

# PARTNER



## PROPERTY CONDITION REPORT

**ADDISON AIRPORT HANGARS A1 AND A1A**  
4726 and 4730 George Haddaway Drive  
Addison, Texas 75001

Date: May 18, 2012  
Partner Project No. 12-86801.1



Prepared for

**SAMI MANAGEMENT, INC.**  
16501 Addison Road, Suite 220  
Addison, Texas 75001

## EXECUTIVE SUMMARY AND PROPERTY DESCRIPTION

Partner Engineering and Science, Inc. (Partner) has performed a Property Condition Assessment of improvements defined in the following table (property) and prepared this Property Condition Report of the findings. The assessment was performed in general accordance with ASTM E2018-08 “Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process”. The purpose of this Property Condition Assessment was to observe and document readily-visible materials and building system defects that might significantly affect the value of the property, and determine if conditions exist which may have a significant impact on the continued operation of the facility during the evaluation period.

### *Property Description*

<b>Property Name</b>	Addison Airport Hangars A1 and A1A
<b>Address</b>	4726 and 4730 George Haddaway Drive, Addison, Texas 75001
<b>Property Use</b>	Aircraft hangars with maintenance
<b>Number of Buildings</b>	Two
<b>Number of Tenant Spaces</b>	Two (one per building)
<b>Stories or Floors</b>	One story with mezzanine at each building
<b>Gross Building Area (SF)</b>	Approximately 24,000 square feet for each hangar
<b>Parcel Size (Acres)</b>	Not applicable
<b>Year Built</b>	1958
<b>Foundation / Substructure</b>	Concrete spread footings with pad/pier foundations at point loads
<b>Superstructure</b>	Long-span steel framing
<b>Façade</b>	Painted steel panel siding
<b>Roof System</b>	Steel panels, Built-up roofing
<b>Parking Area</b>	Asphalt paving at grade
<b>Parking Space Count</b>	Approximately 30
<b>Heating and Cooling</b>	Split systems and package units
<b>Water Heating</b>	Individual water heaters
<b>Fire Suppression</b>	Fire extinguishers, stand-pipe (west hanger)

The buildings are within the limits of the Addison Airport. As such, the buildings do not have dedicated parcels associated with them. This report addresses just the buildings and the portions of the adjacent site reasonably utilized for conventional vehicular activity. This report does not address airport improvements such as taxiways or runways in the immediate adjacency to the buildings.

### *Overall Site Condition*

Partner evaluates the subject property to be in fair condition.

Property management did not report any recent or planned improvements to the buildings proper.

The detailed observations of reviewed systems are presented in the following Sections of this report with tabulated opinions of cost presented in the Appendices.

At the request of the client, Partner has included a cost for demolition to allow for another use of the property. This cost is displayed on Table 1.

### ***Immediate Repair Items***

In accordance with ASTM E2018-08 “Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process”, Partner has prepared opinions of probable costs for items or conditions that require immediate action as a result of the following: Material existing or potential unsafe conditions, material building code or fire code violations, or conditions, that if left uncorrected, have the potential to result in, or contribute to, critical element or system failure within one year or may result in a significant increase in remedial cost.

The following deferred maintenance items and/or physical deficiencies that are considered significant and require immediate repair at this time were identified:

- Vehicle paving at the end of George Haddaway Drive as well as paving at the front apron of the hangars is damaged,
- An area of displaced slab was observed,
- The original hangar roofing panels show extensive signs of corrosion, repairs are substantial and repair efforts have realized their effectiveness as well,
- Exterior walls have excessive peeling paint and areas of impact damage,
- Windows have broken panes and glazing seals which are deteriorating,
- Hangar and man-doors show extended age with miscellaneous areas of damage and/or operation that is not optimal,
- Stairs to the mezzanine levels appear to be non-compliant with current regulations and have excessive deflection,
- A water heater in 4730 is severely corroded and leaking,
- Upgrade electrical systems to meet current code,
- A panel board without a cover was observed,
- Upgrade/install fire alarm systems and suppression systems to meet current code,
- Most interior finishes at non-hangar bay areas are worn or physically damaged,
- Abatement of known or presumed ACM,
- Handicap accessibility is not addressed at the property.

An opinion of cost to address these items is included in Table 1 - Immediate Repair and Deferred Maintenance Costs Estimate.

### ***Replacement Reserve Items***

Partner has provided opinions of cost for the following capital replacement reserve items that are anticipated to occur during the term of this report.

- Parking area seal coating,
- Roofing replacement at flat addition areas,
- Exterior painting,
- Motor replacement of hangar door operators,
- HVAC equipment replacement,

- Interior finish replacement.

An opinion of cost to address these items is included in Table 2 - Replacement Reserve Costs Estimate.

All other building systems are expected to perform adequately beyond the evaluation period.

Partner can make no comment on the marketability of the useful life of the property. Any qualifications and limitations in place for the property condition assessment as provided by Partner is applicable to the summary comments mentioned above.

## Immediate Repair and Deferred Maintenance Costs Estimate

Addison Airport Hangars A1 and A1A

4726 and 4730 George Haddaway Drive  
Addison, Texas

SECT. #	ITEM	QTY	UNIT	UNIT COST	TOTAL COST	CONDITION
<b>SITE IMPROVEMENTS</b>						
3.3	Vehicle paving	12,250	SF	\$2.50	\$30,625	Repair and overlay George Haddaway Drive behind the buildings
3.3	Apron paving	28,000	SF	\$8.50	\$238,000	Replace damaged asphalt paving with FAA-compliant concrete paving
<b>BUILDING ENVELOPE</b>						
4.1	Slab grinding	1	LS	\$1,500	\$1,500	One area of slab movement was observed
4.2	Truss	1680	LF	\$12	\$20,160	Remove corrosion and apply rust inhibitor to truss chords
4.2	Mezzanine framing	1	LS	\$15,000	\$15,000	Repair mezzanine framing
4.3	Hangar roofing	61,000	SF	\$9.00	\$549,000	Replace the original, deteriorating steel roofing panels over the hangars
4.4	Exterior walls	49,574	SF	\$1.25	\$61,968	Paint exterior walls and perform repairs to damaged areas and sealant
4.4	Windows	2	LS	\$3,500	\$7,000	Replace damaged panes, reseal glazing and service operable components
4.4	Doors	2	LS	\$2,500	\$5,000	Service all hangar doors and man-doors to ensure proper operation
4.5	Stairs	2	EA	\$4,500	\$9,000	Replace the existing stairs due to non-compliant rise-to-run
<b>MECHANICAL AND ELECTRICAL SYSTEMS</b>						
5.4	Upgrade electrical - East Hanger	1	LS	\$800,000	\$800,000	Upgrade electrical system to meet current code
5.4	Open panel - East Hanger	1	LS	low cost	\$0	A panel board in there storage room was open with no cover. This should be addressed immediately.
5.4	Upgrade electrical - West Hanger	1	LS	\$850,000	\$850,000	Upgrade electrical system to meet current code
5.6.1	Installation of a fire supression system - East and West Hangers	1	LS	\$550,000	\$550,000	Install fire sprinkler system to meet current code
5.6.1	Upgrade paint spray booth	1	LS	\$10,000	\$10,000	Upgrade fire suppression of the paint booth to meet current code
5.6.1	Provide fire rated walls	2	EA	\$25,000	\$50,000	Retrofit walls to meet current code
5.6.2	Install fire alarm system	2	EA	\$10,000	\$20,000	Install fire alarm system to meet current code
5.6.2	Upgrade exit lighting and emergency lighting	25	EA	\$2,500	\$62,500	Upgrade exit lighting and emergency lighting to meet current code
5.2	Domestic water heater	1	EA	\$650	\$650	Replace the damaged water heater in 4730
<b>INTERIOR ELEMENTS AND FINISHES</b>						
6.2	Concrete floors	38,400	SF	\$0.75	\$28,800	Paint and seal the concrete floors to protect against chemicals and fluids utilized by tenants
6.2	ACM Abatement	1	LS	\$42,000.00	\$42,000	Abate known or presumed ACM prior to renovation. See ACM Survey for details.
6.2	Carpet	417	SY	\$22	\$9,167	Replace the worn carpet in the office areas
6.2	Vinyl tile	4,000	SF	\$2.50	\$10,000	Replace the worn vinyl tile in support areas
6.2	Interior walls	18,750	SF	\$0.65	\$12,188	Paint the worn interior walls and repair isolated areas of damage
6.2	Ceilings	2	LS	\$5,000	\$10,000	Remove all ceiling systems to structure
6.2	Ceilings	10,000	SF	\$4	\$42,500	Install new ceiling tile system
<b>ACCESSIBILITY</b>						
7.0	Parking	1	EA	\$150	\$150	Install one standard accessible parking space
7.0	Parking	1	EA	\$200	\$200	Install one van accessible parking space
7.0	Doors	2	LS	\$1,200	\$2,400	Install lever door handles
7.0	Lavatories	2	LS	\$500	\$1,000	Replace knob faucet canopies with lever handles
7.0	Lavatories	2	LS	\$300	\$600	Install plumbing protection underneath lavatories
7.0	Toilet compartments	2	EA	\$360	\$720	Install grab bars in one compartment/room at each building
7.0	Signage	2	EA	\$750	\$1,500	Install signage throughout interior areas
<b>Total</b>					<b>\$3,441,627</b>	
<b>Demolition*</b>					<b>\$246,000</b>	

# Replacement Reserve Costs Estimate

Addison Airport Hangars A1 and A1A

4726 and 4730 George Haddaway Drive  
Addison, Texas

Rentable Area: 48,000  
Building Age: 52  
Inflation Rate: 2.5%  
Evaluation Period: 12

SEC T. #	Description	AVG. EUL (YR)	EFF AGE (YR)	RUL (YR)	QTY	UNIT	UNIT COST	YR 1	YR 2	YR 3	YR 4	YR 5	YR 6	YR 7	YR 8	YR 9	YR 10	YR 11	YR 12	Total Cost
<b>SITE IMPROVEMENTS</b>																				
3.3	Asphalt paving, Seal coat and stripe	5	0	5	12,250	SF	\$0.12					\$1,470					\$1,470			\$2,940
<b>BUILDING ENVELOPE</b>																				
4.3	Flat roofing, Replace	15	10	5	2,000	SF	\$3.50					\$7,000								\$7,000
4.4	Exterior walls, Paint	8	0	8	49,574	SF	\$1.25								\$61,968					\$61,968
4.4	Hangar door motors, Replace	15	11	4	4	EA	\$3,500				\$14,000									\$14,000
<b>MECHANICAL AND ELECTRICAL SYSTEMS</b>																				
5.1	Split system condensers, Replace	15	11	4	20	Ton	\$1,250				\$25,000									\$25,000
5.1	Split system fan coils, Replace	25	15	10	240	MBH	\$15									\$3,600				\$3,600
5.1	Package units, Replace	15	11	4	10	Ton	\$1,250				\$12,500									\$12,500
																				\$0
<b>INTERIOR ELEMENTS AND FINISHES</b>																				
6.2	Carpet, Replace	8	0	8	417	SY	\$22								\$9,167					\$9,167
6.2	Walls, Paint	8	0	8	18,750	SF	\$0.65								\$12,188					\$12,188
<b>Uninflated Totals:</b>								\$0	\$0	\$0	\$51,500	\$7,000	\$0	\$0	\$83,322	\$0	\$3,600	\$0	\$0	\$145,422
<b>Inflated Totals:</b>								\$0	\$0	\$0	\$55,460	\$7,727	\$0	\$0	\$99,044	\$0	\$4,496	\$0	\$0	\$166,726

<b>Uninflated Cost Per Square Foot Per Year:</b>	<b>\$0.25</b>
<b>Inflated Cost Per Square Foot Per Year:</b>	<b>\$0.29</b>

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## **1.0 INTRODUCTION OF SCOPE**

### **1.1 PURPOSE AND SCOPE**

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The purpose of this report is to assist the Client in evaluation of the physical aspects of the subject property and how its condition may affect the soundness of their financial decisions over time. The scope of the assessment and report is based on the guidelines set forth by ASTM E2018-08 "Standard Guide for Property Condition Assessments".

This report is intended to be utilized by the Client for the purpose of evaluating the general overall physical condition of the subject property and identifying physical deficiencies. The purpose of this property condition assessment was to observe and document readily-visible materials and building system defects that might significantly affect the value of the subject property, and determine if conditions exist which may have a significant impact on the continued operation of the facility during the evaluation period.

### **1.2 CLIENT RELIANCE**

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Partner Engineering and Science, Inc. (Partner) was engaged by SAMI Management, Inc. to perform this assessment. The engagement agreement specifically stated the scope and purpose of the assessment, as well as the contractual obligations of both parties. This report and the information therein, are for the exclusive use of SAMI Management, Inc. This report has no other purpose and may not be relied upon, or used, by any other person or entity without the written consent of Partner.

### **1.3 QUALIFIERS**

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The following definitions and terminology are used in this report regarding the physical condition of the project, and the estimated life expectancies/age of the components and systems.

Excellent    New or like new condition.

Good        Well maintained, may exceed expected useful life. No immediate or potential concerns.

Average    Satisfactory, some signs of wear and possible minor immediate repairs. Component/s condition consistent with their expected useful life.

Fair         Marginally satisfactory. Some immediate repairs required. Components/Systems at or near the end of their useful life.

Poor         Immediate concerns, major replacements, and/or significant attention required.

Unless stated otherwise in this report, the systems reviewed are considered to be in good condition and their performance appears to be satisfactory.

### **1.4 COST EVALUATION METHODOLOGY**

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Estimates are based on construction costs developed by construction resources such as Marshall & Swift, RS Means, Partner's experience with past costs for similar projects,

city cost indexes, consulting with local specialty contractors, client provided information, and assumptions regarding future economic conditions. Actual costs may differ from Partner's opinions. Actual cost estimates are determined by many factors including but not limited to: choice and availability of materials, choice and availability of a qualified contractor, regional climate zone, quality of existing materials, site compatibility, and access to the subject property and buildings. Opinion of costs are based solely on material replacement and do not account for soft costs.

Items included in the replacement reserve table are determined based upon the estimated useful life (EUL) of a system or component, the effective age (EA) of the system, and the remaining useful life (RUL) of that system. Factors that may affect the age and condition of a system include, but are not limited to, the frequency of use, exposure to environmental elements, quality of construction and installation, and amount of maintenance provided. Based on these factors, a system may have an effective age that is greater or less than its actual chronological age. Routine maintenance costs are not included as part of this assessment.

## **1.5 DEVIATION FROM ASTM E2018-08**

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ASTM E2018-08 requires disclosure of any deviation from the Standard. The deviations listed below were specified in the Partner scope of work. These deviations are intended to make the PCA more comprehensive. The following is a list of the deviations from, and additions to ASTM E2018-08.

- According to ASTM E2018-08, opinions of cost below a threshold amount of \$3,000 may be omitted from the PCR. Partner uses a threshold of \$1,000 unless directed otherwise by the Client. The lower threshold value provided in this report allows for a more comprehensive analysis of the subject property. Costs that are lower than Partner's threshold value are not included in the report and are typically associated with items of routine maintenance. Items that are considered a threat or danger to health and safety are included in the immediate repair cost estimate table regardless of the cost threshold.
- This PCA includes flood, wind, and seismic zone information.
- Short term costs are incorporated in Table 1 - Immediate Repairs and Deferred Maintenance Costs Estimate.
- This PCA includes an opinion of costs for anticipated capital expenditures for an evaluation term defined by the Client. The costs are presented in Table 2 - Replacement Reserve Costs Estimate.
- In addition, specialty consultants were engaged to provide additional information regarding some of the systems at the property as indicated in the following table.

<b>System</b>	<b>Company</b>	<b>Consultant</b>	<b>Telephone</b>
<b>Structure</b>	Wharry Engineering	Art Sukenik Buddy Allums	972-272-4116
<b>Electrical</b>	Blum Consulting Engineers	Scott Swan	214-373-8222

<b>Life Safety</b>	Rolf Jensen & Associates	Carl Chappell	469-443-7200
<b>Asbestos</b>	HighPoint Environmental	Charles Baugh	972-633-3955

These consultants have prepared reports under separate cover with information from those reports reflected within this PCR.

## **1.6 STATEMENT OF LIMITATIONS**

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This assessment is based upon the guidelines set forth by ASTM E2018-08 “Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process” and subject to the limitations stated therein. Our review of the subject property consisted of a visual assessment of the site, the structure and accessible interior spaces. Any technical analyses made are based on the appearance of the improvements at the time of this assessment and the evaluator’s judgment of the physical condition of the subject property components, their ages and their expected useful life (EUL).

Information regarding the subject property is obtained from a site walk-through survey, local government agency records review, interviews and client-, tenant- or property owner-provided documents. No material sampling, invasive or destructive investigations, equipment or system testing sampling was performed. The observations and related comments within this report are limited in nature and should not be inferred as a full and comprehensive survey of the building components and systems.

Information regarding operations, conditions, and test data provided by the Client, property owner, or their respective representatives has been assumed to be correct and complete. No warranty is expressed or implied, except that the services rendered have been performed in accordance with generally-accepted practices applicable at the time and location of the study

The actual performance of systems and components may vary from a reasonably expected standard and will be affected by circumstances that occur after the date of the evaluation. Partner’s assessments, analyses and opinions expressed within this report are not representations regarding either the design integrity or the structural soundness of the project.

The report does not identify minor, inexpensive repairs or maintenance items, which are clearly part of the subject property owner’s current operating budget so long as these items appear to be addressed on a regular basis. The report does identify infrequently occurring maintenance items of significant cost, such as exterior painting, roofing, deferred maintenance and repairs and replacements that normally involve major expense or outside contracting.

The assessment of the roof, façade and substructure contained herein cannot specifically state that these items are free of leaks and/or water intrusion and should not be interpreted as such. Comments made with respect to the condition of the systems are limited to visual observation and information provided by the designated site contacts and/or on-site representatives and their contractors/vendors. The evaluation of these systems did not include any sampling and/or testing. A more extensive evaluation is required if a comprehensive report on the condition of these systems is required.

