

**ANALYSIS OF  
BROWNFIELD CLEANUP ALTERNATIVES  
WILLOW RUN AIRPORT  
HANGAR #2  
VAN BUREN TOWNSHIP, MICHIGAN**

**For**

**WAYNE COUNTY AIRPORT AUTHORITY  
DETROIT METROPOLITAN WAYNE COUNTY AIRPORT  
L.C. SMITH BUILDING – MEZZANINE  
DETROIT, MICHIGAN 48242**

**JUNE 6, 2014  
TTL PROJECT NO. 10284.02**

**By**

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## 1.0 INTRODUCTION

This Analysis of Brownfield Cleanup Alternatives (ABCA) was prepared by TTL Associates, Inc. (TTL) for the Wayne County Airport Authority (Airport Authority). The ABCA is a required element for receiving funding from the Brownfield Cleanup Revolving Loan Fund (RLF) Grant awarded to the Downriver Community Conference Brownfield Consortium (DCCBC) by the United States Environmental Protection Agency (USEPA).

The DCCBC RLF Grant was awarded for the cleanup of eligible properties in participating Downriver communities. The property for which funding is intended to be used is Hangar #2 of Willow Run Airport, located in Van Buren Township, Michigan (site). The DCCBC has affirmed the eligibility of the Airport Authority to receive a loan of \$600,000 from their RLF Grant for the removal of asbestos-containing materials (ACMs) from Hangar #2. The USEPA has affirmed the eligibility determination for the use of the RLF Grant funds for this project.

Hangar #2 is located in the southwestern portion of Willow Run Airport and is a vacant, approximately 235,000 square foot building. The Fire Marshal has condemned the building and deemed it unsafe for occupancy. Hangar #2 is located in a prime area for aviation-related redevelopment. However, the anticipated demolition costs, in particular the costs associated with the removal of ACMs, have been an impediment to site redevelopment.

In preparing the ABCA, the Airport Authority considered environmental factors, various site characteristics, surrounding properties, land use restrictions, potential future uses, and cleanup goals.

## **2.0 BACKGROUND**

The following sections provide a description of the site, brief summaries of the site history, environmental investigations conducted at the site, and current site conditions.

### **2.1 Site Description**

Hangar #2 is located in Section 18 in Van Buren Township (Township 3 South/Range 8 East), Wayne County, Michigan, just east of the City of Ypsilanti and along the boundary between Wayne and Washtenaw Counties. The Hangar #2 building and ramp areas comprise approximately 5.5 acres, located in the southwestern portion of the 2,600-acre Willow Run Airport. Hangar #2 is an eight bay, vacant 235,000 square foot hangar and is located on the east side of the Airport Service Drive, approximately 2,200 feet southeast of Tyler Road. See Figure 1.0 for a property location map.

### **2.2 Site History**

Ford Motor Company, under contract with the United States Advisory Council for National Defense, began construction of the Willow Run airfield and a nearby, off Airport factory complex in March of 1941. Multiple facilities were constructed at Willow Run Airport to support the nearby manufacturing of the B-24 Liberator Bomber, including two nearly identical aviation hangars (known as Hangar #1 and Hangar #2). The last of the 8,685 B-24 Liberators was manufactured in June of 1945. In 1947, Ford Motor Company sold Willow Run Airport (including the hangars) to the University of Michigan for use in aeronautical instruction and research as well as use as a public airport. In 1977, the University of Michigan transferred ownership to the Board of County Road Commissioners (County of Wayne), the current property owner. In 2002, pursuant to Michigan Public Act 90 of 2002, the Airport Authority was established and the full management and operational jurisdiction of Willow Run Airport was transferred from the County of Wayne to the Airport Authority. Hangar #2 continued to be used for a variety of aircraft maintenance, testing and support services through 2010, when the Airport Authority completed the initial phase of redevelopment by relocating a primary water main from within the Hangar #2 building to allow unimpeded redevelopment of the building site. Hangar #2 has been vacant since 2010. The building is in poor condition. The Fire Marshal condemned the building and deemed it unsafe for occupancy.

