

Construction Type: Concrete masonry unit (CMU) and cast in place concrete exterior walls, steel roof joists supporting concrete plank roof deck.

Age: 1950s (era)

Size: 7,900 Sq. Ft.

Tenant/ Owner Type: Operations/ Storage

Use: Office / Storage

**General Condition: 3**

### **BUILDING SUMMARY**

Previously 911/ Dispatch building, now currently used by Civil Air Patrol. Exterior CMU/ concrete walls appear to have been recently painted. No visible leaks or maintenance issues observed. Some locations of minor damaged masonry where an opening was previously infilled. Roof was not accessible at time of site visit. It was noted that building has the original membrane roof system in place, unknown of existing type/ condition, but is failing and been reported of having multiple minor roof leaks throughout. Asphalt pavement/ concrete aprons around exterior of building have a number of larger cracks and overgrowth. Interior finishes are older and worn.

### **RECOMMENDATIONS**

- Replace existing roof system to maintain weather tight enclosure within near future.
- Added roof insulation when re-roofing would increase R-value and energy efficiency and help with heating/ cooling loss.
- Replace any deteriorated, cracked, or hardened sealant joint locations along exterior openings.
- Maintenance required at asphalt pavement and concrete aprons to remove overgrowth, seal all cracks to prevent further deterioration of both asphalt and concrete, and apply protective sealcoat to asphalt pavement. Some sections of asphalt pavement could need replacement overlay due to higher level of deterioration.



**Photo 1** 911 Exterior Building



**Photo 2** Overgrowth in parking lot



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 603	Age: Unknown
Building Name: Old SRE Repair (Fisher Lease/Monaco Sublease)	Size: 3,200 Sq. Ft.
Ownership: DAA	Tenant/ Owner Type: Business
Construction Type: Pre-engineered metal building, metal roof and siding, concrete floor slab.	Use: Storage

**General Condition: 2**

### **BUILDING SUMMARY**

Older building, faded/worn paint on exterior metal siding. Most of exterior metal siding has some extent of damage, and a few locations have holes in wall. In general, the building is in poor condition. Corrugated steel liner panels on walls and ceiling at interior in fair condition, with some locations of damage. Daylight visible at base of wall in places.

### **RECOMMENDATIONS**

- Repair/ replace damaged locations of exterior metal wall panel siding.
- Clean and paint exterior metal wall panel siding.
- Remove and reinstall failed sealant at all exterior joints, door/ window frames, and at through wall penetrations.



**Photo 1** Old SRE Exterior Building



**Photo 2** Damage to exterior metal siding (multiple locations)



**Photo 3** Interior space



**Photo 4** Damage at interior metal wall/ ceiling liner panel



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 609

Building Name: Monaco Hangar

Ownership: Monaco

Age: 2016 Addition, Hangar unknown

Size: 10,860 Sq. Ft.

Tenant/ Owner Type: Business

Use: Multi-use to include: Private Aircraft Terminal/  
Maintenance/ Customs/ Offices/ Training Facility

Construction Type: Hangar: Pre-engineered metal building, metal roof and siding, concrete floor slab.

Terminal: Precast concrete walls, sloped roof structure, unknown roof type/ system.

**General Condition: 4**

### **BUILDING SUMMARY**

Original hangar in overall good condition. No reported issues with building. Metal siding and roof appear to be in good condition, with no leaks reported. Some minor damage at lower corners of hangar door. Slab finish is worn/flaking. Terminal/office addition is new and well taken care of, in excellent condition (5) both exterior and interior.

### **RECOMMENDATIONS**

- Continue with recommended maintenance schedule for building components and utilities.
- Repair/ re-apply floor slab coating to match original conditions in hangar area.



**Photo 1** Monaco Exterior Building



**Photo 2** Monaco exterior hangar



**Photo 3** Damage at lower corner of hangar door



**Photo 4** Interior space / concrete slab finish worn/ flaking



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 611

Building Name: Old SRE

Ownership: DAA

Age: Unknown

Size: 7,644 Sq. Ft.

Tenant/ Owner Type: Operations

Use: Aircraft storage

Construction Type: Pre-engineered metal building, metal roof and siding, concrete floor slab.

**General Condition: 2**

### **BUILDING SUMMARY**

Older building, faded/worn finish on exterior metal siding with surface rust in multiple locations. Roof reported to have leaks. Limited amount of damage to exterior metal siding, minimal in severity. Corrugated steel liner panels on walls and ceiling at interior in fair condition, with some locations of damage. Concrete foundation exposed around base of building and interior concrete slab both appear to be in general good condition.