### **1.6.1 ADA Exclusion**

The PCA performed for this report is not a comprehensive Americans with Disabilities Act review. During the assessment, only visual observations were performed without taking any measurements. The assessment is generally limited to common areas of the property unless previously requested otherwise. Items noted typically include accessible parking spaces, accessible routes to building entrances, and observations of interior publicly-accessible areas. Even within this limited scope, all components of federally-required accessibility are not audited. Instead, this review noted general design components such as routes of travel, door hardware, plumbing amenities, elevator controls and signals, basic emergency alarm components and signage which can be visually verified. This report also does not address any locally-administered accessibility requirements.

In order to determine if a property meets all of the requirements of the ADA, a comprehensive survey would be necessary.

### **1.6.2 Limiting Conditions**

In addition to the above limitations, this assessment was further limited by the following condition:

- Due to tenant limitations, some interior areas of 4726 were not directly observed.

## 2.0 DOCUMENT REVIEW AND DATA COLLECTION

### 2.1 SITE RECONNAISSANCE

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This report is based on the site visit conducted by Barry McPherson on March 27, 2012. Weather at the time of walk-through survey was partly cloudy with moderate to strong winds and temperatures in the 60s. Partner was escorted by Mr. Bill Dyer and Ms. Melissa Newman during the survey.

### 2.2 PERSONNEL INTERVIEWED/CONTACTED

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The following personnel from the subject facility were interviewed as part of the preparation of this report. Information obtained from the interviews is incorporated into the appropriate Sections of this report.

Individual	Position or Title	Contact Number/Email
Mr. Bill Dyer	Real Estate Manager Addison Airport	972-392-4850
Ms. Melissa Newman	Leasing Manager Addison Airport	972-392-4850

### 2.3 REGULATORY COMPLIANCE INQUIRY

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<b>Building Codes</b>	Addison Development Services Department via the Addison City Manager Department		
	<input type="checkbox"/> No Violations	<input type="checkbox"/> Violations	<input checked="" type="checkbox"/> Awaiting Response
<b>Comments:</b> Consistent with requirements of the municipality, an electronic Request for Information was forwarded to the City Manager Office via the electronic link on the city website to determine if the original Certificate of Occupancy is available, if there are any outstanding violations, and the frequency of inspection.			
<b>Fire or Life Safety</b>	Addison Fire Department via the Addison City Manager Department		
	<input type="checkbox"/> No Violations	<input type="checkbox"/> Violations	<input checked="" type="checkbox"/> Awaiting Response
<b>Comments:</b> Consistent with requirements of the municipality, an electronic Request for Information was forwarded to the City Manager Office to determine the date of last inspection, frequency of inspection, and if there are any outstanding violations.			

<b>Zoning Codes</b>	Addison Development Services Department		
	<input checked="" type="checkbox"/> <b>No Violations</b>	<input type="checkbox"/> <b>Violations</b>	<input type="checkbox"/> <b>Awaiting Response</b>
<b>Comments:</b> The property is zoned I-3, Industrial. The current use appears consistent with the zoning designations.			

The information provided on this list does not constitute a detailed investigation. If possible, Partner confirmed the provided information with on-site observations. Information provided by others is assumed to be factual and complete. Information that is received within 30 days of the site visit will be forwarded upon receipt.

## 2.4 DOCUMENT REVIEW

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No additional documentation was provided for review.

## **3.0 SITE IMPROVEMENTS**

### **3.1 TOPOGRAPHY AND STORM DRAINAGE**

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The overall site is relatively flat with a very slight slope to the north.

Storm water from paved surfaces is discharged to catch basins in the paved areas and to a drainage channel along the north side of the hangars.

#### ***Survey Condition and Analysis***

The site topography appears to adequately accommodate the built improvements and storm water appears to be adequately discharged.

### **3.2 LANDSCAPING**

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Landscaping is limited to manicured grass in the small area between the buildings. Irrigation appears to be by natural means only.

#### ***Survey Condition and Analysis***

The grass appears to be in fair condition with an overall patch appearance. The early growing season could be contributing to the condition. As the growing season progresses, the health of the grass is expected to improve. As such, only normal maintenance is anticipated during the term.

### **3.3 VEHICLE PAVING AND PARKING**

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Vehicle paving at George Haddaway is primarily asphalt with isolated sections of concrete.

Apron parking south of the hangars and west of the West Hanger is primarily asphalt until the paving meets up with the concrete taxiways.

Spaces are not stripped, but there is room for approximately 30 vehicles along the north side of the hangars without obstructing doors and equipment.

#### ***Survey Condition and Analysis***

The asphalt paving on both sides of the hangars is in poor condition. Numerous areas of damage are present including topical and full-depth linear cracking, potholes and spalled areas with displacement (at parking area). At one location in the apron, large steel plates are set over damage of an unknown nature.

The exact extent of George Haddaway Drive is unclear but municipal maps appear to indicate the actual road ends at about the east corner of 4730. As such, this report assumes the paving west of this point is the responsibility of the airport proper and maintenance has been deferred. Therefore, an overlay of the paving is warranted which needs to include any full-depth repairs which are necessary. This cost is represented in Table 1. During the term, seal coating should be anticipated and this cost is represented in Table 2.

According to property management, effective future use of the hangars would require pavement which meets Federal Aviation Administration (FAA) requirements. Partner advanced five concrete borings to determine the depth of the paved surfaces. Two borings were installed south of the hangars (B1 and B-2); two north of the hangars (B-4 and B-5); and one west of the hangars (B-3). The paved surfaces and base materials and thicknesses varied. Partner’s findings are as follows:

Boring No.	Paved Surface/Thickness	Base material
B-1	17” of asphalt	Loose base material
B-2	3” of asphalt	7” of compact base
B-3	5” of asphalt	5” of concrete
B-4	3” of asphalt	4” of concrete
B-5	1.5” of asphalt	Loose base material

Based on the inconsistencies in the construction of the paved surfaces, it is unlikely that FAA requirements are met throughout. Partner recommends reviewing the FAA Guidelines or engaging an FAA consultant to evaluate the paved surfaces. Based on the potential need, in addition to the apron being utilized by several large World War II-era airplanes, replacing the apron area with concrete has been included in Table 1.

Pavement markings to designate parking spaces should be provided as part of the asphalt work recommended above.

### 3.4 PEDESTRIAN PAVING

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Pedestrian paving is generally not present. Vehicle paving and aircraft aprons terminate against the hangars.

### 3.5 WALLS AND FENCES

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The hangar uses are commonly referred to as “through-the-fence” operations meaning the occupants have direct, but secured access from public areas to the airfield. As such, fencing is located at the north edge of the hangars to prevent access to the airfield without entering the hangars. The fencing ranges from conventional chain link to steel open-picket fencing. A motorized gate is located at the west end of the drive aisle north of the hangars and is activated by keypad. A storage area on the east end of 4730 is enclosed by chain link fence as well.

#### *Survey Condition and Analysis*

The fencing is in average condition showing general signs of wear but no overt areas of damage. The gate appears to be in good condition. Only normal maintenance should be expected during the term.



### **3.6 LIGHTING**

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Site illumination is provided by wall-mounted fixtures on the hangars as well as pole-mounted fixtures along the drive aisle.

#### ***Survey Condition and Analysis***

The light fixtures appear to be in average condition. Only normal maintenance should be expected during the term.

### **3.7 SIGNAGE**

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The buildings are generally not identified. The tenant in 4726 has a small offset sign mounted to the corner of the building.

#### ***Survey Condition and Analysis***

The sign appears to be in fair condition and should be maintained as part of tenant responsibility.

### **3.8 REFUSE TRANSFER AREAS**

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Trash is disposed in steel containers set on the asphalt paving without enclosure.

#### ***Survey Condition and Analysis***

The waste containers are the property of the disposal company.

### **3.9 OTHER SITE IMPROVEMENTS**

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No additional site improvements relative to the hangars are present.

## 4.0 BUILDING ENVELOPE

### 4.1 FOUNDATION/SUBSTRUCTURE

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Each building is constructed with concrete spread footings with pad/pier footings at point loads and a slab on grade.

#### *Survey Condition and Analysis*

The foundation was observed to be in good overall condition. Partner noted an area of slab heaving in the slab on grade adjacent to the ear door of the east hanger. The heaving can be addressed by slab grinding. An opinion of cost is included in Table 1.

### 4.2 SUPERSTRUCTURE

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The hangar structures are all steel with columns and long-span trusses. The columns run around the hangar perimeters with an interior row of columns extending to the top of the trusses outside of the hangar enclosure. The trusses are a hybrid design incorporating a scissor design for the lower chords which actually support the roof panels and dual-pitch components which extend above the roof plane. The design provides a clear-span area for approximately 80% of each hangar. Steel girts run between the steel columns to assist with lateral control and to support the exterior wall panels. Steel purlins which are actually shallow H-series trusses run along the top of the bottom chords to support the roof panels. Lateral stability is provided by steel x-bracing in perimeter walls, the interior shear wall and within the trusses. The rear, 20% areas have steel beams supporting the purlins and roof panels.

The mezzanine is conventional wood platform framing with dimensional lumber joists and wood plank decking at the elevated floors.

The addition areas to the west ends of the hangars are constructed with load-bearing CMU supporting steel beams and steel roof decking.

#### *Survey Condition and Analysis*

In general, the steel structures appear to be in good condition. Topical corrosion is present on the upper surfaces of the upper truss chords. Partner recommends removing the rust and application of a rust inhibitor. An opinion of cost is included in Table 1.

The wood framing in the east hanger appears to have sustained damage from prior roof leaks. Partner recommends an inspection that will require destructive testing and repairs to the mezzanine framing prior to use. A cost allowance has been included in Table 1. As an alternative, Partner the mezzanine can be demolished for approximately \$50,000. This cost is not included on Table 1.

### 4.3 ROOFING

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The main pitched roofs are corrugated steel panels anchored with surface-mounted fasteners to the purlins below. Most areas are coated with a thick layer of paint, possibly an emulsion coating. Flashing at penetrations and eave conditions currently consists of a

woven mat material mopped into place with an emulsion coating. Similar flashing is utilized at structure and plumbing penetrations.

Storm water flows to the low eaves where sheet steel gutters and downspouts direct it to below-grade piping where it is discharged to the municipal storm water system.

The roofs are generally clear of equipment and appurtenances but translucent fiberglass panels serve as skylights on 4726 while these panels have been replaced by standard steel panels on 4730. Access to the roofs is possible by a ladder built as part of the hangar door support or by mechanical hoist equipment.

The appendage area of 4730 has a flat roof protected by built-up roofing with gravel ballast. Edges and the transition to the adjacent hangar wall panels have sheet steel flashing. Mechanical penetrations are by a similar method as the main roofs with a woven fabric impregnated with emulsion and applied to penetration walls. Storm water generally flows over the edge of the roofs to grade below. Access to the low roofs is by loose ladder set against the building or mechanical hoist equipment.

The appendage area west of 4726 has steel panel roof similar to the main roofing and isolated areas at the low buildings between the hangars also have steel panel roofing.

### ***Survey Condition and Analysis***

The main steel panel roofing is in fair to poor condition. Corrosion is excessive and encompasses virtually all areas of the roof planes. The coatings are worn as well and there are extensive areas of repair ranging from application of sealant to panel joints, multiple layers of emulsion coatings, and multiple layers of the reinforcing mats. In some areas the mats have also developed deficiencies as well. At interior areas, in particular the office areas with built-out finishes, water damage is extensive.

The panel roofing is presumed to be the originally-installed system which based on the construction date, has exceeded its expected useful life. Based on the age and condition, continued patching and repairs do not appear that they will provide additional life of substance. In addition, the corrosion is approaching depths that are suspect for maintaining the structural integrity of the panels. As such, simply recoating the entire roof and replacing all of the flashing is not recommended. Based on all of the available factors, the panels should be replaced. This decision is also made in part due to the profile of the panels appears to be inconsistent with currently manufactured panels since all of the replaced panel profiles do not match. The cost for this work is included in Table 1. The new roofing is expected to provide reliable service during the term.

The gutters and downspouts for the panel roofing are in poor condition. There are numerous areas of full-depth corrosion and open gutter joints which allow storm water to fall to grade below. Impact damage and corrosion is present on the downspouts as well. The cost for roofing replacement above includes replacement of the drainage accessories.

The built-up roofing is in fair condition. Ballast is disturbed in several areas which has allowed excessive hardening and cracking of the underlying bitumen. Cracking at edge and flashing conditions are also present. An allowance for making as-needed repairs is

included in Table 1. Based on a presumed age of at least 15 years, replacement should be anticipated during the term and the cost for this work is included in Table 2.

The smaller steel panel roofing areas should be replaced as part of the larger scope of work to maintain consistency with materials, systems and expected useful life. This cost has been factored into the above steel panel roofing estimate.

#### **4.4 EXTERIOR WALLS, WINDOWS AND DOORS**

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##### **4.4.1 Exterior Walls**

Exterior walls are typically painted, corrugated steel panels secured to the steel frame. Steel flashing is used at joints with contiguous systems and materials with sealant at limited areas. The small addition areas are painted CMU.

##### ***Survey Condition and Analysis***

The exterior walls are in fair condition. Primarily along the rear parking areas are several areas of impact damage, presumably by vehicles. In addition, the painted finish is worn with extensive areas of peeling and flaking. The CMU walls also have painted finishes that are peeling while at least one area has a CMU knocked out. Sealant is generally aged and brittle. Based on the condition, repainting of the walls is warranted and the cost for this work is included in Table 1. As part of this work, the damaged panels and missing CMU should be replaced or properly straightened. Sealant should also be replaced. During the term painting should be expected again with this cost included in Table 2.

##### **4.4.2 Windows**

Windows are steel-framed units with single glazing. Typically with fixed panes, some of the windows are operable hopper windows. Glazing panes are sealed to the frames with glazier's putty.

##### ***Survey Condition and Analysis***

The windows appear original. Many panes are damaged or have been replaced due to prior damage, in some instances, with a solid material instead of glazing. As thermal performance is not an issue, the glazing should be repaired as needed to return the windows to a condition capable of providing consistent performance during the reserve term. This work should include replacing all broken or improperly-repaired panes, servicing all operating hardware and resealing the panes. An allowance for this work is included in Table 1.

##### **4.4.3 Doors**

The primary doors are full-height bi-parting hangar doors on the south side of each building. The multi-panel telescoping doors are opened and closed with mechanical assistance consisting of an electric crawler gear with pneumatic tires on each operable half. The doors open beyond the sidewalls providing almost full-width openings. Steel-framed towers at each front corner provide support to the stacked door panels. A rolling steel panel door is located on the north side of 4730 while a steel panel overhead door is

located on the north side of 4726. Man-doors are typically hollow steel while aluminum-framed doors with full glazing panes are at limited areas.

***Survey Condition and Analysis***

The doors appear to be in average condition. Apparently there is some concern over the operable status of some crawler motors as tenants indicated they do not always work properly. The doors were observed in both the closed and open position so it is known full range of motion is possible. Based on the age of the crawler motors, replacement should be expected during the term and this cost is represented in Table 2. Immediate repairs should consist of a comprehensive maintenance program to lubricate all operable parts, repair the motors as necessary and perform any alignment adjustments to ensure reliable operation. This allowance is included in Table 1.

The secondary doors are in similar physical condition with various issues such as binding and poor finish condition. These doors should also be addressed as part of the allowance provided above.

**4.5 STAIRS, BALCONIES AND TERRACES**

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Interior stairs leading to the mezzanine areas are wood framed with steel handrails.

***Survey Condition and Analysis***

The stairs appear to be in fair to poor condition. While not measured, the rise-to-run of the stairs appears to exceed current allowable limits as the risers are excessively high and the treads are shallow. Deflection was noted while traversing the stairs as well. In order to meet current requirements, new stairs are recommended to be installed. An opinion of cost is included in Table 1. Routine maintenance is anticipated during the term.

## 5.0 MECHANICAL AND ELECTRICAL SYSTEMS

### 5.1 HEATING, VENTILATION AND AIR CONDITIONING

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Heating and cooling are provided sparingly, typically only at enclosed office areas. Conditioned air is supplied by several split systems, package units and through-wall air conditioners. Split system condensers are typically at grade and utilize R-22 refrigerant. Fan coil/air handling units are in a void space to the side of the mezzanine on the upper level and appear to be gas-fired units. Distribution is by insulated flexible ductwork and sheet steel ductwork to ceiling-mounted diffusers. Each system is controlled by a local thermostat.

The package units are located on the roof of the addition areas west of 4730 and also utilized R-22 refrigerant. Heating appears to be provided by electric-resistance coils. Distribution and controls are similar to the split systems.

Through-wall units are typical residential-style unitary systems for cooling only.

Large capacity fans are located on exterior walls to circulate air through the main hangar areas.

#### *Survey Condition and Analysis*

The systems appear to be in average to fair condition. Inoperable equipment was not noted and several of the office areas were maintained at a very cool temperature. However, based on EUL, replacement should be anticipated during the term and the cost for this work is included in Table 2.

Ductwork appears to be rather haphazard, resulting from multiple modifications over the years. Future work on the equipment should also include revisions to the distribution system to maximize efficiency. This can be completed with the replacement costs included above.

### 5.2 PLUMBING

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Domestic water enters the building from a main along George Haddaway Drive. Distribution piping appears to be copper. Head pressure is maintained by municipal water pressure. Sewer piping appears to be cast iron and vent piping also appears to be cast iron.

Domestic hot water is supplied by electric water heaters. The electric residential-style units are generally in the 20-30 gallon range.

Toilet room fixtures include wall-mounted porcelain lavatories with knob handle faucets, floor-mounted tank-style porcelain toilets, porcelain urinals and steel panel toilet partitions. Several polymer and porcelain service sinks are located in maintenance areas.

#### *Survey Condition and Analysis*

Plumbing piping was observed near equipment and at roof penetrations. Some corrosion of the service components is present but routine cleaning can address the issue.

Notwithstanding future interior renovations or change in occupancy capacity, only normal maintenance is anticipated during the term.