### **2.3 Previous Environmental Investigations**

Several environmental investigations have been conducted at the site. These investigations have included:

- LimnoTech, Phase I Environmental Site Assessment Report, Hangar 2, Willow Run Airport, Van Buren Township, Michigan, March 2008.
- LimnoTech, Phase II Environmental Site Assessment Report, Hangar 2, Willow Run Airport, Van Buren Township, Michigan, March 2008.

- Environmental Consulting Group, Inc. (visual asbestos survey, 2007).
- American Environmental Consultants, LLC (visual asbestos survey, 2008).
- ATC Associates, Inc. (hazardous materials/equipment survey, circa 2010).
- CRA Engineering, Inc., Building Decommissioning Report, Former Hangar 2, Willow Run Airport, Ypsilanti, Michigan, March 2014.

As operator of the site, the Airport Authority contracted Limno-Tech, Inc. (LTI) in 2008 to conduct Phase I and Phase II Environmental Site Assessments (ESAs) of Hangar #2. These assessments were conducted in anticipation of the demolition of the building and the redevelopment of the area and were performed to identify potential environmental concerns associated with the planned redevelopment. The Phase I ESA identified potential recognized environmental conditions (RECs) associated with the historic operations at Hangar #2. The Phase II ESA assessed the site for on-site impacts associated with the RECs identified in the Phase I ESA.

The Phase II ESA identified low concentrations of volatile organic compounds, metals, and polychlorinated biphenyls (PCBs) in shallow groundwater at the site that slightly exceeded the Michigan Act 451 of 1994, Part 201, as amended (Part 201) drinking water criteria. However, the shallow groundwater is not used for drinking water at the site, and it is not anticipated to be used in the future; therefore, it was concluded that the groundwater ingestion exposure pathway was not complete at the site, and the Phase II ESA detections were not considered a significant concern.

The Airport Authority also contracted Environmental Consulting Group, Inc. (2007) and American Environmental Consultants, LLC (2008) to conduct visual inspections of Hangar #2 for the possible presence of ACM. These inspections identified several suspected ACMs in the building. As a result of these visual inspections, the Airport Authority contracted ATC Associates, Inc. to complete a formal survey of Hangar #2 for potential hazardous materials/equipment that may require removal and special handling prior to building demolition. The survey identified numerous ACMs, including transite ducts, transite panels, floor tile, thermal and non-thermal system insulation and fittings, window caulk, and several additional ACM building materials. The survey also identified PCB and non-PCB light ballasts, mercury devices, two small transformers, and fluorescent and high-intensity discharge light bulbs in the building.

The Airport Authority retained CRA Engineering, Inc. (CRAE) in 2013 to conduct a Building Decommissioning Assessment (BDA) in association with the planned demolition of the site building. In conducting the BDA, CRAE reviewed various site plans and documents, including the Phase I and II ESAs and various asbestos/hazardous materials inspections/surveys, and inspected the site building, to provide information required to prepare the building for demolition.

CRAE conducted the BDA in late 2013/ early 2014 in association with the planned demolition of Hangar #2. The work included a supplementary asbestos survey to identify/quantify ACM. The investigation also included sampling/assessment of various building surfaces and contents, including surfaces, sludges, solids, oils, paints and concrete. CRAE also inventoried various regulated materials that require special care during the decommissioning process, such as refrigerants, transformers and other electrical equipment, mercury-containing devices, lighting and oil-filled equipment.

## **2.4 Current Environmental Concerns**

The 2014 CRAE BDA Report identified numerous ACMs, including transite ducts, transite panels, floor tile, thermal and non-thermal system insulation and fittings, window caulk, and several additional ACMs in Hangar #2. Attachment A includes a table from the BDA Report summarizing asbestos-containing materials identified, as well as several other regulated materials within the building.

Hangar #2 is vacant and in poor condition. The Fire Marshal has condemned the site building, deemed it unsafe for occupancy and said that it should not be entered without caution.