### **RECOMMENDATIONS**

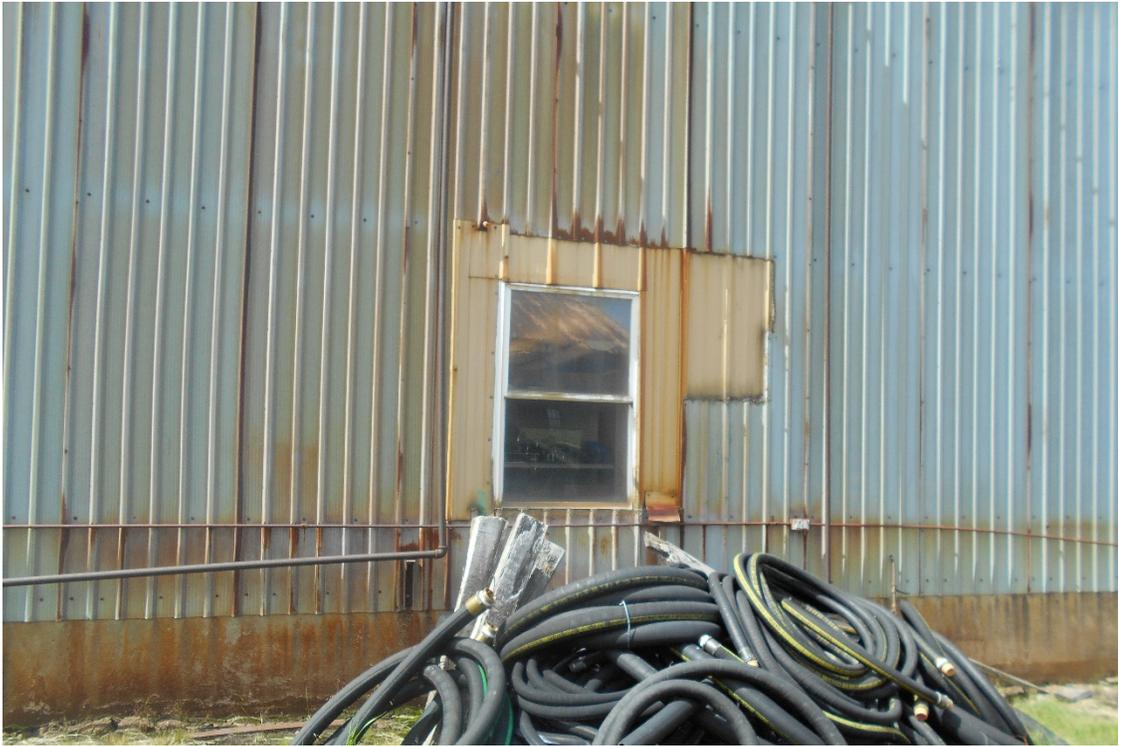
- Repair/ replace damaged locations of exterior metal wall panel siding.
- Clean and paint exterior metal wall panel siding.
- Replace existing older exterior doors and frames with new hollow metal units. Replace existing vision windows and frames with new painted metal units.
- Replace existing roof with new pre-finished metal roof panels and seal all thru roof penetrations weather tight.
- Remove and reinstall failed sealant at all exterior joints, door/ window frames, and at thru wall penetrations.



**Photo 1** Old SRE Exterior Building



**Photo 2** Exterior siding faded, worn and rusted. Exterior windows needing replacement



**Photo 3** Window patch/ repair



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 612  
Building Name: FedEx  
Ownership: Fisher

Age: Original 1980's; w/ 2018 addition  
Size: 29,494 Sq. Ft.  
Tenant/ Owner Type: Business  
Use: Aircraft business

Construction Type: Original office building has a brick exterior, and warehouse is insulated precast wall panels. Addition has CMU base with a pre-finished metal wall panel upper. Bar joist, metal deck, with gravel ballasted membrane roof (original building).

**General Condition: 4**

### **BUILDING SUMMARY**

Original structure is in good overall condition from the exterior, with the only visible issue of cracked precast at upper corner of panel. Addition is new, and appeared in excellent condition. No reported issues about the building overall, with the exception of minor roof leaks

### **RECOMMENDATIONS**

- Continue with recommended maintenance schedule for building components and utilities.
- Repair/ re-place sealant joint where brick façade at original office building meets up with precast wall panel at warehouse to prevent water infiltration.
- Minor roof leaks reported, investigate and repair locations to maintain weather tight building.