The water heater in 4730 is in poor condition due to excessive corrosion and active leaking. Replacement of the heater should be performed and the cost for this work is included in Table 1. During the term, water heater replacement can be performed as part of normal maintenance due to the limited expected cost.

Fixtures are generally in average condition. They show age, but damage is very limited. Only normal maintenance should be anticipated during the term.

### **5.3 GAS DISTRIBUTION**

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Natural gas is provided by meters and regulators to the east side of each building. Piping is malleable steel (black iron).

#### ***Survey Condition and Analysis***

Plumbing piping was observed near equipment and the meters. While exhibiting normal wear, no significant issues were identified. Only normal maintenance should be anticipated during the term.

### **5.4 ELECTRICAL**

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The findings in this section were incorporated from the Blum Consulting Engineers, Inc. report.

#### **The East Hanger**

On the outside of the structure, at the northwest corner, there is a set of three 50 KVA pole-mounted utility transformers which take high voltage service from the utility company overhead lines and step it down to 208Y/120V-3PH, 4W service. The utility feeders are routed overhead at the north side of the building and originate from a point near Addison Road. The service cables route from the utility pole, through an exterior weather-head and into the building. The building electrical service enters the building from overhead via two (2) 4-inch conduits and two (2) 3-inch conduits through the west wall. The two (2) 4-inch conduits terminate into a surface mounted wireway which feeds four separate disconnect switches of various sizes ranging from 100A to 400A. The two (2) 3-inch conduits terminate into a 400A service rated disconnect switch. Each service switch feeds a variety of panel boards, disconnect switches and miscellaneous equipment. The total capacity that this system is capable of delivering is approximately 6 watts per square-foot.

#### **The West Hanger**

On the outside of the structure, at the northeast corner, there is a set of three 100 KVA pole-mounted utility transformers which take high voltage service from the utility company overhead lines and step it down to 208Y/120V-3PH, 4W service. The service cables route from the utility pole, through an exterior weather-head and into the building.

The building electrical service enters the building from overhead via a single conduit appearing to be 4-inches in trade diameter and penetrates the north wall. The 4-inch conduit terminates into a vertical surface mounted wireway which feeds two separate panel boards both of which are Square D products. The panels are named Panel 1 and Panel 2 and rated at 250A and 100A, respectively. The panel boards sub-feed to other panel boards and miscellaneous branch circuit devices throughout the building. The total capacity of this system is capable of delivering approximately 12 watts per square-foot.

### *Survey Condition and Analysis*

#### The East Hanger

The condition of the electrical equipment leads Blum to believe it is all original to the building. Much of it has been painted orange and many equipment nameplates are missing or unreadable. It is unlikely that replacement parts are available and even if parts could be found, they would come at a premium price. It appears that, over the years, as occupancy and use has changed that the electrical system was expanded as needed with no real direction for future growth/expansion. Certain risks are elevated when utilizing over-current protection devices of this age as time destroys certain components that are necessary for the device to operate properly. Given the fact that much of this space is unconditioned only increases the risk for component failure. The better part of all of the electrical system in this building would be classified as past its life expectancy. No lightning protection system was identified on the premises. We could not readily identify the grounding system for code compliance. Further investigation by a licensed contractor is required to fully disclose the grounding system.

It is Blum's opinion that any future major modifications to this building allow for complete replacement of the existing electrical systems. Not only are the systems past their life expectancy, their ratings and capacities are not easily identifiable. A similar infrastructure system utilizing a field constructed wireway with not more than six (6) service entrance rated switches could be installed. A total capacity of approximately 800A-1000A at 208V could be expected from the present utility infrastructure. New panels would be fed from the service disconnect switches at the wireway and then branch circuit wiring would run to the applicable load. A complete UL Master Labeled lightning protection system should be installed to reduce the risk of electrical shock and potential for igniting flammable liquids and vapors. New lighting systems could be installed to implement a more energy efficient solution. Providing fluorescent or LED fixtures in the high bay areas would allow for a quicker start time with less lamp 'warm up'. Newer energy codes mandate that most areas of lighting require some means of automatic control that can range from a simple relay panel to occupancy sensors to automatically shut the lighting off when the room is not being used. The grounding system shall be investigated and upgraded as necessary. All panels and electrical system components should be uniquely labeled as outlined in NEC 408.4. Partner has included a cost allowance for this work to meet current code and to replace antiquated equipment in Table 1.



Blum noted several equipment areas that did not provide the minimum required working clearances as outlined in the National Electrical Code Article 110. For such installations, we recommend providing tape marking on the floor to indicate this required working clearance. No objects can be stored within this projected area. This can be completed as part of routine maintenance.

We also noted one particular panel board located within a wall cavity inside a storage room that has no cover and all live parts are exposed. This creates a dangerous environment that should be immediately remedied. This is included in Table 1 as it is considered a life safety issue.

### The West Hanger

The condition of the electrical equipment in this building is in better shape than that of the East Hangar. However, we estimate the panels to be at least 20+ years old. Again, finding replacement parts may prove difficult and costly, if renovations are in order. Several of the sub-feed panels appear to be older than the service panels. These are Federal Pacific panels, which is no longer in business. Some have been painted, as well, which has masked some of the nameplate information. No lightning protection system was identified on the premises. We could not readily identify the grounding system for code compliance. Further investigation by a licensed contractor is required to fully disclose the grounding system.

Modifications to this building would require replacement of most of the electrical systems. However, for any major renovation we would recommend replacing all of the electrical panels. A similar infrastructure system utilizing a field constructed wireway with not more than six (6) service entrance rated switches could be installed. A total capacity of approximately 1600A at 208V could be expected from the present utility infrastructure. New panels would be fed from the service disconnect switches at the wireway and then branch circuit wiring would run to the applicable load. A complete UL Master Labeled lightning protection system should be installed to reduce the risk of electrical shock and potential for igniting flammable liquids and vapors. New lighting systems could be installed to implement a more energy efficient solution. Providing fluorescent fixtures in the high bay areas would allow for a quicker start time with less lamp 'warm up'. Newer energy codes mandate that most areas of lighting require some means of automatic control that can range from a simple relay panel to occupancy sensors to automatically shut the lighting off when the room is not being used. The grounding system shall be investigated and upgraded as necessary. All panels and electrical system components should be uniquely labeled as outlined in NEC 408.4. Partner has included a cost allowance for this work to meet current code and to replace antiquated equipment in Table 1.

Blum noted several equipment areas that did not provide the minimum required working clearances as outlined in the National Electrical Code Article 110. Blum recommends providing tape marking on the floor to indicate this required working clearance. No

objects can be stored within this projected area. This can be completed as part of routine maintenance.

Additional details on the electrical system are included in the Blum Report included in the appendices.

## **5.5 CONVEYANCES**

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Mechanical conveyances are not present.

## **5.6 LIFE SAFETY SYSTEMS**

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The findings in this section were incorporated from the Rolf Jensen & Associates, Inc. report.

### **5.6.1 Fire Suppression Systems**

Fire sprinkler systems are not present in the hangars.

A paint spray booth in the East Hangar was provided with a special suppression / clean agent fire suppression system for that area only, and was last inspected in July 2001. Currently the West Hangar is provided with a single Class II standpipe connection with approximately 50 feet of hose.

Fire hydrants are located around the perimeter of the property.

Fire extinguishers are located sporadically throughout the floor area of the aircraft hangars.

### ***Survey Condition and Analysis***

Both aircraft hangars are required to be provided with fire suppression systems designed and installed to comply with NFPA 409 as required by Section 412.4.6 of the 2009 Addison Building Code (ABC). Based upon the type of construction and the floor area, the hangars would be considered Group II hangars in accordance with National Fire Protection Association (NFPA) 409. Partner recommends installation to meet current code. An opinion of cost is included in Table 1.

The hangar buildings are required to be provided with 2-hour fire-resistance rated exterior walls when such walls are less than 30 feet from lot lines or a public way. The distance between the East and West hangars appears to be less than 60 feet; which would require the two exterior walls facing one another to be 2-hour fire-resistance rated to comply with Section 412.4.1 of the 2009 ABC. Additionally, Section 412.4.4 requires the mechanical rooms with the heating equipment to be separated by 2-hour fire-resistance rated fire barriers and horizontal assemblies or both. Partner recommends upgrading these walls with a 2-hour fire resistance to meet current code. An opinion of cost is included in Table 1.

The West Hangar currently has a make-shift paint spray booth composed of metal tubing and plastic sheathing without proper exhaust / ventilation. This area will require fire suppression system(s), exhaust / ventilation for the painting operations and an approved enclosure. Partner has included a cost of this work early in Table 1.

Fire extinguishers should be added to comply with travel distance requirements of the 2009 AFC, NFPA 10 and NFPA 409. This can be completed with the cost of installing a fire suppression system.

Additional information on the fire alarm system can be found in the RJA report in the appendices.

### **5.6.2 Alarm Systems**

Neither of the aircraft hangars is provided with a fire alarm system. One manual pull station was observed in both hangars – however, no fire alarm control panel or transponder panel was observed. It is unclear if the manual pull stations report directly to the Addison Fire Department.

#### ***Survey Condition and Analysis***

Both of the aircraft hangars would be required to be provided with a fire alarm system to comply with the 2009 AFC. The fire alarm systems would provide electronic supervision of the required automatic sprinkler system, supervision of required smoke detectors (including duct detectors) and transmit signals to the supervising station / Addison Fire Department. The fire alarm systems should be provided with battery provided secondary power. Partner recommends installation of a fire alarm system to meet current code. An opinion of cost is included in Table 1.

Visual and audible notification is not currently provided in the aircraft hangars or jet-port office building, but is required to be provided in public areas and employee work areas to comply with the 2009 ABC and 2009 AFC. This can be addressed with the installation of the fire alarm system discussed above.

The exit signage in the hangars appears to be inadequate along the exit paths. The signs do not appear to be illuminated either externally or internally as required by the 2009 ABC. Upgrades to the exit signage and emergency lighting are required to meet current code. An opinion of cost is included in Table 1.

Additional information on the fire alarm system can be found in the RJA report in the appendices.

## **6.0 INTERIOR ELEMENTS**

### **6.1 COMMON AREAS**

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Common areas are not present. The tenant functions occupy all areas of the hangars.

### **6.2 TENANT AREAS**

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#### **6.2.1 Tenant Spaces**

Each building is currently occupied by a single tenant. Both tenants generally perform aircraft maintenance while the work performed by the tenant in 4730 could be more appropriately described as aircraft restoration.

#### **6.2.2 Tenant Area Finishes**

Each building is dominated by a large hanger bay at roughly the forward 80% of the buildings. Behind the structural shear wall and to the sides in the addition areas are offices, mechanical spaces, storage, painting booths and general spaces associated with the maintenance operations.

The hangar areas have painted concrete floors as to most of the support spaces. Walls are typically exposed structure or corrugated steel panels while ceilings are typically exposed structure.

Office areas have carpet and vinyl tile flooring with painted gypsum board or CMU walls. Ceilings are an amalgamation of several historical finishes consisting of original direct-applied acoustic tile with painted gypsum board or suspended acoustical panels installed underneath. Toilet rooms have vinyl tile flooring with painted CMU walls and ceilings similar to the office areas.

#### ***Survey Condition and Analysis***

Interior finishes are in average to poor condition. Non-office areas are generally worn in appearance, most notably the painted floors. To protect the concrete from chemicals and fluids used in the aircraft maintenance, repainting and sealing should be performed and the cost for this work is included in Table 1. Due to the industrial nature, the unfinished, exposed structure areas are not anticipated to require corrections. Painting could be performed to improve the overall appearance but this would be strictly a cosmetic enhancement.

However, the office-type areas are in poor condition. Vinyl tile is generally faded, chipped and with broken edges or displacement. Carpet is generally worn as well. A comprehensive flooring replacement program appears warranted consisting of replacing the tiles and carpet throughout. The estimated cost for this work is included in Table 1. During the term, carpet replacement should be expected with this cost reflected in Table 2. Walls have isolated areas of minor damage but generally are simply in need of paint. An allowance for painting is included in Table 1 and also in Table 2 for the expected cycle during the term. Ceilings are in poor condition. Extensive areas of water

damage, age-related damage and physical abuse are present throughout the office areas. In addition, the multi-layer ceiling system is not compliant with some model building codes as the layers provide plenums where smoke and fire can spread without being observed from within the occupied areas. As such, an allowance for completely removing the old ceiling systems is included in Table 1 as is an allowance for installing a new suspended system.

Partner conducted an Asbestos Survey of the hanger buildings. The survey identified asbestos containing floor tile and mastic, ceiling tile mastic, and presumed tar roofing materials to be asbestos containing material (ACM) in the East Hanger and presumed ceramic floor tile grout, textured gypsum board walls and ceiling tile to be ACM in the west Hanger. Prior to removal or renovation of these materials, Partner recommends abatement by a licensed contractor. An opinion of cost is included in Table 1.

A copy of the Asbestos Survey is included in the appendices.

## 7.0 AMERICANS WITH DISABILITIES ACT COMPLIANCE

As part of assessment, a limited, visual accessibility survey was performed which excluded taking of measurement or counts. The scope of the survey was to determine the existence of architectural barriers or physical attributes in regard to parking, routes of travel and general accessibility at doors and fixtures. Furthermore, the scope of this survey includes only the federal requirements of the ADA.

### *Survey Condition and Analysis*

Each building is generally tenant-occupied. Regardless, this arrangement does not indemnify property management from legal liabilities.

No parking spaces are marked but based on the estimated number of spaces possible within the parking area, two handicap parking spaces are warranted. One of the spaces needs to be designated as van accessible and the spaces should be located near the man-doors.

Doors generally have knob handles which are not compliant. Lever handles should be installed.

Lavatory faucets have knob handles which are not compliant. Lever faucet handles should be installed.

Lavatories have exposed plumbing piping which is not compliant. Protective boots should be installed.

A handicap-designated toilet stall with grab bars was not observed. One toilet in each room should be provided with grab bars.

Signage is non-existent at interior spaces.

The items above appear to be reasonably accommodated and costs for the corrections are included in Table 1.

Various other issues are present with regard to clear floor area at doors and fixtures. Verification of these issues goes beyond the scope of this report. Due to the age of the buildings, consideration might be afforded regarding the technical feasibility of making revisions. A representative of the Department of Justice should be consulted regarding the extent of corrections which need to be performed. Note that local authorities having jurisdiction can not provide relief from federal ADA requirements. However, they should be consulted to determine compliance with local and state regulations.

Note that in March 2012, federal accessibility standards were updated from the conventionally-recognized standards which have been in place since 1991.

## **8.0 NATURAL HAZARD INFORMATION**

Partner reviewed readily-available materials to obtain the following information. Determination of site-specific conditions is not within the scope of this report and may require additional investigation.

### **8.1 FLOOD**

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According to Flood Insurance Rate Map (FIRM) 48113C0180J published by the Federal Emergency Management Agency (FEMA) on August 23, 2001, the property is located in Zone X which is defined as areas outside the 100- and 500-year flood plains.

### **8.2 WIND**

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According to the Wind Zones of the United States map published by FEMA in 1998, the property is located in Wind Zone IV which has a Design Wind Speed of 250 mph. The property is not located in a Hurricane Susceptible Region or a Special Wind Region.

### **8.3 SEISMIC**

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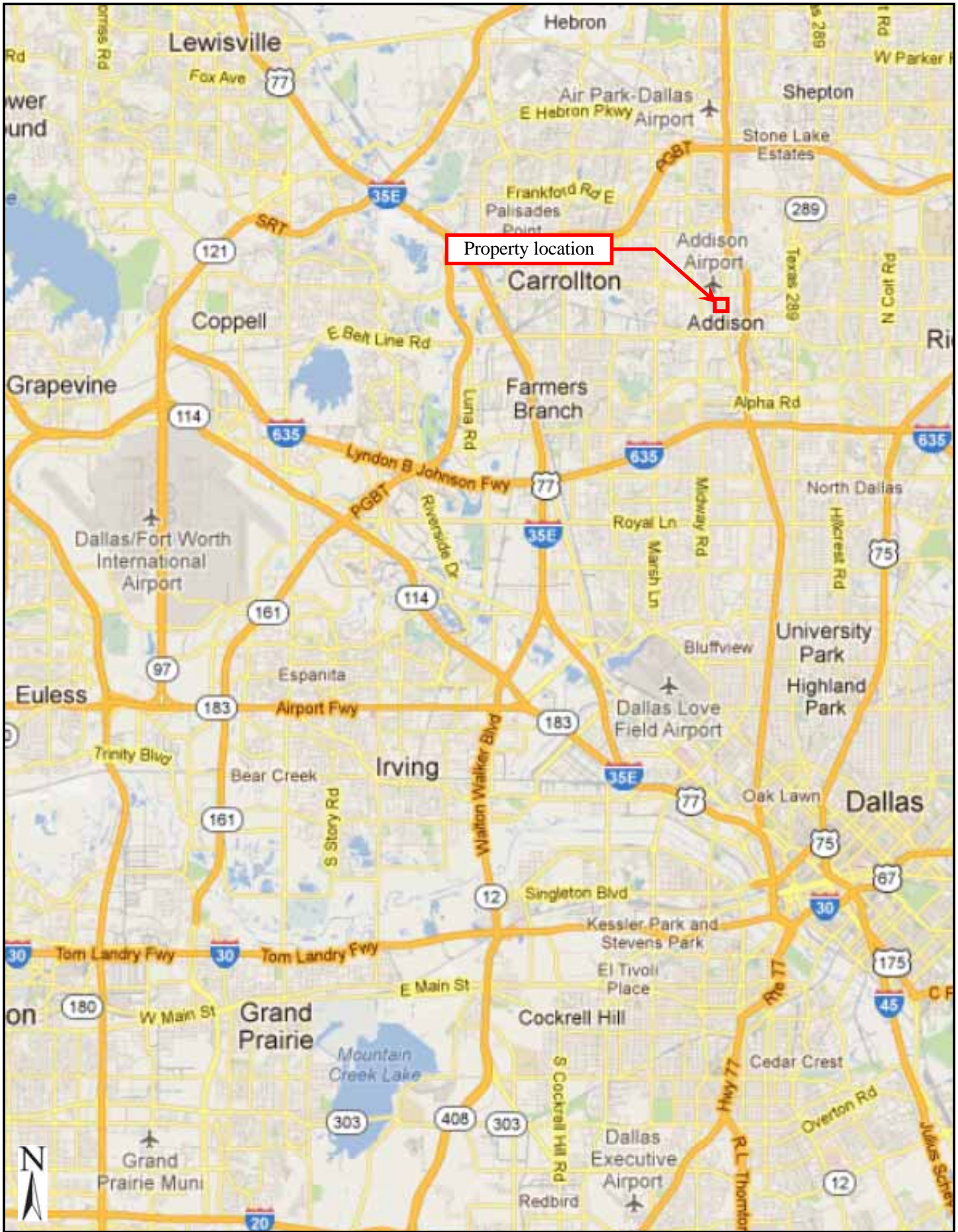
According to Table 16.2 of the 1997 Uniform Building Code, the property appears located in Seismic Zone 1 which is defined as areas having a low probability for damaging ground motion.