### **3.0 REMEDIAL OBJECTIVES AND ALTERNATIVES**

The following sections summarize the objectives of the proposed remedial actions, alternative remedial options, the recommended remedial alternative and justification for the recommendation. The DABC RLF loan will only be used to fund asbestos abatement. Other remedial actions are to be funded from separate funding sources.

#### **3.1 Remedial Objectives**

The Airport Authority is in the initial planning stages for the redevelopment of the site, including the demolition of Hangar #2, which has been condemned and deemed unsafe for occupancy by the Fire Marshall. The Airport Authority plans to use the DCCBC RLF loan to finance the abatement of the identified ACMs in the site building prior to its demolition. The identified ACM and the other hazardous substances identified within Hangar #2 would be removed prior to building demolition to prevent a release of these materials to the environment during demolition activities, as well as reduce potential exposures to demolition personnel and/or site workers/visitors. Removing the environmental contamination from the site/building would facilitate redevelopment of the site.

#### **3.2 Potential Remedial Alternatives**

The purpose of the following sections is to evaluate the remedial alternatives.

##### **Alternative No. 1 – No Action**

The no action alternative would be the lowest cost alternative. However, the no action alternative would not mitigate the potential threats to human health and the environment that are known to exist in the building. In addition, the no action alternative would not facilitate preparation of the site for redevelopment and the ACM in the building would remain an impediment for the planned site redevelopment.

##### **Alternative No. 2 – Partial Abatement of ACMs**

The partial abatement alternative would include the removal of the identified ACM as necessary for the renovation and reuse of Hangar #2. This alternative would mitigate risks to human health and the environment associated with potential exposure to the identified ACM and could be less expensive than the cost for the ACM removal necessary for building demolition. However, extensive ACM abatement and/or encapsulation would likely be required under this alternative. In addition, Hangar #2 is in poor condition and would require considerable non-environmental improvements to make it functional. The total costs of these environmental and non-environmental actions would exceed the value of the building, an outdated, obsolete structure constructed in the early 1940s.

The partial abatement alternative is not recommended, as renovation of Hangar #2 is not considered to be a cost-effective, feasible alternative.

### **Alternative No. 3 – Abatement of ACMs for Building Demolition**

This alternative includes the removal and proper off-site disposal of the ACMs identified in the BDA Report by an approved contractor followed by the demolition of Hangar #2. In accordance with the U.S. EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP), all regulated ACM (RACM) or ACM that could become RACM during demolition would be removed from Hangar #2 by licensed asbestos abatement contractors. Other regulated hazardous materials would also be removed from the building, but their removal would not be performed under the RLF loan.

The asbestos abatement work would be performed in accordance with the requirements of 29 CFR 1926.1101, the Asbestos Construction Standard, adopted by the State of Michigan by reference as Rule 324.51302. Contractors would be licensed and work activities would meet the requirements of the Michigan Public Act 135, of 1986, the Asbestos Contractors Licensing Act. Notification of intent to renovate or demolish would be provided per NESHAP requirements. NESHAP requirements would also be met for asbestos identification, adequate wetting of surfaces to be abated, lack of visible emissions, and proper packaging and labelling of waste materials for disposal. Contractor personnel would be accredited per Michigan Public Act 440 of 1988, the Asbestos Workers Accreditation Act, through the Michigan Department of Licensing and Regulatory Affairs (LARA) Asbestos Program.

Prior to initiating ACM abatement activities, a Notification of Intent to Renovate/Demolish Form would be submitted to the Michigan Department of Environmental Quality (MDEQ), Air Quality Division, as well as the Michigan LARA Asbestos Program, for review. The Notifications would be submitted at least ten working days before beginning the abatement activities. The Notification would specify the facility owner and the selected/approved contractor, and include a summary of the project description, the planned schedule, planned waste disposal [Type II (Municipal Solid Waste) landfill] location(s), necessary engineering controls, etc.