**Photo 1** FedEx Exterior Building



**Photo 2** Crack/ chip in original building precast concrete wall panel



**Photo 3** Building addition



**Photo 4** Interior warehouse



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 622

Building Name: Hangar 2

Ownership: DAA

Age: 1950s (era)

Size: 15,350 Sq. Ft. (ground floor)

Tenant/ Owner Type: Public

Use: Aircraft storage/ offices

Construction Type: Largely brick exterior with some locations of concrete masonry (CMU), bowstring truss/ roof at hanger, flat roof at office and rear storage area, concrete floor slab.

**General Condition: 2**

### **BUILDING SUMMARY**

One of the original buildings on airport property. Office area and second floor mezzanine, with painted brick exterior, were part of an addition and in poor shape (1) and unsafe in certain locations. The addition has roof leaks and the tenant is redirecting the water to the exterior. Original hangar appeared in fair condition (2), and possibly could be restored. Hangar door not operational and in poor condition, has safety concerns and likely needs replacement. Concrete floor slab appeared in fair condition with no signs of significant cracks or settlement. Unable to verify roof structure and roofing type/ system as areas were covered or inaccessible. There are also has a couple lower 10' high brick masonry storage sheds located along back side of building.

### **RECOMMENDATIONS**

- Major restorative work would be required to office addition to be an occupiable space.
- Locations at brick and mortar joints in need of tuck-pointing at original hangar building.
- Replace existing doors, windows, hangar door and sealant joints along exterior along with new roof system at hangar to maintain weather tight building enclosure.
- Clean/ new painted finish at existing painted exterior CMU.



**Photo 1** Hangar 2 Exterior Building



**Photo 2** Hangar door damaged, not operational



**Photo 3** Brick addition, in poor shape



**Photo 4** Interior space of hangar



**Photo 5** Damage at interior of addition (multiple locations)



**Photo 6** Damage at interior of addition (multiple locations)



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 701

Building Name: Allette

Ownership: Allette

Age: 2015

Size: 6,850 Sq. Ft.

Tenant/ Owner Type: Business

Use: Aircraft storage

Construction Type: Double-T precast concrete exterior, roof type/ system unknown

**General Condition: 4**

### **BUILDING SUMMARY**

Newer building, overall good condition, with some minor cracking in double-t exterior wall panels. No known leaks or other issues with building. Unable to gain entry at time of site visit.

### **RECOMMENDATIONS**

- Continue with recommended maintenance schedule for building components and utilities.
- Repair/ fill couple locations where minor cracks occurred in exterior concrete wall panels to prevent further deterioration and maintain weather tight building exterior.



**Photo 1** LSC Exterior Building



**Photo 2** Minor crack in precast wall panel



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 703

Building Name: Cirrus

Ownership: Cirrus

Age: 1994-95

Size: 174,340 Sq. Ft.

Tenant/ Owner Type: Business

Use: Aircraft Business/ Factory

Construction Type: Precast concrete wall panels and curtainwall exterior, concrete floor slab, roof type/ system unknown.

**General Condition: 4**

### **BUILDING SUMMARY**

Building is in overall good condition, some minor damage near bottom of concrete wall panels and lower portion of hangar doors found along north side of building and at loading docks. Paint finish is peeling off at precast concrete wall panel joints. Appears to have had additions onto original building multiple times. No known leaks or other issues with building. Unable to gain entry at time of site visit. Unknown condition of existing roof system.

### **RECOMMENDATIONS**

- Repair/ re-paint damaged locations of exterior precast concrete wall panels.
- Repair damaged hangar door metal paneling to prevent water infiltration and further deterioration.
- Replace sealant between pre-cast concrete wall panel to panel joints that has cracked, separated or hardened at locations along exterior of building to maintain weather tightness.



**Photo 1** Cirrus Exterior Building



**Photo 2** Damage at hangar doors (multiple locations)



**Photo 3** Paint finish peeling at precast concrete wall panel joints (typical)



**Photo 4** Minor cracks found in precast concrete wall panels, limited locations



**Photo 5** Exterior building



**Photo 6** Loading dock precast wall panel damage



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 704

Building Name: Cirrus

Ownership: Cirrus

Age: 1995 (estimated)

Size: 57,890 Sq. Ft.

Tenant/ Owner Type: Business

Use: Business/ Aircraft Hangar

Construction Type: Precast concrete wall panels and curtainwall exterior, concrete floor slab, roof type/ system unknown.

**General Condition: 4**

### **BUILDING SUMMARY**

Building appears to be in overall good condition. Paint finish is peeling off sealant at precast concrete wall panel joints. No other known leaks or other issues with building. Unable to gain entry at time of site visit.

### **RECOMMENDATIONS**

- Repair/ re-paint damaged locations of exterior precast concrete wall panels and sealant joints.
- Replace sealant that has cracked, separated or hardened at locations along exterior of building to maintain weather tightness.