## **FIGURES**

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- 1- SITE LOCATION MAP**
- 2- SITE PLAN**
- 3- CORING LOCATION MAP**

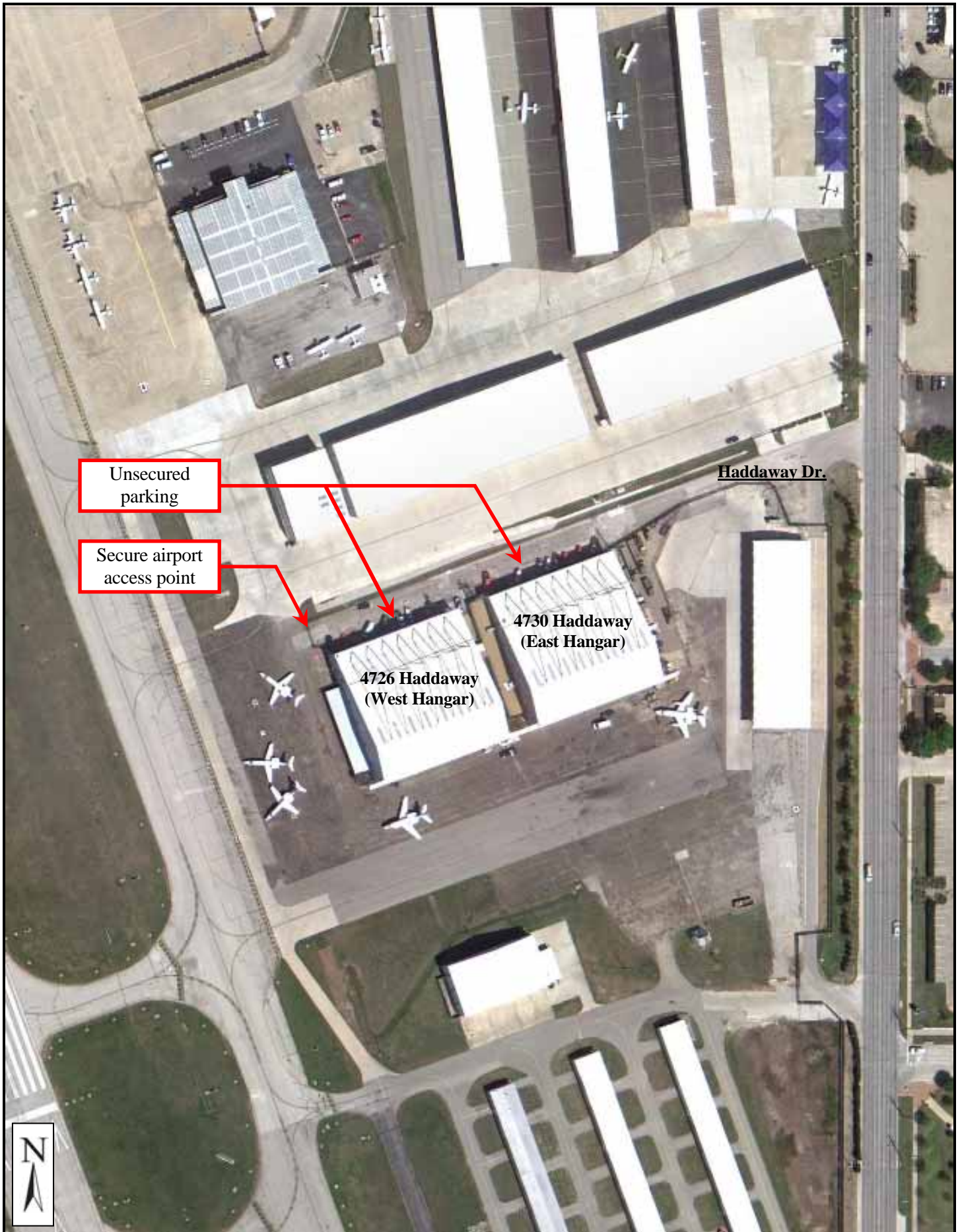




**FIGURE 1: SITE LOCATION MAP**  
Project No. 12-86801.1

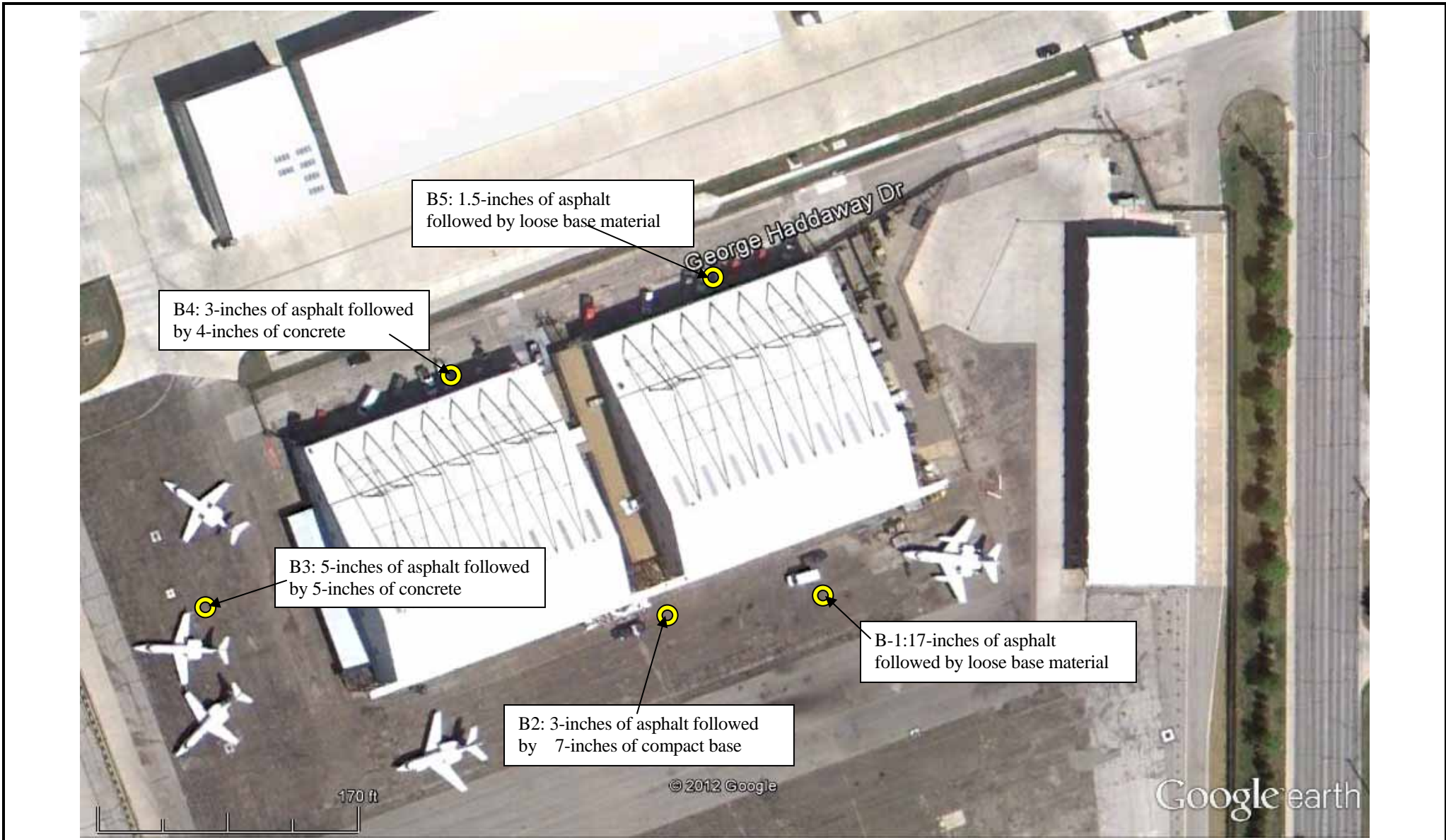
Drawing Not To Scale





**FIGURE 2: SITE PLAN**  
Project No. 12-86801.2

Drawing Not To Scale



**FIGURE 3: CORING LOCATION MAP**

Site Address:

Addison Airport – Hangars A1 & A1A  
 4726 & 4730 George Haddaway Drive  
 Addison, Texas 75001



○ Coring Locations

**PARTNER**  
 Engineering and Science, Inc.

www.PARTNEResi.com  
 (800) 419-4923

Project No. 12-86801.1

## **APPENDIX A: SITE PHOTOGRAPHS**

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1. Front, south elevation of 4726



2. Left side, west elevation of 4726



3. Rear, north elevation of 4726



4. Right side, east elevation of 4726



5. Front, south elevation of 4730



6. Left side, west elevation of 4730



7. Rear, north elevation of 4730



8. Right side, east elevation of 4730



9. North roof at 4726



10. North roof at 4726



11. South roof at 4726



12. North roof at 4730



13. North roof at 4730



14. South roof at 4730



15. Step transition at roofs



16. Edge condition at roofs



17. Structure penetration at roofs



18. Plumbing penetration at roofs



19. Skylight at 4726



20. Skylight replacement panel at 4730



21. Built-up roof west of 4730



22. Equipment flashing at built-up roof



23. Flashing at roof transition to wall panel



24. George Haddaway Drive north of buildings





25. Secured airport access gate



26. Tarmac paving south of buildings



27. Hangar structure



28. Hangar structure



29. Hangar door gantry framing



30. Mezzanine framing



31. Upper ceiling framing at mezzanine areas



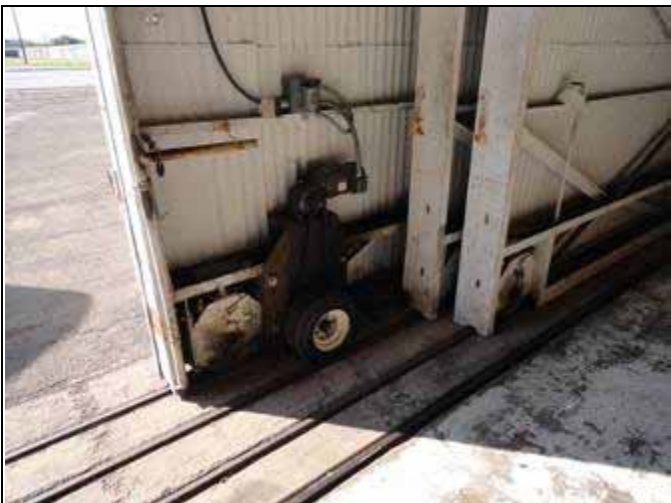
32. Interstitial space between occupied areas and exterior walls



33. Addition framing



34. Stairs



35. Hangar door operating equipment



36. Service door



37. Overhead door



38. Window



39. HVAC split system condenser



40. HVAC split system furnace



41. HVAC package unit



42. HVAC distribution ductwork



43. HVAC packaged through-wall unit



44. Domestic water heater



45. Main electrical distribution center



46. Hangar interior



47. Hangar interior



48. Hangar interior



49. Rear hangar interior



50. Office area interior



51. Office area interior



52. Mezzanine interior



53. Mezzanine interior



54. Toilet room



55. Toilet room



56. Minor slab displacement at east wall of 4730



57. Surface corrosion at exposed roof structure



58. Paving damage at George Haddaway Drive



59. Pavement damage at George Haddaway Drive



60. Pavement damage at south apron



61. Pavement damage at south apron



62. Steel plates set over pavement void at south apron



63. Roofing panel corrosion



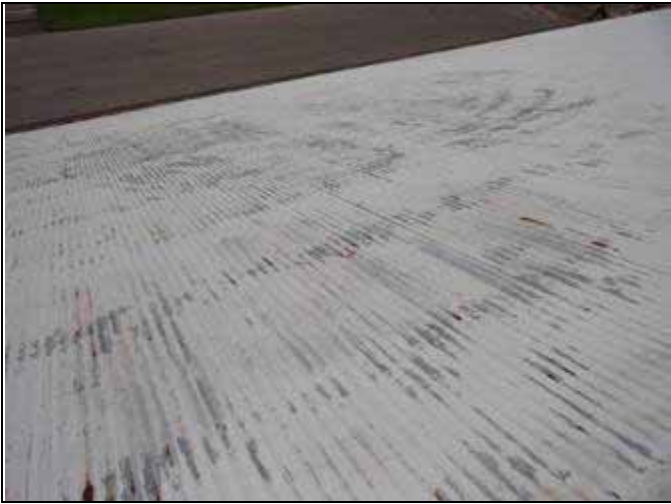
64. Roofing panel corrosion



65. Roofing panel corrosion



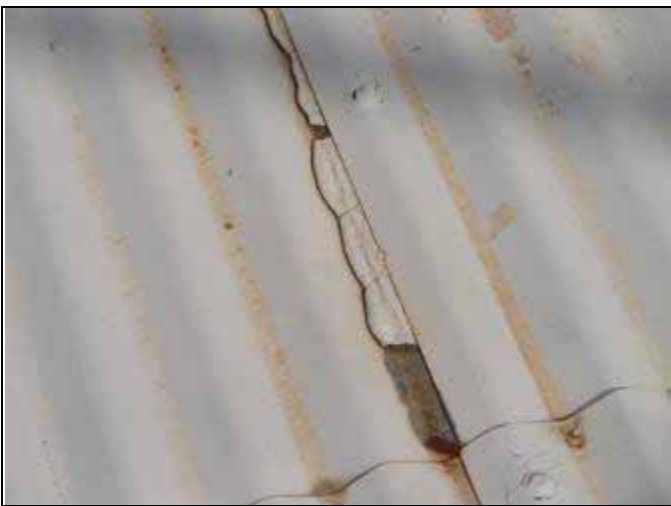
66. Roofing panel corrosion and deteriorated finish



67. Deteriorated finish on roofing panels



68. Repaired flashing at structural penetration



69. Deteriorated sealant and roofing panel joint



70. Deteriorate fabric of prior roofing repairs



71. Corroded roof gutter



72. Corroded roof gutter





73. Damaged roof downspout



74. Displaced built-up aggregate and cracking bitumen



75. Split bitumen at built-up roofing



76. Impact damaged wall panels



77. Impact damaged wall panels



78. Peeling paint on wall panels



79. Peeling paint on wall panels



80. Damaged CMU wall at addition



81. Peeling paint at addition



82. Exposed electrical panel wiring



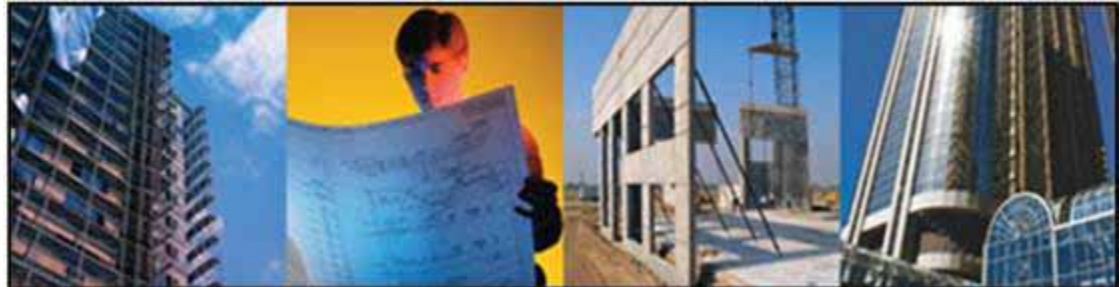
83. Damaged interior finishes



84. Damaged interior finishes

## **APPENDIX B: SUPPORTING DOCUMENTATION**

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## **ASBESTOS SURVEY REPORT**

**ADDISON AIRPORT-HANGER AI AND A1A**  
4726 & 4730 George Haddaway Drive  
Addison, Texas 75001

May 18, 2012  
Partner Project No. 12-86801.1  
Client Reference No. 86801



Prepared for

**SAMI MANAGEMENT, INC.**  
16051 Addison Road, Suite 220  
Addison, Texas 75001

May 18, 2012

Mr. Bill Dyer  
SAMI MANAGEMENT, INC.  
16051 Addison Road, Suite 220  
Addison, Texas 75001

Subject: Asbestos Survey Report  
4726 & 4730 George Haddaway Drive  
Addison, Texas 75001  
Partner Project No. 12-86801.1

Dear Mr. Dyer:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Asbestos Survey* of the abovementioned address (the “subject property”). This survey was performed in general conformance with the scope and limitations as detailed in our fee proposal.

This survey included a site reconnaissance, suspect material sampling, and laboratory analysis. An assessment was conducted, conclusions were prepared, and recommendations were provided, as necessary.

We appreciate the opportunity to provide environmental services to SAMI Management. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at 214.666.6800.