Final air clearance samples would be collected to verify the adequacy of the abatement activities upon completion. Properly trained and equipped personnel would be utilized for all of the required work. Required notifications would be provided to MDEQ and/or local oversight entities in a timely manner. In addition, all intrusive work involving potential contact with hazardous materials would be required to be conducted by Contractor personnel that have completed initial and annual OSHA training and medical surveillance, in accordance with 29 CFR 1910.120(e) and (f).

Cost: The cost to complete the asbestos abatement activities is estimated at approximately \$900,000.

This alternative would remove the identified RACM and other hazardous materials from the site and would meet the remediation objectives. Human health and environmental risks posed by the ACM and hazardous materials would be mitigated, physical risks posed by the unsafe structure would be eliminated, and the impediments to site redevelopment would be removed. This



alternative has the greatest ability to meet the objectives of preparing the site for redevelopment compared to the other alternatives.

### **3.3 Recommended Brownfield Cleanup Alternative**

Alternative No. 1 (No Action Alternative) would leave the ACM in place, would not reduce human health or environmental risks, and would not meet the project goals. The site building would remain condemned and unsafe to occupy. Alternative No. 2 (Partial ACM Abatement Alternative) would mitigate human health and environmental risks posed by the ACM and other materials, but in conjunction with the required non-environmental improvements, it would not be cost-effective for an outdated, obsolete structure such as Hangar #2, which was constructed in the early 1940s. Alternative No. 3 (Abatement of ACM for Building Demolition) would meet the remedial objectives and would facilitate redevelopment of the site. Alternative No. 3 is recommended for implementation at the site to enable redevelopment of this portion of the airport.