**Photo 1** Cirrus Exterior Building



**Photo 2** Peeling paint at precast concrete wall panel joints (typical)



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 705

Building Name: Monaco

Ownership: Monaco

Age: Unknown

Size: 1,600 Sq. Ft.

Tenant/ Owner Type: Business

Use: Equipment Storage

Construction Type: Post frame, metal wall panel and roof, metal interior liner panel

**General Condition: 4**

### **BUILDING SUMMARY**

Older post frame building, refinished and modified recently for drive-thru hangar doors. Minor cracks in concrete floor slab. Building in overall good condition. Hangar doors appeared in good condition and operational.

### **RECOMMENDATIONS**

- Repair/ fill minor cracks in concrete floor slab to prevent further deterioration.



**Photo 1** Monaco Exterior Building



**Photo 2** Cracks/ damage at interior concrete floor slab



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## FACILITY CONDITION ASSESSMENT

### **INTRODUCTION**

Building Number: 709

Building Name: FAA Garage

Ownership: FAA

Age: 2010 (era)

Size: 1,248Sq. Ft.

Tenant/ Owner Type: Operations

Use: FAA Vehicle Storage

Construction Type: Wood framed walls/trusses, metal panel roof and walls.

**General Condition: 4**

### **BUILDING SUMMARY**

Wood framed building appeared to be set on existing bituminous pavement as no foundation was noticeable. Overall in good condition. Newer roof installed couple years ago. Slab shows heavy cracking.

### **RECOMMENDATIONS**

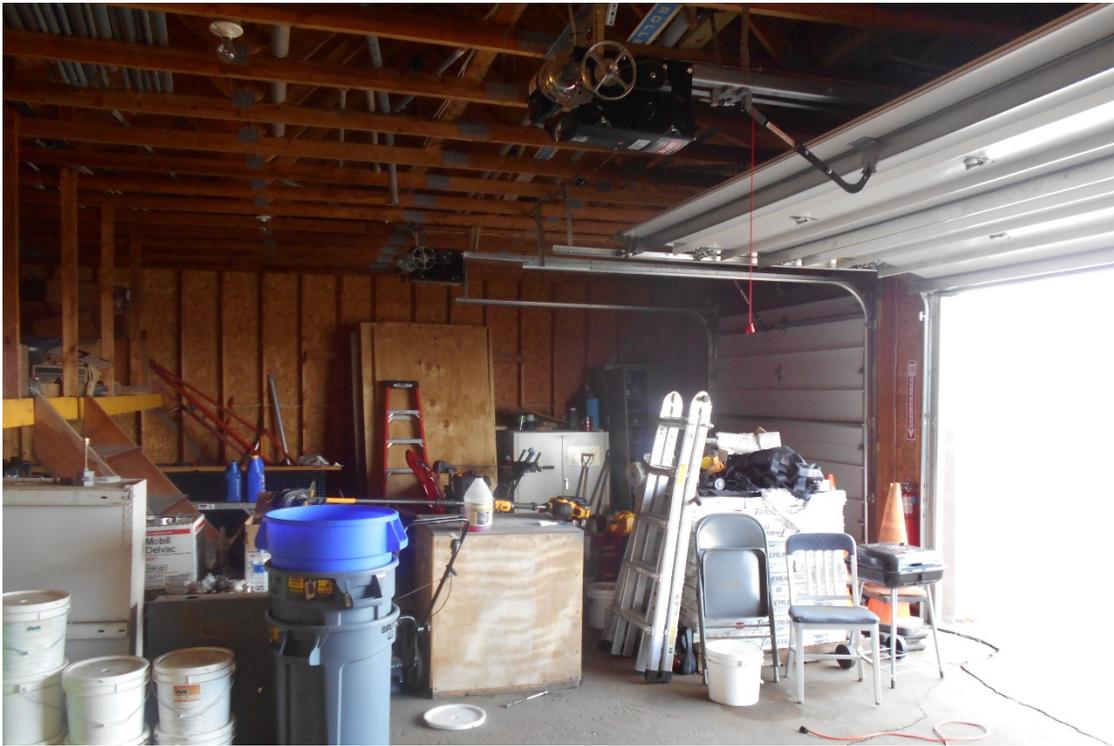
- Repair/ fill cracks in bituminous floor slab to prevent further deterioration.
- Paint exterior side of hollow metal door and frame.



**Photo 1** FAA Garage Exterior Building



**Photo 2** Cracks in bituminous floor slab



**Photo 3** Cracks in bituminous floor slab



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