Sincerely,

**DRAFT**

Summer Gell  
Relationship Manager

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## APPENDICES

- Appendix A Laboratory Analysis and Chain of Custody
- Appendix B Sample Location Diagrams
- Appendix C Certifications
- Appendix D Photographic Documentation

## 1.0 INTRODUCTION

### 1.1 PROPERTY DESCRIPTION

---

<b>Address:</b>	4726 & 4730 George Haddaway Drive, Addison, TX
<b>Nature of Use:</b>	Commercial
<b>Number of Buildings:</b>	Two
<b>Number of Floors:</b>	Two
<b>Building Square Footage (SF):</b>	25,600 SF and 25,600 SF
<b>Surveyed By:</b>	Charles R. Baugh, Inspector
<b>Assessment Date/Time:</b>	March 28 and 29, 2012

### 1.2 PURPOSE AND SCOPE

---

The purpose of this asbestos survey (survey) was to sample and analyze suspect asbestos-containing materials (ACM), specifically those building materials which may present an asbestos risk during potential demolition activities. The suspect materials sampled during the survey were limited to accessible areas within the interior and exterior of this building.

### 1.3 METHODOLOGY

---

#### ASBESTOS

Selected materials were sampled according to the guidelines set forth in 40 CFR Part 763, and later analyzed using the Polarized Light Microscopy (PLM) method in accordance with the EPA reference method 600/R-93/116 for Determination of Asbestos in Bulk Building Materials.

The United States Environmental Protection Agency (USEPA) as set forth in 40 CFR 763, defines a homogeneous area as “an area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture.” The regulation requires that a minimum number of representative samples be collected from each homogeneous area. If asbestos is identified in any samples from a homogeneous area, the entire homogeneous area is considered to contain asbestos.

The aforementioned testing and analytical constraints can affect the findings and recommendations of this survey. Specifically, no assurance is given regarding the asbestos content of the samples beyond these parameters. Further investigation is not recommended unless the client can determine it is cost-effective.

The asbestos-containing materials most likely to release asbestos fibers are those which are in a friable state. Friability describes the condition of asbestos. The definition of friable is any material, when dry, that is capable of being crumbled, pulverized or reduced to powder by hand pressure (40 CFR 763).

Non-friable sources of asbestos are materials containing cement or asphaltic binder which may become friable and release fibers if the sources are exposed to actions such as abrasion, drilling, cutting, fracturing or hammering. Non-friable sources of asbestos do not typically pose a significant exposure risk if they remain in good condition and are not disturbed. During renovation or demolition activities, non-friable sources may become friable and thus may pose an exposure risk.

The PLM method is the most commonly used method to analyze building materials for the presence of asbestos. This method utilizes the optical properties of minerals to identify the selected constituent. The use of this method enables identification of the type and the percentage of asbestos in a given sample. The detection limit of the PLM method for asbestos identification is about one percent (1%) asbestos.

The Texas Asbestos Health Protection Rules regulations define asbestos-containing material (ACM) as any material which contains greater than one percent (1%) asbestos. Further quantification is possible utilizing either Transmission Electron Microscopy (TEM) analysis or point counting via PLM.

## **2.0 ASBESTOS SURVEY**

### **2.1 VISUAL INSPECTION**

---

Suspect ACM observed at the time of the inspection were sampled and analyzed for asbestos content. The survey also established whether any of the substrates sampled could be considered friable and significantly damaged or capable of immediate worker exposure. The materials of concern were the interior and exterior building components.

Partner did not attempt to disassemble mechanical equipment, open pipe chases, or assess materials within wall cavities. Regardless of the thoroughness of a survey, the possibility exists that some areas containing ACM were not identified, inaccessible, or different from those materials at specific locations.

### **2.2 ANALYTICAL RESULTS**

---

#### **ASBESTOS**

A total of 91 bulk samples of suspect asbestos containing materials were collected for analysis. The samples were analyzed by PLM at EMSL Analytical, which is accredited by the American Industrial Hygiene Association (AIHA) and the National Volunteer Laboratory Accreditation Program (NVLAP). They are located in Houston, Texas. The analytical results are listed in the following table. The laboratory results and chain of custody are contained in Appendix A. Sample locations are depicted on the diagram contained in Appendix B.



Analytical Results

**East Hanger**

Sample No.	Location	Description	Asbestos Content
AEC-1	NE Office Area	12"X12" Grey Floor Tile and Mastic	4% Chrysotile (mastic)
AEC-2	NE Office Area	12"X12" Grey Floor Tile and Mastic	4% Chrysotile (mastic)
AEC-3	NE Office Area	12"X12" Grey Floor Tile and Mastic	4% Chrysotile (mastic)
AEC-4	NE Office Area	12"x12" Tan Mottled Floor Tile & Mastic	5% Chrysotile (mastic)
AEC-5	NE Office Area	12"x12" Tan Mottled Floor Tile & Mastic	5% Chrysotile (mastic)
AEC-6	NE Office Area	12"x12" Tan Mottled Floor Tile & Mastic	5% Chrysotile (mastic)
AEC-7	NE Office Area	Black Cove Base and Mastic	None Detected
AEC-8	NE Office Area	Black Cove Base and Mastic	None Detected
AEC-9	NE Office Area	Black Cove Base and Mastic	None Detected
AEC-10	NE Office Area	Grey Cove Base and Mastic	None Detected
AEC-11	NE Office Area	Grey Cove Base and Mastic	None Detected
AEC-12	NE Office Area	Grey Cove Base and Mastic	None Detected
AEC-13	NE Office Area	Plaster Wall	None Detected
AEC-14	NE Office Area	Plaster Wall	None Detected
AEC-15	NE Office Area	Plaster Wall	None Detected
AEC-16	NE Office Area	Plaster Wall	None Detected
AEC-17	NE Office Area	Plaster Wall	None Detected
AEC-18	NE Office Area	Plaster Wall	None Detected
AEC-19	NE Office Area	Plaster Wall	None Detected
AEC-20	NE Office Area	Hadide Block Wall and Grout	None Detected
AEC-21	NE Office Area	Hadide Block Wall and Grout	None Detected
AEC-22	NE Office Area	Hadide Block Wall and Grout	None Detected

Sample No.	Location	Description	Asbestos Content
AEC-23	NE Office Area	2'x4' Lay-in Ceiling Tile	None Detected
AEC-24	NE Office Area	2'x4' Lay-in Ceiling Tile	None Detected
AEC-25	NE Office Area	2'x4' Lay-in Ceiling Tile	None Detected
AEC-26	NE Office Area	12"x12" Glue-on Ceiling Tile(squiggle line pattern)	None Detected
AEC-27	NE Office Area	12"x12" Glue-on Ceiling Tile (squiggle line pattern)	None Detected
AEC-28	NE Office Area	12"x12" Glue-on Ceiling Tile(squiggle line pattern)	None Detected
AEC-29	NE Office Area	Sand Textured Gyp-board Wall	0.25% Joint 0.50% Texture
AEC-30	NE Office Area	Sand Textured Gyp-board Wall	<0.25% Joint 0.25% Texture
AEC-31	NE Office Area	Sand Textured Gyp-board Wall	0.50% Joint 0.25% Texture
AEC-32	NE Office Area	Sand Textured Gyp-board Wall	ND Joint <0.25% Texture
AEC-33	NE Office Area	Sand Textured Gyp-board Wall	0.50% Joint <0.25% Texture
AEC-34	NE Office Area	Sand Textured Gyp-board Wall	0.50% Joint 0.25% Texture
AEC-35	NE Office Area	Sand Textured Gyp-board Wall	ND Joint <0.25% Texture
AEC-36	Exterior Walls	Window Pane Putty	None Detected
AEC-37	Exterior Walls	Window Pane Putty	<0.25%
AEC-38	Exterior Walls	Window Pane Putty	None Detected
<b>AEC-39</b>	<b>NE Office Area (2<sup>nd</sup> Floor)</b>	<b>9"x9" Floor Tile and Mastic</b>	<b>7% Chrysotile (tile)</b>
<b>AEC-40</b>	<b>NE Office Area (2<sup>nd</sup> Floor)</b>	<b>9"x9" Floor Tile and Mastic</b>	<b>7% Chrysotile (tile)</b>
<b>AEC-41</b>	<b>NE Office Area (2<sup>nd</sup> Floor)</b>	<b>9"x9" Floor Tile and Mastic</b>	<b>7% Chrysotile (tile)</b>
AEC-42	NE Office Area (2 <sup>nd</sup> Floor)	Ceiling Insulation Batting	None Detected
AEC-43	NE Office Area (2 <sup>nd</sup> Floor)	Ceiling Insulation Batting	None Detected
AEC-44	NE Office Area (2 <sup>nd</sup> Floor)	Ceiling Insulation Batting	None Detected
AEC-46	NE Office Area (1 <sup>st</sup> Floor )	12"x12" Dk Grey Floor Tile & Mastic	None Detected

Sample No.	Location	Description	Asbestos Content
AEC-47	NE Office Area (1 <sup>st</sup> Floor )	12"x12" Dk Grey Floor Tile & Mastic	6% Chrysotile (mastic)
AEC-48	NE Office Area (1 <sup>st</sup> Floor )	12"x12" Dk Grey Floor Tile & Mastic	None Detected
AEC-49	NE Office Area	12"x12" Glue-on Ceiling Tile (Random Dot Pattern)	2% Chrysotile (mastic)
AEC-50	NE Office Area	12"x12" Glue-on Ceiling Tile (Random Dot Pattern)	2% Chrysotile (mastic)
AEC-51	NE Office Area	12"x12" Glue-on Ceiling Tile (Random Dot Pattern)	None Detected
AEC-52	NE Office Area (2 <sup>nd</sup> Floor)	12"x12" Cream Mottled Floor Tile and Mastic Under Carpet	None Detected*
AEC-53	NE Office Area (2 <sup>nd</sup> Floor)	12"x12" Cream Mottled Floor Tile and Mastic Under Carpet	None Detected*
AEC-54	NE Office Area (2 <sup>nd</sup> Floor)	12"x12" Cream Mottled Floor Tile and Mastic Under Carpet	None Detected
AEC-55	West Office/ Storage Area	9"x9" White Floor Tile and Mastic	5% Chrysotile
AEC-56	West Office/ Storage Area	9"x9" White Floor Tile and Mastic	5% Chrysotile
AEC-57	West Office/ Storage Area	9"x9" White Floor Tile and Mastic	5% Chrysotile
AEC-58	West Office/ Storage Area	Textured Gyp-board Wall	None Detected
AEC-59	West Office/ Storage Area	Textured Gyp-board Wall	None Detected
AEC-60	West Office/ Storage Area	Textured Gyp-board Wall	None Detected
AEC-61	South Hanger Doors	Hanger Door Gasket	None Detected
AEC-62	South Hanger Doors	Hanger Door Gasket	None Detected
AEC-63	South Hanger Doors	Hanger Door Gasket	None Detected
N/A	Roof Above West Side Office	Roofing Tar	Assumed

\* Two entries for samples AEC 52 and 53 are listed in the laboratory report. The first set is listed as "none detected" for asbestos. The second set indicates the presence of asbestos but is also annotated as "extra sample not listed on COC" and represent erroneous entries.

## West Hanger

Sample No.	Location	Description	Asbestos Content
AWC-1	NW Office Area	12"x12" White Floor Tile & Mastic	None Detected
AWC-2	NW Office Area	12"x12" White Floor Tile & Mastic	None Detected
AWC-3	NW Office Area	12"x12" White Floor Tile & Mastic	None Detected
AWC-4	NW Office Area	2'x4" Lay-in Ceiling Tile	None Detected
AWC-5	NW Office Area	2'x4" Lay-in Ceiling Tile	None Detected
AWC-6	NW Office Area	2'x4" Lay-in Ceiling Tile	None Detected
AWC-7	NW Office Area	Smooth Textured Gyp-board Walls	0.50% Joint 0.25% Texture
AWC-8	NW Office Area	Smooth Textured Gyp-board Walls	0.50% Joint <0.25% Texture
AWC-9	NW Office Area	Smooth Textured Gyp-board Walls	None Detected
AWC-10	NW Office Area	Smooth Textured Gyp-board Walls	None Detected
AWC-11	NW Office Area	Smooth Textured Gyp-board Walls	None Detected
AWC-12	Exterior Walls	Window Putty	None Detected
AWC-13	Exterior Walls	Window Putty	None Detected
AWC-14	Exterior Walls	Window Putty	None Detected
AWC-15	NE Storage Area	Painted Hadide Block and Grout	None Detected
AWC-16	NE Storage Area	Painted Hadide Block and Grout	None Detected
AWC-17	NE Storage Area	Painted Hadide Block and Grout	None Detected
AWC-18	North Wall	"Old" Textured Gyp-board Walls	0.25% Joint 0.75% Texture
AWC-19	North Wall	"Old" Textured Gyp-board Walls	0.25% Joint 0.50% Texture
AWC-20	North Wall	"Old" Textured Gyp-board Walls	ND Joint 0.25% Texture
AWC-21	North Wall	"Old" Textured Gyp-board Walls	None Detected
AWC-22	North Wall	"Old" Textured Gyp-board Walls	0.75% Joint <0.25% Texture
AWC-23	South Hanger	Hanger Door Gaskets	None Detected

Sample No.	Location	Description	Asbestos Content
	Doors		
AWC-24	South Hanger Doors	Hanger Door Gaskets	None Detected
AWC-25	South Hanger Doors	Hanger Door Gaskets	None Detected
AWC-26	NW Office Area	Brown Cove Base and Mastic	None Detected
AWC-27	NW Office Area	Brown Cove Base and Mastic	None Detected
AWC-28	NW Office Area	Brown Cove Base and Mastic	None Detected
N/A	Hallway in NE Office area.	Ceramic floor tile and grout	Assumed
N/A	Front Reception and Adjoining Areas	1'x1' Ceiling Tile	Assumed
N/A	Front Reception and Adjoining Areas	Splatter Textured Gyp-board walls	Assumed

Asbestos-containing material is defined as any material containing more than one percent (1%) asbestos as determined using PLM (40 CFR 61).

In Texas, asbestos-containing material (ACM) is defined by TDSHS as any material containing more than 1% (one percent) of asbestos by weight (CCR Title 8, Section 1529).

Documentation of the laboratory results should be retained as a reference for future renovation/demolition activities.

### 3.0 CONCLUSION

The following ACM were confirmed in the East Hanger:

- Floor Tile (12"x 12" and 9"x 9") and mastic throughout the 1<sup>st</sup> and 2<sup>nd</sup> floor of the northeast office area, approximately 4,500 square feet.
- Mastic for 1'x 1' ceiling tile in portions of the 1<sup>st</sup> and 2<sup>nd</sup> floor of the northeast office area, approximately 2,700 square feet.
- Floor tile and mastic in the west office area, approximately 1,500 square feet.
- Tar roofing above the west office area was not sampled and is therefore assumed to be ACM. Estimated quantity is 1,500 square feet. Further testing could be utilized to confirm the asbestos content.

The following ACM were confirmed in the West Hanger:

- Ceramic floor tile and grout were not sampled and are assumed to be ACM. Estimated quantity is 220 square feet. Further testing could be utilized to confirm the asbestos content.
- Splatter textured gyp-board walls in the front reception area and adjoining offices were not sampled and assumed to be ACM. Estimated quantity is 4,000 square feet. Further testing could be utilized to confirm the asbestos content.
- Ceiling tile (1'x 1') in the front reception area and adjoining offices were not sampled as assumed to be ACM. Estimated quantity is 800 square feet. Further testing could be utilized to confirm the asbestos content.

Partner understands that the buildings will be demolished. The roofs appeared to be in good overall condition, and were not sampled but assumed ACM. The approximate quantities of ACM indicated in this report should be field-verified by an asbestos abatement contractor before presenting a bid for removal of ACM.

The EPA recommends that all ACM be removed by a certified asbestos abatement contractor prior to any renovation or demolition activities that may impact the material. In the absence of planned renovation/demolition activities, the EPA recommends that ACM be managed in-place whenever asbestos is identified in a building. Any damaged asbestos materials should be removed, repaired, encapsulated, or enclosed. Asbestos materials that are not damaged may be managed in place in accordance with a written Operations and Maintenance Program.

Federal, state and local laws require building owners and/or their representatives, prior to any demolition and/or renovation operations which may disturb any asbestos-containing materials in their buildings, meet the following requirements:

- Notifications,
- Removal techniques (such as wetting) for asbestos-containing materials,
- Clean-up procedures,
- Waste storage and disposal requirements.

## 4.0 LIMITATIONS

Partner subcontracted with EMSL to perform the asbestos analysis. No warranties expressed or implied, are made by Partner or its subcontractor EMSL, or their employees as to the use of any information, apparatus, product or process disclosed in this report. Every reasonable effort has been made to assure correctness. If an Asbestos Abatement Contractor or other Demolition/Construction Contractor is employed, such contractor should bring any discrepancies found in this report as it relates to current site conditions or newly discovered site conditions to the immediate attention of Partner. This report should not be used solely for asbestos abatement bidding purposes. The quantities of ACM listed are estimates only and not meant to be used to solicit abatement quotations. These quantities should be confirmed by abatement contractors prior to submitting bids for abatement.

State-of-the-art practices have been employed to perform this asbestos survey. No product research was performed in attempts to reveal material compositions. Additional sampling may be required if demolition/renovation activities reveal any materials not previously tested. The services consist of professional opinions and recommendations made in accordance with generally accepted engineering principles/practices. These services are designed to provide an analytical tool to assist the client. Partner and its subcontractor EMSL and their employees/representatives bear no responsibility for the actual condition of the structure or safety of this site pertaining to asbestos and/or asbestos contamination regardless of the actions taken by the survey team or the client.