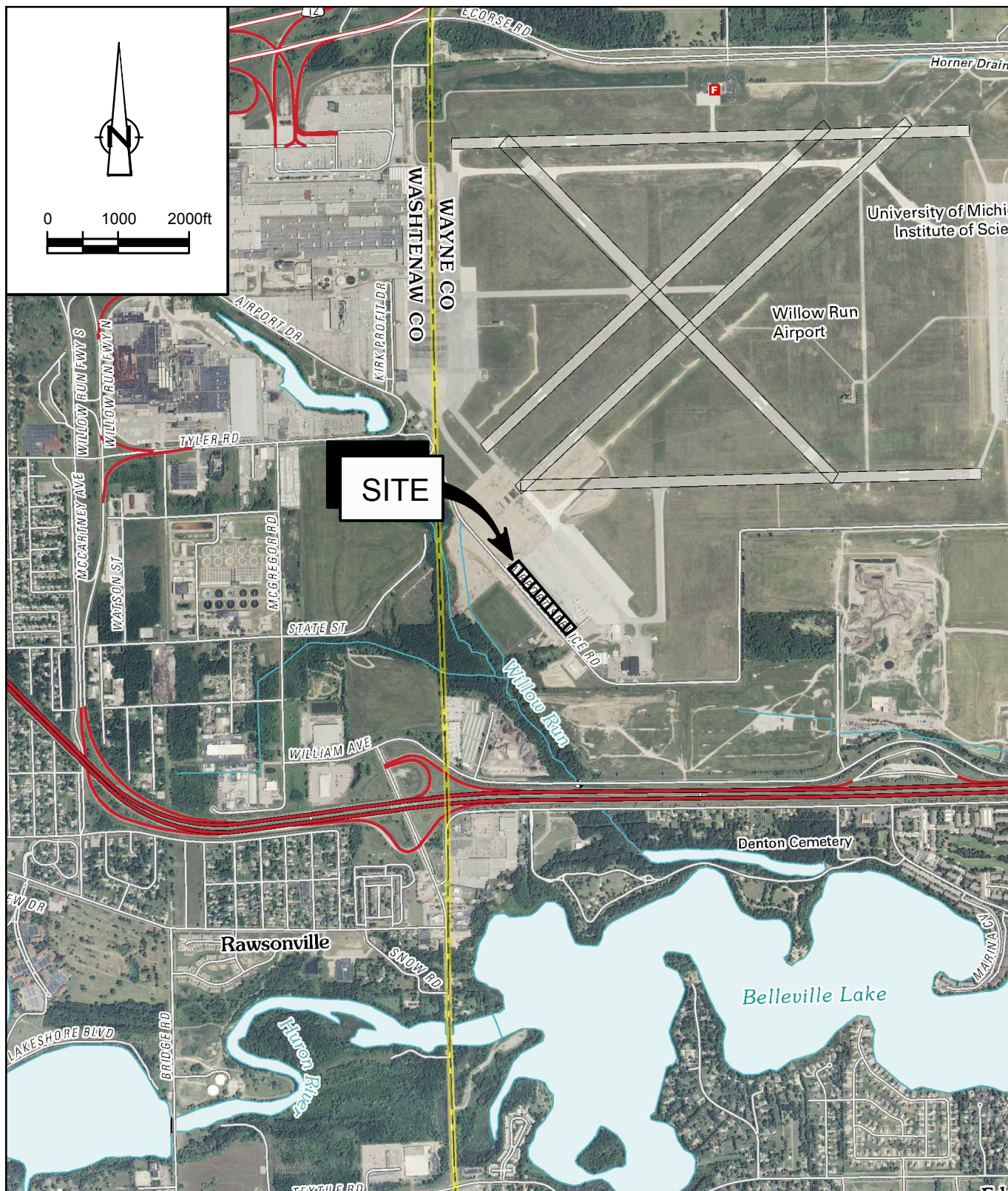
## **4.0 CONCLUSIONS**

The remedial alternatives were evaluated based on effectiveness in meeting the remedial objectives, ability to be implemented, cost-effectiveness, ability to meet project time constraints, and the intended future use of the property. Only Alternative No. 3 was considered technically feasible, capable of protecting human health and the environment, and cost-effective.

The Airport Authority has decided to proceed with the asbestos abatement and other building decommissioning response actions and ultimately, building demolition, described as Alternative No. 3. This alternative is necessary to reduce human health and environmental risks and to support the anticipated future redevelopment of the property for aviation-related purposes.

Formal bid specifications have been prepared for the selected alternative that includes necessary design drawings, technical specifications, and general requirements. The package was suitable for bidding purposes to secure a contractor to implement the corrective action, as applicable.

## FIGURES



SOURCE: USGS AERIAL MAP  
 YPSILANTI, MICHIGAN DATE: 2011

figure 1

SITE LOCATION MAP  
 HANGAR # 2

WAYNE COUNTY AIRPORT AUTHORITY  
*Ypsilanti, Michigan*

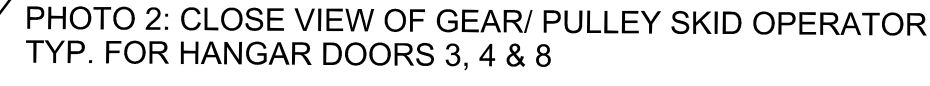


CRA ENGINEERING INC.

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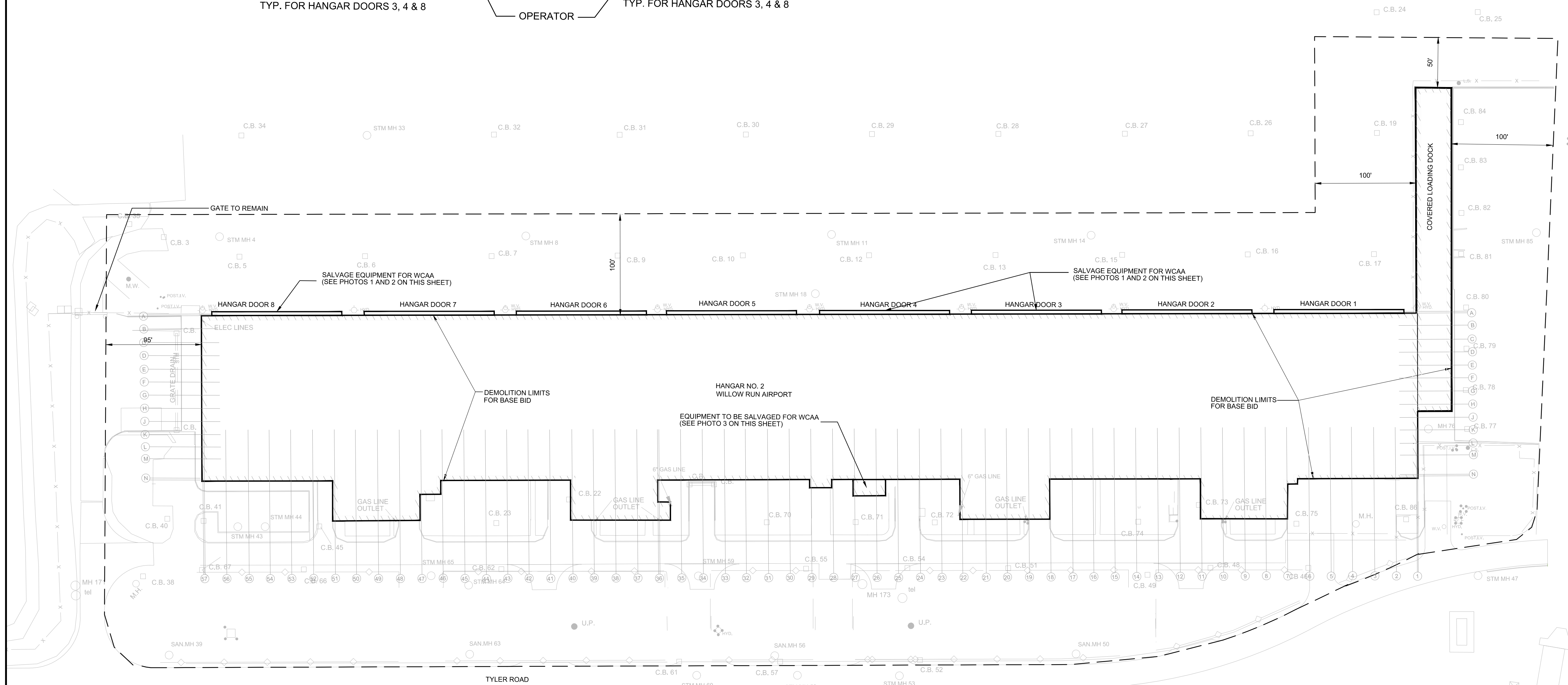
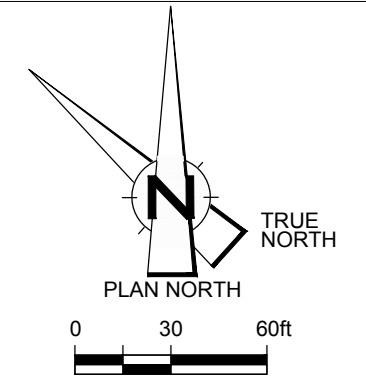




THE BASE BID DEMOLITION SCOPE IS DEFINED IN SECTION 5 OF THE BID PACKAGE AND IN THE PROJECT PLANS AND SPECIFICATIONS. IN GENERAL, THIS SCOPE OF WORK INCLUDES:

1. FILL MATERIAL REMOVAL, HANDLING, TRANSPORTATION AND DISPOSAL
2. ACM ABATEMENT
3. CLEANING AND DECONTAMINATION
4. UTILITY DISCONNECTS INCLUDING STORM/SANITARY SEWERS, POTABLE WATER, FIRE PROTECTION WATER AND NATURAL GAS
5. UTILITY ROOTS (ELECTRICAL AND FIBER OPTIC)
6. DEMOLITION OF STRUCTURE TO SLAB
7. BACKFILLING OF EXCAVATIONS RELATED TO STRUCTURE REMOVAL
8. MATERIAL RECYCLING INCLUDING FERROUS AND NON-FERROUS MATERIALS
9. SITE RESTORATION INCLUDING REMOVAL OF TEMPORARY STRUCTURES