## 5.0 SIGNATURES OF PROFESSIONALS

Partner has performed an asbestos survey on the property at 4726 & 4730 George Haddaway Drive, Addison, Dallas County, Texas in general conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

Prepared By:

**Partner Engineering and Science, Inc.**

**DRAFT**

Charles R. Baugh, PG  
TDSHS AIC # 105121  
Inspector

**DRAFT**

Kevin Roberts, CAC  
Senior Author

**APPENDIX A**

**LABORATORY ANALYSIS & CHAIN OF CUSTODY**



# EMSL Analytical, Inc.

8700 Jameel Road, Suite 190, Houston, TX 77040

Phone/Fax: (713) 686-3635 / (713) 686-3645

<http://www.emsl.com>

[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201643

CustomerID: 32PRTN78

CustomerPO:

ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:30 AM  
Analysis Date: 4/5/2012  
Collected:

Project: 12-86801.1-West Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-1-Floor Tile 151201643-0001		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-1-Mastic 151201643-0001A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-2-Floor Tile 151201643-0002		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-2-Mastic 151201643-0002A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-3-Floor Tile 151201643-0003		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-3-Mastic 151201643-0003A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-4 151201643-0004		White/Beige Fibrous Homogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (other)	None Detected
AWC-5 151201643-0005		White/Beige Fibrous Homogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (other)	None Detected

Analyst(s)

Jenny Drapela (38)

Jason Mote (14)

Michelle Leggett, Laboratory Manager  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. None Detected = <1%  
Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/05/2012 16:57:06



# EMSL Analytical, Inc.

8700 Jameel Road, Suite 190, Houston, TX 77040

Phone/Fax: (713) 686-3635 / (713) 686-3645

<http://www.emsl.com>

[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201643

CustomerID: 32PRTN78

CustomerPO:

ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:30 AM  
Analysis Date: 4/5/2012  
Collected:

Project: 12-86801.1-West Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-6 151201643-0006		White/Beige Fibrous Homogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (other)	None Detected
AWC-7-Drywall 151201643-0007		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-7-Joint Compound 151201643-0007A		Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AWC-7-Texture 151201643-0007B		White/Beige Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AWC-8-Drywall 151201643-0008		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-8-Joint Compound 151201643-0008A		Gray/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AWC-8-Texture 151201643-0008B		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					

Analyst(s)

Jenny Drapela (38)

Jason Mote (14)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/05/2012 16:57:06



# EMSL Analytical, Inc.

8700 Jameel Road, Suite 190, Houston, TX 77040

Phone/Fax: (713) 686-3635 / (713) 686-3645

<http://www.emsl.com>

[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201643

CustomerID: 32PRTN78

CustomerPO:

ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:30 AM  
Analysis Date: 4/5/2012  
Collected:

Project: 12-86801.1-West Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-9-Drywall 151201643-0009		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-9-Joint Compound 151201643-0009A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-9-Texture 151201643-0009B		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AWC-10-Drywall 151201643-0010		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-10-Joint Compound 151201643-0010A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-10-Texture 151201643-0010B		Tan/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AWC-11-Drywall 151201643-0011		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected

Analyst(s)

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Jason Mote (14)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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Project: 12-86801.1-West Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-11-Joint Compound 151201643-0011A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-11-Texture 151201643-0011B		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AWC-12 151201643-0012		Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-13 151201643-0013		Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-14 151201643-0014		Silver/Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-15 151201643-0015		Tan/White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AWC-16 151201643-0016		Tan/White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AWC-17 151201643-0017		Tan/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-18-Drywall 151201643-0018		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-18-Joint Compound 151201643-0018A		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AWC-18-Texture 151201643-0018B		White/Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AWC-19-Drywall 151201643-0019		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-19-Joint Compound 151201643-0019A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AWC-19-Texture 151201643-0019B		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AWC-20-Drywall 151201643-0020		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected

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Project: 12-86801.1-West Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-20-Texture 151201643-0020A		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AWC-21-Drywall 151201643-0021		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-21-Texture 151201643-0021A		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AWC-22-Drywall 151201643-0022		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AWC-22-Joint Compound 151201643-0022A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AWC-22-Texture 151201643-0022B		Gray/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AWC-23 151201643-0023		Gray/White Fibrous Homogeneous	20% Synthetic	80% Non-fibrous (other)	None Detected

Analyst(s)

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or other approved signatory

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**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:30 AM  
Analysis Date: 4/5/2012  
Collected:

Project: 12-86801.1-West Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AWC-24 151201643-0024		Gray/White Fibrous Homogeneous	20% Synthetic	80% Non-fibrous (other)	None Detected
AWC-25 151201643-0025		Gray/White Fibrous Homogeneous	20% Synthetic	80% Non-fibrous (other)	None Detected
AWC-26-Cove Base 151201643-0026		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-26-Mastic 151201643-0026A		Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-27-Cove Base 151201643-0027		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-27-Mastic 151201643-0027A		Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-28-Cove Base 151201643-0028		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AWC-28-Mastic 151201643-0028A		Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

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Jason Mote (14)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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<http://www.emsl.com>

[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201645

CustomerID: 32PRTN78

CustomerPO:

ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:32 AM  
Analysis Date: 4/6/2012  
Collected:

Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-1-Floor Tile 151201645-0001		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-1-Mastic 151201645-0001A		Black/Yellow Non-Fibrous Homogeneous		96% Non-fibrous (other)	4% Chrysotile
AEC-2-Floor Tile 151201645-0002		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-2-Mastic 151201645-0002A		Black Non-Fibrous Homogeneous		96% Non-fibrous (other)	4% Chrysotile
AEC-3-Floor Tile 151201645-0003		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-3-Mastic 151201645-0003A		Black/Yellow Non-Fibrous Heterogeneous		96% Non-fibrous (other)	4% Chrysotile
AEC-4-Floor Tile 151201645-0004		Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-4-Mastic 151201645-0004A		Black/Yellow Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile

Analyst(s)

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Jason Mote (40)

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Initial report from 04/06/2012 12:12:50



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Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-5-Floor Tile 151201645-0005		Green Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-5-Mastic 151201645-0005A		Black/Yellow Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-6-Floor Tile 151201645-0006		Tan Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-6-Mastic 151201645-0006A		Black/Yellow Non-Fibrous Heterogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-7-Cove Base 151201645-0007		Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-7-Mastic 151201645-0007A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-8-Cove Base 151201645-0008		Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-8-Mastic 151201645-0008A		Brown/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-9-Cove Base 151201645-0009		Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-9-Mastic 151201645-0009A		Brown/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-10-Cove Base 151201645-0010		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-10-Mastic 151201645-0010A		Brown/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-11-Cove Base 151201645-0011		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-11-Mastic 151201645-0011A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-12-Cove Base 151201645-0012		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-12-Mastic 151201645-0012A		Brown/Yellow Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

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**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:32 AM  
Analysis Date: 4/6/2012  
Collected:

Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-13 151201645-0013		White/Green/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-14 151201645-0014		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-15 151201645-0015		White/Green/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-16 151201645-0016		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-17 151201645-0017		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-18 151201645-0018		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-19 151201645-0019		White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-20-Block Wall 151201645-0020		Tan/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

Jenny Drapela (84)

Jason Mote (40)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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Initial report from 04/06/2012 12:12:50

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Phone/Fax: (713) 686-3635 / (713) 686-3645

<http://www.emsl.com>[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201645

CustomerID: 32PRTN78

CustomerPO:

ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
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**Suite 200**  
**Torrance, CA 90501**

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### Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-20-Grout 151201645-0020A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-21 151201645-0021		Tan/White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Layers inseparable					
AEC-22-Block Wall 151201645-0022		Gray/White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-22-Grout 151201645-0022A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-23 151201645-0023		White/Beige Fibrous Homogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (other)	None Detected
AEC-24 151201645-0024		White/Beige Fibrous Homogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (other)	None Detected
AEC-25 151201645-0025		White/Beige Fibrous Homogeneous	40% Cellulose 20% Min. Wool	40% Non-fibrous (other)	None Detected
AEC-26-Ceiling Tile 151201645-0026		Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected

Analyst(s)

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Jason Mote (40)

Michelle Leggett, Laboratory Manager  
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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-26-Mastic 151201645-0026A		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-27-Ceiling Tile 151201645-0027		Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
AEC-27-Mastic 151201645-0027A		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-28-Ceiling Tile 151201645-0028		Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
AEC-28-Mastic 151201645-0028A		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-29-Drywall 151201645-0029		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-29-Joint Compound 151201645-0029A		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AEC-29-Texture 151201645-0029B		White/Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile

Inseparable paint / coating layer included in analysis

Analyst(s)

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Jason Mote (40)

Michelle Leggett, Laboratory Manager  
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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-30-Drywall <i>151201645-0030</i>		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-30-Joint Compound <i>151201645-0030A</i>		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AEC-30-Texture <i>151201645-0030B</i>		White/Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AEC-31-Joint Compound <i>151201645-0031</i>		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AEC-31-Texture <i>151201645-0031A</i>		White/Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AEC-32-Drywall <i>151201645-0032</i>		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-32-Texture <i>151201645-0032A</i>		White/Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					

Analyst(s)

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*Jason Mote (40)*

Michelle Leggett, Laboratory Manager  
or other approved signatory

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[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

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Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-33-Drywall 151201645-0033		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-33-Joint Compound 151201645-0033A		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AEC-33-Texture 151201645-0033B		Tan/White/Beige Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AEC-34-Drywall 151201645-0034		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-34-Joint Compound 151201645-0034A		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AEC-34-Texture 151201645-0034B		White/Cream Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AEC-35-Drywall 151201645-0035		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected

Analyst(s)

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Jason Mote (40)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-35-Joint Compound 151201645-0035A		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
AEC-35-Texture 151201645-0035B		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	<1% Chrysotile
Inseparable paint / coating layer included in analysis					
AEC-36 151201645-0036		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-37 151201645-0037		White/Beige Non-Fibrous Homogeneous		100% Non-fibrous (other)	<1% Chrysotile
AEC-38 151201645-0038		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-39-Floor Tile 151201645-0039		Tan Non-Fibrous Homogeneous		93% Non-fibrous (other)	7% Chrysotile
AEC-39-Mastic 151201645-0039A		Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-39-Mastic 151201645-0039B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Analyst(s) \_\_\_\_\_

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-40-Floor Tile 151201645-0040		Tan Non-Fibrous Homogeneous		93% Non-fibrous (other)	7% Chrysotile
AEC-40-Mastic 151201645-0040A		Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-40-Mastic 151201645-0040B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-41-Floor Tile 151201645-0041		Tan Non-Fibrous Homogeneous		94% Non-fibrous (other)	6% Chrysotile
AEC-41-Mastic 151201645-0041A		Black Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-41-Mastic 151201645-0041B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-42-Wrap 151201645-0042		Brown/Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (other)	None Detected
AEC-42-Insulation 151201645-0042A		Brown Fibrous Homogeneous	70% Min. Wool	30% Non-fibrous (other)	None Detected

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Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-43-Insulation 151201645-0043		Brown Fibrous Homogeneous	70% Min. Wool	30% Non-fibrous (other)	None Detected
AEC-43-Other 151201645-0043A		White Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-44-Wrap 151201645-0044		Brown/Black Fibrous Homogeneous	60% Cellulose	40% Non-fibrous (other)	None Detected
AEC-44-Insulation 151201645-0044A		Brown Fibrous Homogeneous	80% Min. Wool	20% Non-fibrous (other)	None Detected
AEC-46-Floor Tile 151201645-0045		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-46-Mastic 151201645-0045A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-47-Floor Tile 151201645-0046		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-47-Mastic 151201645-0046A		Black/Yellow Non-Fibrous Heterogeneous		94% Non-fibrous (other)	6% Chrysotile

Analyst(s)

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			% Fibrous	% Non-Fibrous	% Type
AEC-48-Floor Tile 151201645-0047		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-48-Mastic 151201645-0047A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-49-Ceiling Tile 151201645-0048		Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
AEC-49-Mastic 151201645-0048A		Brown Non-Fibrous Homogeneous		98% Non-fibrous (other)	2% Chrysotile
AEC-50-Ceiling Tile 151201645-0049		Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
AEC-50-Mastic 151201645-0049A		Brown Non-Fibrous Homogeneous		98% Non-fibrous (other)	2% Chrysotile
AEC-51-Ceiling Tile 151201645-0050		Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (other)	None Detected
AEC-51-Mastic 151201645-0050A		Brown Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

Jenny Drapela (84)

Jason Mote (40)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/06/2012 12:12:50



# EMSL Analytical, Inc.

8700 Jameel Road, Suite 190, Houston, TX 77040

Phone/Fax: (713) 686-3635 / (713) 686-3645

<http://www.emsl.com>

[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201645

CustomerID: 32PRTN78

CustomerPO:

ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:32 AM  
Analysis Date: 4/6/2012  
Collected:

Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-52-Floor Tile 151201645-0051		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-52-Mastic 151201645-0051A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-52-Mastic 151201645-0051B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-53-Floor Tile 151201645-0052		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-53-Mastic 151201645-0052A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-53-Mastic 151201645-0052B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-54-Floor Tile 151201645-0053		Cream Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-54-Mastic 151201645-0053A		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

Jenny Drapela (84)

Jason Mote (40)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/06/2012 12:12:50

**EMSL Analytical, Inc.**

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<http://www.emsl.com>[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201645

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Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
 Fax:  
 Received: 03/30/12 9:32 AM  
 Analysis Date: 4/6/2012  
 Collected:

Project: 12-86801.1-East Hanger

### Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-54-Mastic 151201645-0053B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-55-Floor Tile 151201645-0054		Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-55-Mastic 151201645-0054A		Black Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-55-Mastic/Foam 151201645-0054B		Yellow Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
AEC-56-Floor Tile 151201645-0055		Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-56-Mastic 151201645-0055A		Black Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-57-Floor Tile 151201645-0056		Gray Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile
AEC-57-Mastic 151201645-0056A		Black Non-Fibrous Homogeneous		95% Non-fibrous (other)	5% Chrysotile

Analyst(s)

Jenny Drapela (84)

Jason Mote (40)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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 Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/06/2012 12:12:50



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[houstonlab@emsl.com](mailto:houstonlab@emsl.com)

EMSL Order: 151201645

CustomerID: 32PRTN78

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ProjectID:

Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:32 AM  
Analysis Date: 4/6/2012  
Collected:

Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-58-Drywall 151201645-0057		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-58-Texture 151201645-0057A		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AEC-59-Drywall 151201645-0058		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-59-Texture 151201645-0058A		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AEC-60-Drywall 151201645-0059		Brown/White Fibrous Homogeneous	10% Cellulose	90% Non-fibrous (other)	None Detected
AEC-60-Texture 151201645-0059A		White Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
Inseparable paint / coating layer included in analysis					
AEC-61 151201645-0060		White Fibrous Heterogeneous	15% Synthetic	85% Non-fibrous (other)	None Detected

Analyst(s)

Jenny Drapela (84)

Jason Mote (40)

Michelle Leggett, Laboratory Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/06/2012 12:12:50





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EMSL Order: 151201645

CustomerID: 32PRTN78

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Attn: **Kevin Schmitt**  
**Partner Engineering & Science**  
**2154 Torrance Blvd**  
**Suite 200**  
**Torrance, CA 90501**

Phone: (310) 615-4500  
Fax:  
Received: 03/30/12 9:32 AM  
Analysis Date: 4/6/2012  
Collected:

Project: 12-86801.1-East Hanger

## Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
AEC-62 <i>151201645-0061</i>		Gray/White Fibrous Heterogeneous	15% Synthetic	85% Non-fibrous (other)	None Detected
AEC-63 <i>151201645-0062</i>		Gray/White Fibrous Homogeneous	15% Synthetic	85% Non-fibrous (other)	None Detected
AEC-52-Floor Tile <i>151201645-0063</i>		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
Extra sample not listed on COC					
AEC-52-Mastic <i>151201645-0063A</i>		Black/Yellow Non-Fibrous Heterogeneous		97% Non-fibrous (other)	3% Chrysotile
Extra sample not listed on COC					
AEC-53-Floor Tile <i>151201645-0064</i>		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
Extra sample not listed on COC					
AEC-53-Mastic <i>151201645-0064A</i>		Black/Yellow Non-Fibrous Heterogeneous		96% Non-fibrous (other)	4% Chrysotile
Extra sample not listed on COC					
AEC-54-Floor Tile <i>151201645-0065</i>		Gray Non-Fibrous Homogeneous		100% Non-fibrous (other)	None Detected
Extra sample not listed on COC; Insufficient mastic					

Analyst(s)

*Jenny Drapela (84)*

*Jason Mote (40)*

Michelle Leggett, Laboratory Manager  
or other approved signatory

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Samples analyzed by EMSL Analytical, Inc. Houston, TX NVLAP Lab Code 102106-0, AZ 0925, CO AL-15355, LA 04126, TX 300159

Initial report from 04/06/2012 12:12:50



Asbestos Lab Services Chain of Custody

EMSL Order Number (Lab Use Only):

151201643

Houston, TX Ste. 190 8700 Jameel Rd. Houston, TX 77040 PHONE: 1-866-318-3920 FAX: 713-686-3645

Company: Partner Engineering and Science
Street: 1990 E. Grand Ave. #1000
City/State/Zip: El Segundo, CA 90245
Report To (Name): Kevin Schmitt
Telephone: 310-615-4500
Project Name/Number: 12-86801.1 - West Hangar

Turnaround Time (TAT) Options\* - Please Check
[ ] 3 Hour [ ] 6 Hour [ ] 24 Hour [ ] 48 Hour [ ] 72 Hour [ ] 96 Hour [x] 1 Week [ ] 2 Week

\*For TEM Air 3 hr through 6 hr, please call ahead to schedule. There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service.

PCM - Air [ ] Check if samples are from NY
PLM - Bulk (reporting limit) [x] PLM EPA 600/R-93/116 (<1%)
TEM - Air [ ] 4-4.5hr TAT (AHERA only)
TEM - Dust [ ] Microvac - ASTM D 5755
Soil/Rock/Vermiculite [ ] PLM CARB 435 - A (0.25% sensitivity)

[ ] Check For Positive Stop - Clearly Identify Homogenous Group
Filter Pore Size (Air Samples): [ ] 0.8um [ ] 0.45um

Samplers Name: Samplers Signature:

Table with 4 columns: Sample #, Sample Description, Volume/Area (Air) HA # (Bulk), Date/Time Sampled. Rows include AWC-1 (12"x12" White Mottled Floor Tile + Mastic), AWC-4 (2'x4' Lay-in Ceiling Tile), and AWC-7 (Smooth Textured Gyp-board Wall System).

Client Sample # (s): AWC 1-28 Total # of Samples: 28

Relinquished (Client): [Signature] Date: 3/29/12 Time:
Received (Lab): [Signature] Date: 3/30/12 Time: 9:30 am

Comments/Special Instructions:
Bill To: Partner Engineering and Science, Inc., 1990 E. Grand Ave. #100, El Segundo, CA 90245
Attention: Cheryl Manuel Phone: 310.615.4500 Email: kschnitt@partneresi.com



Asbestos Lab Services Chain of Custody  
**EMSL Order Number** (Lab Use Only):

151201643

Houston, TX  
 Ste. 190  
 8700 Jameel Rd.  
 Houston, TX 77040  
 PHONE: 1-866-318-3920  
 FAX: 713-686-3645

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AWC-9	Smooth Textured Wall System		
AWC-10	↓		
AWC-11	↓		
AWC-12	Window Pane Putty		
AWC-13	↓		
AWC-14	↓		
AWC-15	Painted Hardie Block & Grout		
AWC-16	↓		
AWC-17	↓		
AWC-18	"Old" Smooth Textured Gyp-board Wall		
AWC-19	↓		
AWC-20	↓		
AWC-21	↓		
AWC-22	↓		
AWC-23	Hanger Door Gaskets		
AWC-24	↓		

Comments/Special Instructions:



Asbestos Lab Services Chain of Custody  
EMSL Order Number (Lab Use Only):

151201643

Houston, TX  
Ste. 190  
8700 Jameel Rd.  
Houston, TX 77040  
PHONE: 1-866-318-3920  
FAX: 713-686-3645

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AWC-25	Hanger Door Gaskets.		
AWC-26	Brown Cove Base & Mastic		
AWC-27	↓		
AWC-28			
<del> </del>			

Comments/Special Instructions:



Asbestos Lab Services Chain of Custody

EMSL Order Number (Lab Use Only):

151201645

Houston, TX  
 Ste. 190  
 8700 Jameel Rd.  
 Houston, TX 77040  
 PHONE: 1-866-318-3920  
 FAX: 713-686-3645

Company: Partner Engineering and Science  
 Street: 1990 E. Grand Ave. #1000  
 City/State/Zip: El Segundo, CA 90245  
 Report To (Name): Kevin Schmitt  
 Telephone: 310-615-4500  
 Project Name/Number: 12-86801.1 - East Highway  
 Please Provide Results: Email Purchase Order: State Samples Taken: TX

EMSL-Bill to:  Same  Different  
 If Bill to is Different note instructions in Comments\*\*  
 Third Party Billing requires written authorization from third party

Fax:  
 Email Address: mharo@partneresi.com

Turnaround Time (TAT) Options\* - Please Check

- 3 Hour  6 Hour  24 Hour  48 Hour  72 Hour  96 Hour  1 Week  2 Week

\*For TEM Air 3 hr through 6 hr, please call ahead to schedule. \*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PCM - Air  Check if samples are from NY

- NIOSH 7400  
 w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)

- PLM EPA 600/R-93/116 (<1%)  
 PLM EPA NOB (<1%)  
 Point Count  
 400 (<0.25%)  1000 (<0.1%)  
 Point Count w/Gravimetric  
 400 (<0.25%)  1000 (<0.1%)  
 NYS 198.1 (friable in NY)  
 NYS 198.6 NOB (non-friable-NY)  
 NIOSH 9002 (<1%)

TEM - Air  4-4.5hr TAT (AHERA only)

- AHERA 40 CFR, Part 763  
 NIOSH 7402  
 EPA Level II  
 ISO 10312

TEM - Bulk

- TEM EPA NOB  
 NYS NOB 198.4 (non-friable-NY)  
 Chatfield SOP  
 TEM Mass Analysis-EPA 600 sec. 2.5

TEM - Water: EPA 100.2

- Fibers >10µm  Waste  Drinking  
 All Fiber Sizes  Waste  Drinking

TEM - Dust

- Microvac - ASTM D 5755  
 Wipe - ASTM D6480  
 Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite

- PLM CARB 435 - A (0.25% sensitivity)  
 PLM CARB 435 - B (0.1% sensitivity)  
 TEM CARB 435 - B (0.1% sensitivity)  
 TEM CARB 435 - C (0.01% sensitivity)  
 EPA Protocol (Semi-Quantitative)  
 EPA Protocol (Quantitative)

Other:

- 

- Check For Positive Stop - Clearly Identify Homogenous Group Filter Pore Size (Air Samples):  0.8µm  0.45µm

Samplers Name: Charles Bough

Samplers Signature: [Signature]

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AEC-1	12"x12" Lt. Gray Floor Tile & Mastic		
AEC-2	↓		
AEC-3	↓		
AEC-4	12"x12" Tan Mottled Floor Tile & Mastic		
AEC-5	↓		
AEC-6	↓		
AEC-7	Black Cove Base & Mastic		
AEC-8	↓		

Client Sample # (s): AEC1-44 and 46-63 - Total # of Samples: 67  
 Relinquished (Client): [Signature] Date: 3/29/12 Time:  
 Received (Lab): [Signature] Date: 3/30/12 Time: 9:30 a

Comments/Special Instructions:  
 Bill To: Partner Engineering and Science, Inc., 1990 E. Grand Ave. #100, El Segundo, CA 90245  
 Attention: Cheryl Manuel Phone: 310.615.4500 Email: kschnitt@partneresi.com  
 FedEx



Asbestos Lab Services Chain of Custody  
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Houston, TX  
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 8700 Jameel Rd.  
 Houston, TX 77040  
 PHONE: 1-866-318-3920  
 FAX: 713-686-3645

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AEC-9	Black Cove Base & Mastic		
AEC-10	Grey Cove Base & Mastic		
AEC-11	↓		
AEC-12	↓		
AEC-13	Plaster Wall		
AEC-14	↓		
AEC-15	↓		
AEC-16	↓		
AEC-17	↓		
AEC-18	↓		
AEC-19	↓		
AEC-20	Hadiide Block Wall & Grout		
AEC-21	↓		
AEC-22	↓		
AEC-23	2'x4' Lay-in Ceiling Tile		
AEC-24	↓		

Comments/Special Instructions:



Asbestos Lab Services Chain of Custody

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151201645

Houston, TX

Ste. 190

8700 Jameel Rd.

Houston, TX 77040

PHONE: 1-866-318-3920

FAX: 713-686-3645

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AEC-25	2'x4' Lay-in Ceiling Tile		
AEC-26	1'x1' Ceiling Tile & Mastic (squiggly Pattern)		
AEC-27			
AEC-28			
AEC-29	Sand Textured Gyp-board Wall System		
AEC-30			
AEC-31			
AEC-32			
AEC-33			
AEC-34			
AEC-35			
AEC-36	Window Pane Putty		
AEC-37			
AEC-38			
AEC-39	9"x9" Floor Tile & Mastic		
AEC-40			

Comments/Special Instructions:



Asbestos Lab Services Chain of Custody  
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 Ste. 190  
 8700 Jameel Rd.  
 Houston, TX 77040  
 PHONE: 1-866-318-3920  
 FAX: 713-686-3645

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AEC-41	9"X9" Floor Tile & Mastic		
AEC-42	Ceiling Insulation Batting		
AEC-43			
AEC-44			
AEC-45	No Sample - break in sampling sequence		
AEC-46	12"X12" Dk. Grey Floor Tile & Mastic		
AEC-47			
AEC-48			
AEC-49	12"X12" Ceiling Tile & Mastic (Random Dot Pattern).		
AEC-50			
AEC-51			
AEC-52	12"X12" Cream Mottled Floor tile w/ Carpet Mastic		
AEC-53			
AEC-54			
AEC-55	9"X9" Floor Tile & Mastic		
AEC-56			

Comments/Special Instructions:





Asbestos Lab Services Chain of Custody  
**EMSL Order Number (Lab Use Only):**

151201645

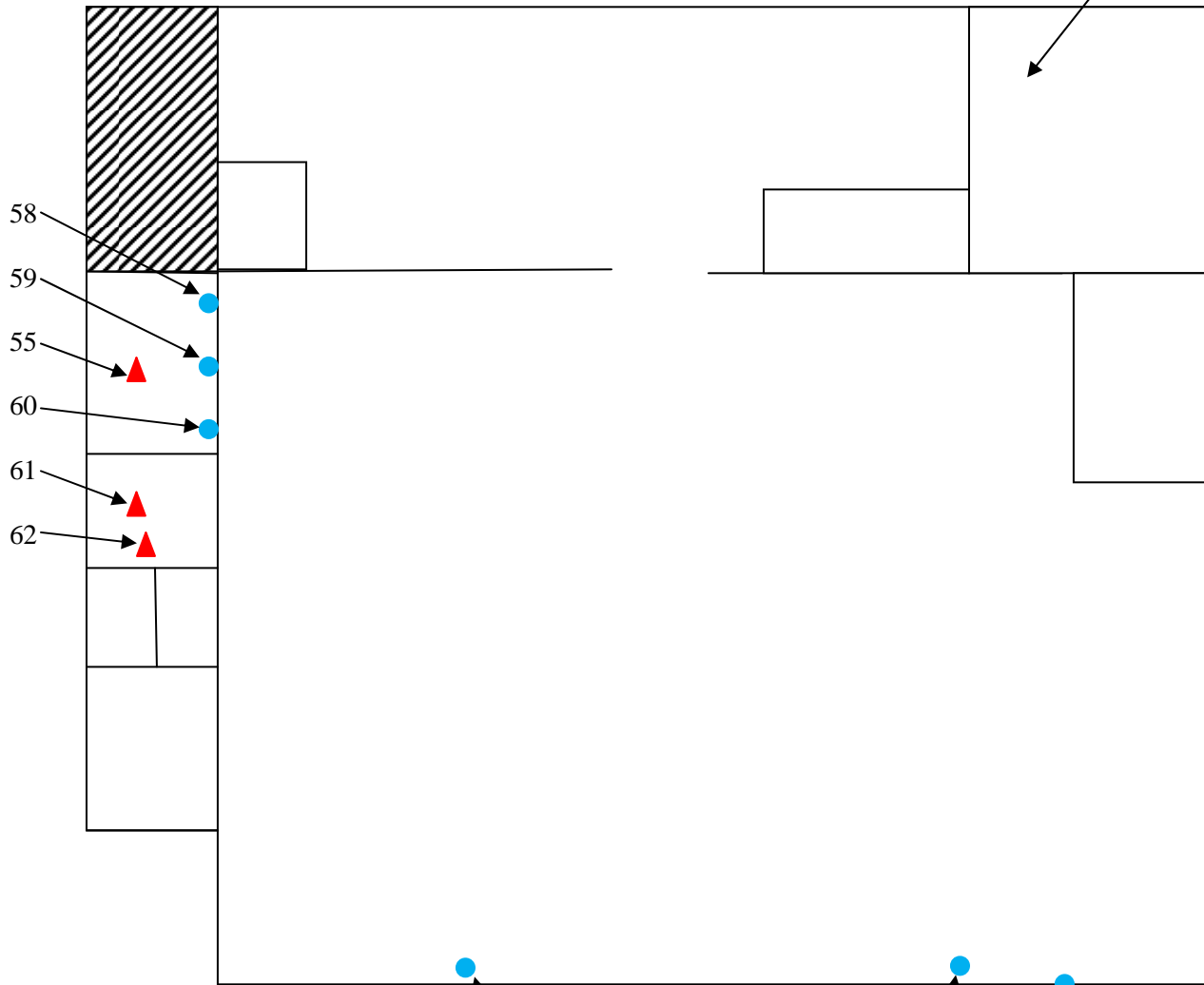
Houston, TX  
 Ste. 190  
 8700 Jameel Rd.  
 Houston, TX 77040  
 PHONE: 1-866-318-3920  
 FAX: 713-686-3645

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
AEC-57	9" x 9" White Floor Tile + Mastic		
AEC-58	Textured Gyp-board Wall		
AEC-59	↓		
AEC-60	↓		
AEC-61	Hangar Door Gasket		
AEC-62	↓		
AEC-63	↓		
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Comments/Special Instructions:

**APPENDIX B**  
**SAMPLE LOCATION DIAGRAM**

See Figure 2 for Sample Locations from  
First and Second Floor in This Area



**LEGEND**

- ▲ ACBM Sample (>1% Asbestos)
- Non-ASBM Sample (<1% Asbestos)
- ▨ Inaccessible Area

**Appendix B: Figure 1 East Hanger  
SAMPLE LOCATION DIAGRAM**

Site Address:  
Addison Airport-Hanger AI & Hanger A1A  
4726 & 4730 George Haddaway Dr.  
Addison, Texas 75001

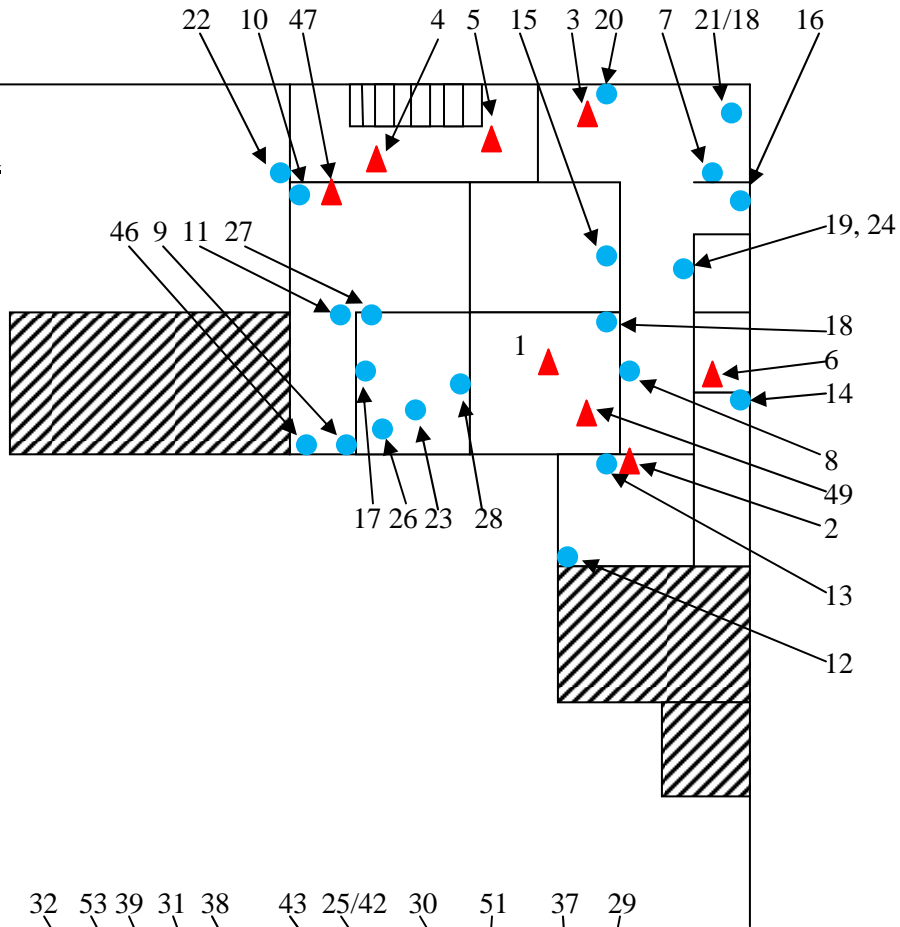
N

Drawing Not To  
Scale

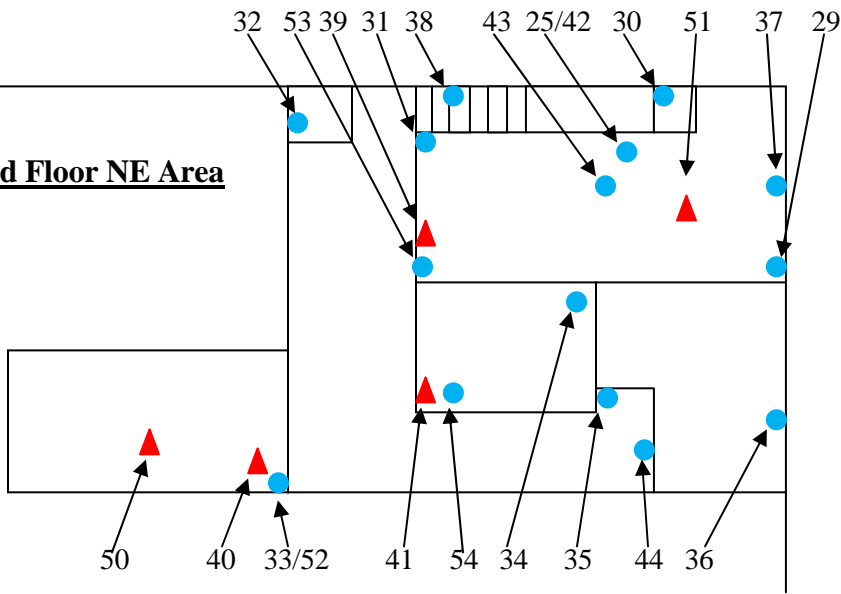
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(800) 419-4923

Project No. 12-86801.1

**First Floor-NE Area**



**Second Floor NE Area**



**LEGEND**

- ▲ ACBM Sample (>1% Asbestos)
- Non-ASBM Sample (<1% Asbestos)
- Inaccessible Area