1. TEMPORARY SITE SECURITY FENCING SHALL BE INSTALLED IN ACCORDANCE WITH AIRPORT SPECIFICATION SP-20.
2. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE OWNER OF ANY DISCREPANCIES.
3. ALL STORM WATER AND SANITARY MANHOLES TO BE PROTECTED AND REMAIN EXCEPT THOSE IDENTIFIED FOR REMOVAL ON C-01.
4. PROTECT AND MAINTAIN THE GUARDRAIL ALONG TYLER ROAD.
5. CONTRACTOR IS TO REMOVE INTACT GEARFULLY SKID OPERATORS ON HANGAR BAY DRIVE, WCAA IN ACCORDANCE TO SPECIFICATION SECTION 0223.
6. CONTRACTORS TO REMOVE INTACT TAGGED AND DESIGNATED EQUIPMENT IN THE ELECTRICAL SWITCH GEAR ROOM IN ACCORDANCE TO SPECIFICATION SECTION 0223.
7. MAINTAIN VEHICULAR ACCESS TO ENTRANCES AND EXITS TO THE SITE AT ALL TIMES.
8. REFER TO DRAWING C-01 AND SPECIFICATION SECTION 0223 FOR DETAILS REGARDING UTILITIES AND PROTECTED EQUIPMENT.
9. MAINTAIN ACCESS AND OPERABILITY OF GATES 5-10 AND 5-13 AT ALL TIMES DURING DEMOLITION AND DECOMMISSIONING ACTIVITIES.
10. ALL DEMOLITION SHALL BE PERFORMED IN A SAFE MANNER ACCEPTABLE TO ALL AUTHORITIES HAVING JURISDICTION AND THE OWNER IN ACCORDANCE WITH SPECIFICATION SECTION 0223.
11. COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION, THOROUGHLY CLEAN ADJACENT AREAS OF DUST, DIRT, AND DEBRIS CAUSED BY DEMOLITION WORK AS REQUIRED BY AIRPORT'S GENERAL TERMS AND CONDITIONS.

[illegible]

LEGEND	
	DEMOLITION LIMITS
	TEMPORARY FENCE / WORK AREA
	EX. CATCH BASIN
	EX. STORM MANHOLE
	EX. SANITARY MANHOLE
	EX. HYDRANT
	EX. FENCE
	EX. CLEANOUT
	EX. BOLLARD
	EX. GUARDRAIL
	HANGAR DOOR

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

ISSUED FOR BID	4/8/2014	ML
ISSUED AS DRAFT FINAL	4/4/2014	ML
ISSUED FOR 90% REVIEW	1/28/2014	ML
ISSUED FOR 60% REVIEW	12/19/2013	ML
Status	Date	Initial

WAYNE COUNTY AIRPORT AUTHORITY  
WILLOW RUN AIRPORT: HANGAR NO. 2  
PROJECT SOLICITATION No. 140078

YPSILANTI, MI

BASE BID  
DEMOLITION LIMITS



**CRA ENGINEERING INC.**

Source Reference:

Project Manager: S. ADAMOWSKI	Reviewed By: R. SCHLOESSER	Date: 4/8/2014	
Scale: 1:60	Project N°: 081129-H2D	Report N°: 010	Drawing N°: D-01

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## **APPENDIX A**

### **ACMs SUMMARY TABLE**

## HANGAR 2 SUMMARY LIST OF ASBESTOS-CONTAINING MATERIALS REQUIRING ABATEMENT

DESCRIPTION	LOCATION	QUANTITY
Transite Duct	Throughout office/shop areas	~71,000 square feet
Transite Panels	Hanger Exterior and Bays	~96,850 square feet
Straight Pipe Joint & Hanger Insulation (joint/hanger quantities included in linear total)	Throughout office/shop areas **	~7,675' linear **
	SE sides of Bays	~1,650 linear + 650 pipe fittings/valves
9" x 9" floor tile (brown),	Bay office areas *	~29,500 square feet
9" x 9" floor tile (green)	1-5, 1-6, 8-8 *	~1,930 square feet
9" x 9" floor tile (tan w/ black streaks)	1-9, 1-9 (2), 1-10, 3-12, 3-13 *	~6,620 square feet
9" x 9" floor tile (black w/ red/white specks)	1-9, 1-9 (2) *	~750 square feet
12" x 12" floor tile (off white w/ black flecks)	7-4 – 7-7, 7-10 – 7-13 *	~2,850 square feet
Floor tile under 12" x 12" floor tile (beige w/ dark spot)	5-14	~1,150 square feet
Interior window pane caulk	Windows	1,190 windows ~9,806' linear x .5 " *
Interior window frame glaze	Windows	78 frame units ~400' linear x .5" *
Exterior window pane caulk	Windows	1,190 windows ~1,424' linear x .5 " *
Exterior window frame caulk	Windows	78 frame units ~400' linear x .5" *
Exterior window caulk/glaze	Exterior – Hangar doors	~900' linear x .5" *
Boiler Insulation	2-26, 7-2 – Boiler Rooms	~300 square feet
Tank Insulation	2-26, 7-2 – Boiler Rooms	~400 square feet
Boiler/Tank Straight pipe/joint insulation	2-26, 7-2 – Boiler Rooms	~300 linear feet – 2" – 12" pipe, 2 - 12" valves
	Exterior access boiler rooms in Bays 3 & 6	~67 fittings 2" – 12"
Boiler caulk/gasket (coal boiler)	2-26, 3-14, 6-12, 7-2 - Boiler Rooms	~600 linear feet x 6"
Fan unit caulk	2-26, 3-14, 6-12, 7-2 - Boiler Rooms	~1,600 linear feet x 2"

DESCRIPTION	LOCATION	QUANTITY
Concrete tunnel sealant	2-26, 3-14, 6-12, 7-2 - Boiler Rooms tunnels	~2,400 linear feet x 2"
Boiler wall insulation (under metal jacket)	Exterior entry boiler room – 6-12	12' x 4.5' x 3' ~150 square feet
Boiler Plate Mud	Exterior entry boiler rooms – 3-14, 6-12	~185 square feet
Fire Door Core	Bay 3	4 doors
Black table top	6-14	45 square feet
Fuel Pipe Wrap	Bay 6 exterior – outside meter room	8" - 4 linear feet
Sink undercoating (white)	8-15	1 sink ~ 3square feet
Exterior Building Caulk	Lower Roof above Boiler Rooms - 2-26, 3-14, 6-12, 7-2	800 linear feet x .5"
Transition caulk	Around exterior door frames (standard and roll-up) & between some bays	750 linear feet x .5"

- \* Majority of floor tile is under 12" x 12" non-asbestos tile and/or raised computer floors on 1<sup>st</sup> floor in Bays 2,3 and 5 and carpet squares or carpet on the 2<sup>nd</sup> floor.
- \*\* Friable TSI may be present between interior component walls where observed mechanical piping enter/exit a wall/ceiling. Additional TSI should be assumed present in sink chases and/or bathroom chases that were not accessible without structural demolition. Careful, selective demolition of walls should be conducted at these locations to determine if ACM is present. If TSI is present, it should be removed by a licensed asbestos abatement contractor per applicable regulations, prior to demolition activities

## HANGAR 2 SUMMARY LIST OF ASBESTOS-CONTAINING MATERIALS NOT REQUIRING ABATEMENT

DESCRIPTION	LOCATION	QUANTITY
Roof Flashing-Lower Roof above Boiler Rooms	2-26, 3-14, 6-12, 7-2	800 LF
A/C Unit Tar	Middle Roof top	18 Units
Weatherproofing Tar	4-3	30 square feet