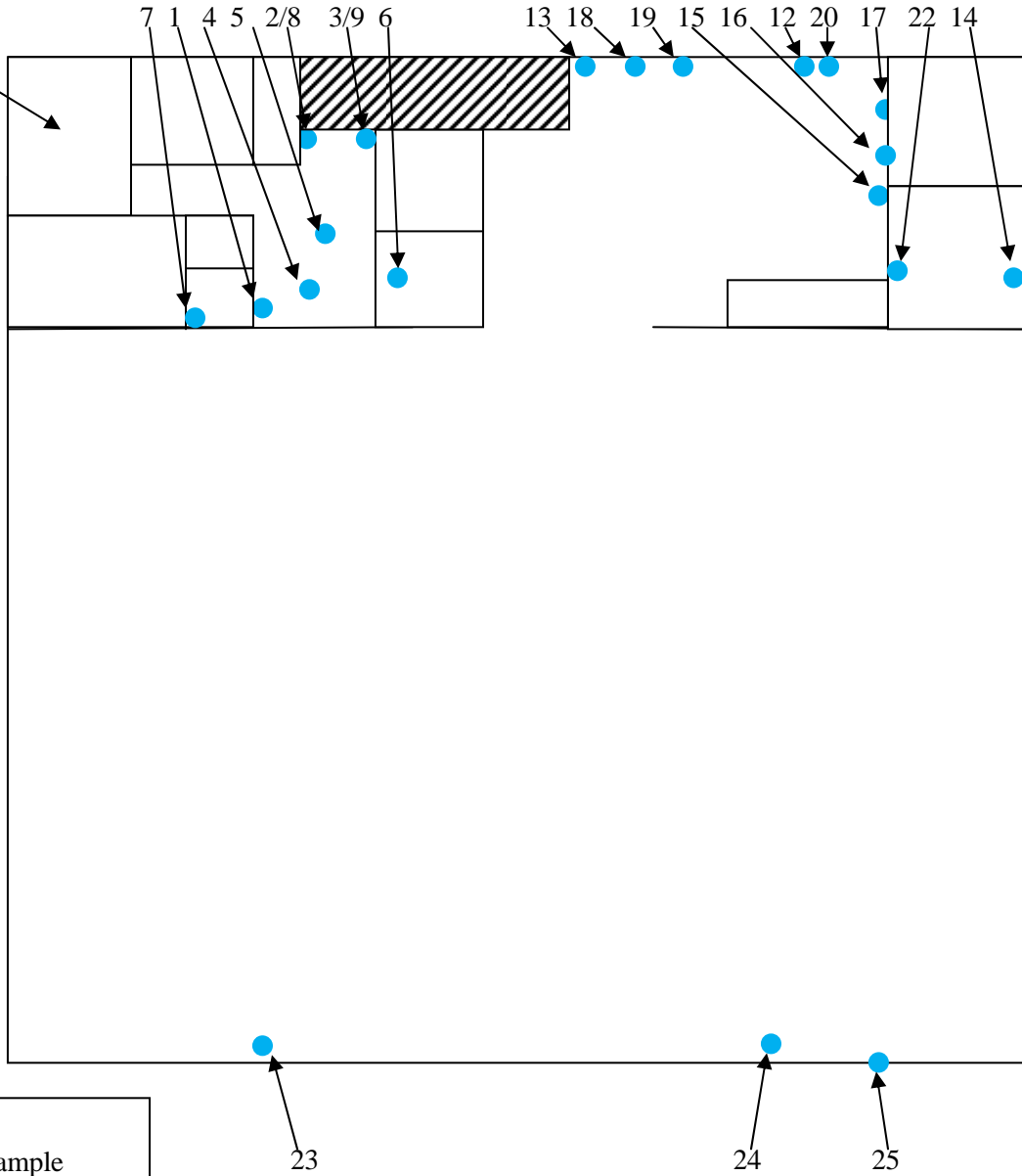
**Appendix B: FIGURE 2 East Hanger  
SAMPLE LOCATION DIAGRAM**

Site Address:  
Addison Airport-Hanger AI & Hanger A1A  
4726 & 4730 George Haddaway Dr.  
Addison, Texas 75001

Drawing Not To  
Scale

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 (800) 419-4923  
 Project No. 12-86801.1

See Figure 4 for  
Sample Locations  
from Second Floor  
Above This Area



**LEGEND**

- ▲ ACBM Sample (>1% Asbestos)
- Non-ASBM Sample (<1% Asbestos)
- Inaccessible Area

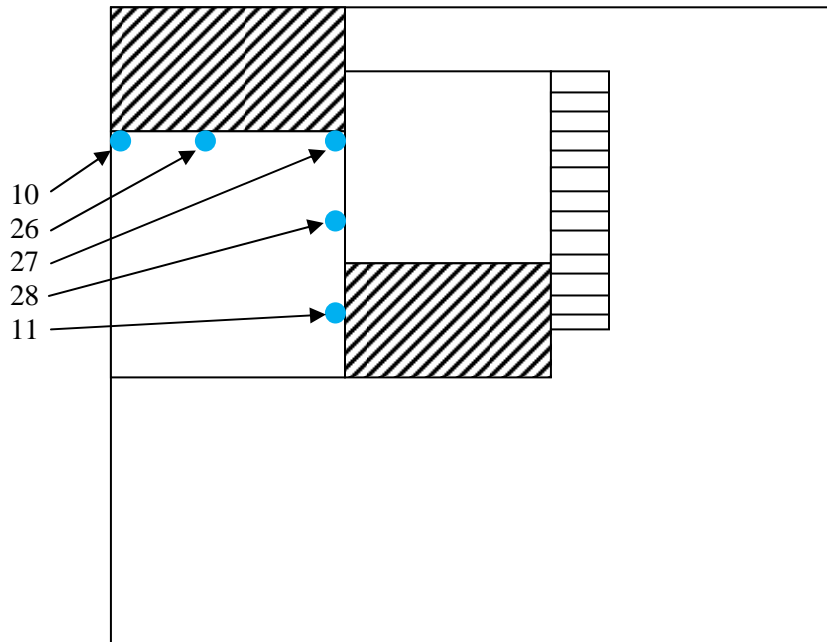
**Appendix B: Figure 3 West Hanger  
SAMPLE LOCATION DIAGRAM**

Site Address:  
Addison Airport-Hanger AI & Hanger A1A  
4726 & 4730 George Haddaway Dr.  
Addison, Texas 75001

Drawing Not To  
Scale

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 (800) 419-4923  
  
 Project No. 12-86801.1

## Second Floor



### **LEGEND**

▲ ACBM Sample  
(>1% Asbestos)

● Non-ASBM Sample  
(<1% Asbestos)

▨ Inaccessible Area

### **Appendix B: Figure 4 West Hanger Sample Location Diagram**

Site Address:

Addison Airport-Hanger AI & Hanger A1A  
4726 & 4730 George Haddaway Dr.  
Addison, Texas 75001



Drawing Not To  
Scale

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Project No. 12-86801.1

**APPENDIX C**  
**CERTIFICATIONS**



**Texas Department of  
State Health Services**

**Asbestos Individual Consultant**

**CHARLES R BAUGH**

**License No. 105121**

**Control No. 95938**

**Expiration Date: 3/9/2012**





**APPENDIX D**  
**PHOTOGRAPHIC DOCUMENTATION**



1. View to the east across south hanger doors of East Hanger.



2. View of west interior of east hanger.



3. View to the east, across the north end of east hanger, of NE Office area.



4. View of roofing underside in east hanger.



5. View of west side storage area with ACBM floor tile/mastic.



6. View of rooms in NE office area.

#### APPENDIX D: PHOTO DOCUMENTATION

Site Address:

Addison Airport – Hanger AI & Hanger A1A  
4726 George Haddaway Drive  
Addison, Texas 75001

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(800) 419-4923

Project No. 12-86801.1



7. View of ACBM mastic on ceiling in NE office area of east hanger.



8. View of window pane on 2<sup>nd</sup> floor above NE office area of east hanger.



9. View of ACBM tile under non-ACBM tile, under carpet on 2<sup>nd</sup> floor of NE office area of east hanger.



10. View of ACBM ceiling mastic in 2<sup>nd</sup> floor room above NE office area in east hanger.



11. View of 2<sup>nd</sup> floor mechanical room in east hanger.



12. View of ACBM floor tile/mastic in 1<sup>st</sup> floor room in NE Office area of east hanger

**APPENDIX D: PHOTO DOCUMENTATION**

Site Address:

Addison Airport – Hanger AI & Hanger A1A  
 4726 George Haddaway Drive  
 Addison, Texas 75001

**PARTNER**  
 Engineering and Science, Inc.  
[www.PARTNEResi.com](http://www.PARTNEResi.com)  
 (800) 419-4923

Project No. 12-86801.1



13. View of south interior of west hanger



14. View of north interior of west hanger.



15. View of front reception area of west hanger



16. View of office in west hanger.



17. View of break room.



18. View of connecting hallway.

<p><b>APPENDIX D: PHOTO DOCUMENTATION</b></p>	<p><b>PARTNER</b>          Engineering and Science, Inc.  <a href="http://www.PARTNEResi.com">www.PARTNEResi.com</a>          (800) 419-4923</p> <p><b>Project No. 12-86801.1</b></p>
<p>Site Address:</p>	
<p>Addison Airport – Hanger AI &amp; Hanger A1A          4726 George Haddaway Drive          Addison, Texas 75001</p>	



19. View of second floor room in west hanger.



20. View of north work room area in west hanger.



21. View to the west across the north work room area of the west hanger



22. View of paint room in NE area of west hanger.



23. View of water heater in NE restroom of west hanger.



24. View of door gaskets on south hanger doors of west hanger.

**APPENDIX D: PHOTO DOCUMENTATION**

Addison Airport – Hanger AI & Hanger A1A  
4726 George Haddaway Drive  
Addison, Texas 75001

**PARTNER**  
Engineering and Science, Inc.  
[www.PARTNEResi.com](http://www.PARTNEResi.com)  
(800) 419-4923

Project No. 12-86801.1



**ROLF JENSEN & ASSOCIATES, INC.**  
FIRE PROTECTION CONSULTANTS

2301 West Plano Parkway  
Suite 210  
Plano, TX 75075 USA  
[www.rjainc.com](http://www.rjainc.com)  
+1 469-443-7200  
Fax: +1 469-443-7201

**FIRE PROTECTION ENGINEERING SURVEY  
REPORT  
ADDISON AIRPORT FACILITIES  
ADDISON, TX**

**Prepared For:**

Partner Engineering North Carolina PLLC  
8000 Corporate Center Drive, Suite 104  
Charlotte, NC 28226

May 7, 2012

T56823



## **FIRE PROTECTION ENGINEERING SURVEY REPORT**

### **INTRODUCTION**

Rolf Jensen & Associates, Inc. (RJA) performed a fire protection engineering audit survey of two (2) aircraft hangars and one (1) jet-port office building operated by the Addison Municipal Airport in Dallas, Texas on March 27, 2012. The purpose of the survey is to review the existing life safety and fire protection features provided for the property, including the fire alarm system, automatic sprinkler system, passive fire protection features, emergency lighting, and egress routes to assess their general condition and to identify observable fire safety related code deficiencies. This report outlines the results of the survey and provides related recommendations and observations for the facilities.

The information and observations contained in this report are based on a walk-through survey of the buildings only. Functional, destructive, or intrusive visual inspections and fire protection system testing were not conducted.

Appendix A is provided to establish an estimated cost to fix the observed deficiencies and fire protection and life safety systems as described. Maintenance items are included in the body of this report but are not included as part of the cost estimate.

### **ADDISON MUNICIPAL AIRPORT – ADDISON, TX**

1. **Property Name/Location:**

Addison Municipal Airport  
16051 Addison Rd  
Dallas, Texas 75001

2. **Date(s) of Survey:**

March 27, 2012

3. **Dates of Construction/Applicable Code:**

The two (2) aircraft hangars are utilized for aircraft maintenance. The east hangar was constructed between 1958 and 1959. The east hangar is currently occupied by the Cavanaugh Flight Museum that performs maintenance on historical aircraft. The west hangar was also constructed between 1958 and 1959. The west hangar is currently occupied by a private maintenance contractor. The applicable code at the time of original building construction of the hangars was the 1951 Edition of the Dallas Building Code, which was the 1947 Uniform Building Code with local amendments.

The jet-port office building is a two-story office building constructed in approximately 1983 / 1984. The applicable building code at the time of original building construction is assumed to be the 1983 Dallas Building Code, which was the 1982 Uniform Building Code with local amendments.

This report will identify and compare the facilities to the 2009 Edition of the International Building Code (Addison Building Code - ABC) and the 2009 Edition of the International Fire Code as currently adopted by the Town of Addison (Addison Fire Code – AFC).

**4. General Building Information:**

The aircraft hangars are both single story buildings and the jet-port building is a two story office building. The aircraft hangars are approximately 25,000 square feet each. There are small mezzanine areas in each of the hangars that include miscellaneous mechanical areas, offices, storage areas, etc. The two story office building is approximately 8,000 square feet total (approximately 4,000 square feet per floor). There are no basements below any of the buildings.

**5. Summary of Conditions**

**Construction Type**

**The Hangar Buildings**

Existing drawings of both the east and west hangar buildings were not available to determine the original type of construction. However, based upon observations the aircraft hangars appear to be Type IIB construction as identified in Table 601 of the 2009 ABC as the roof, structural frame and walls appeared to be non-rated and the construction materials appeared to be non-combustible.

The aircraft hangars are classified as Group S-1 occupancies in accordance with Section 311.2 of the 2009 ABC. Per Table 503, the maximum allowable area per floor prior to any increase is 17,500 square feet. The hangars are not currently provided with fire suppression system(s) and therefore cannot take credit for the sprinkler area increase as permitted by Section 506.3 of the 2009 ABC. Additionally, as only one side of the hangars affronts a public way, the area increases permitted by Section 506.2 of the 2009 ABC are also not available. For the aircraft hangars to comply with the building area limitations of the 2009 ABC, a fire suppression system is required to be provided.



## The Jet-Port Building

The Jet-Port Building's architectural and structural drawings were not available to indicate the specific construction type. The jet-port building would be considered a Group B occupancy in accordance with Chapter 3 of the 2009 ABC. Based upon the building height (number of stories) and the building areas the 2009 ABC would require this building to be a minimum of Type VB construction with a maximum allowable floor area of 9,000 square feet. This construction type does not require any of the building elements to be fire-resistance rated. To comply with the building area requirements, a fire suppression system is not required.

## **Means of Egress**

### The Hangar Buildings

The hangar buildings are not provided with enclosed stairwells. The maximum allowable travel distance will be increased when the fire suppression system is provided in the hangar buildings. Multiple exits are provided at grade for the aircraft hangars.

For the East Hangar, one (1) exit is provided on the north wall, which can be locked from the exterior with a key, and one (1) exit is provided from the office area and one from the hangar area to the exterior on the east wall which discharges into a fenced area of the airport property. Most operations within the hangar include having the large rolling doors open which can provide egress from the facility during an incident although they are not permitted to be counted as egress due to their operation.

For the West Hangar, one (1) exit is provided on the north wall, which can be locked from the exterior with a key and multiple exits are provided from the hangar area to the exterior on the west and south walls which discharges into a fenced area of the airport property. Most operations within the hangar include having the large rolling doors open which can provide egress from the facility during an incident although they are not permitted to be counted as egress due to their operation.

The mezzanine areas of both buildings are provided with a single open stairwell. The open stairwell is permitted by the 2009 ABC Section 505.3 as the maximum travel distance from the mezzanine areas does not exceed the limitation in Table 1016.1 of 200 feet. The open stairs are approximately 36 inches wide and provided with narrow stair treads. The 36-inch width of the stairs is compliant with Section 1009.1 Exception 1 of the 2009 ABC as the occupant load of the mezzanines are estimated to be less than 50 occupants. The narrow stair treads do not meet the requirements of Section 1009.4.2 of the 2009 ABC for stair riser height and tread depth. As the mezzanines are not currently occupied, this condition may be considered an existing non-conforming item. Should the

mezzanine become utilized, the stair riser height and tread depth will be required to be addressed.

The exit signage in the hangars appears to be inadequate along the exit paths. The signs do not appear to be illuminated either externally or internally as required by the 2009 ABC.

### The Jet-Port Building

The jet-port building is provided with multiple exits at grade and two (2) open stairs from the second floor to the first floor. As permitted by 2009 ABC Section 1016.1 Exception 4, the stairs are permitted to be open when the building is provided with a sprinkler system and the stair only connects two (2) levels.

The maximum travel distance to an exit for occupants of the jet-port building is 200 feet in accordance with Table 1016.1 of the 2009 ABC as the building is not provided with automatic sprinklers. The open stairs provide the minimum required width and the stair treads and risers appeared compliant with the 2009 ABC.

The exit signage clearly marks the egress path as required. The exit signage in the jet-port building appears to meet the requirements of the 2009 ABC.

### **Fire-Resistance Rated Separations**

Both the aircraft hangar buildings and jet-port office building are constructed as non-rated structures.

The hangar buildings are required to be provided with 2-hour fire-resistance rated exterior walls when such walls are less than 30 feet from lot lines or a public way. The distance between the East and West hangars appears to be less than 60 feet; which would require the two exterior walls facing one another to be 2-hour fire-resistance rated to comply with Section 412.4.1 of the 2009 ABC. Additionally, Section 412.4.4 requires the mechanical rooms with the heating equipment to be separated by 2-hour fire-resistance rated fire barriers and horizontal assemblies or both.

The jet-port building appears to have a great enough distance from lot lines and access to the public way to not require fire-resistance rated exterior walls. Interior fire-resistance rated separations in the jet-port office building would include the elevator shaft. As the elevator shaft connects two (2) stories and is concealed within the building construction, a 1-hour fire-resistance rated shaft is required. It is assumed that the existing elevator shaft meets this requirement.

## **Fire Protection Systems**

### **Suppression Systems**

The aircraft hangars and jet-port building are not provided with fire suppression systems. A paint spray booth in the East Hangar was provided with a special suppression / clean agent fire suppression system for that area only, and was last inspected in July 2001. Currently the West Hangar is provided with a single Class II standpipe connection with approximately 50 feet of hose.

The West Hangar currently has a make-shift paint spray booth composed of metal tubing and plastic sheathing without proper exhaust / ventilation. This area will require fire suppression system(s), exhaust / ventilation for the painting operations and an approved enclosure.

Both aircraft hangars are required to be provided with fire suppression systems designed and installed to comply with NFPA 409 as required by Section 412.4.6 of the 2009 ABC. Based upon the type of construction and the floor area, the hangars would be considered Group II hangars in accordance with NFPA 409.

The jet-port office building is not currently provided with sprinkler protection. If the jet-port office building were being constructed in the Town of Addison, the 2009 AFC would require the building to be provided with sprinklers. Additionally, should the building be remodeled from its current state (affecting more than 50% of the existing building) the 2009 AFC would require sprinklers.

Fire hydrants are located around the perimeter of the property. No obstructions to fire department access or fire hydrants were observed.

Fire extinguishers are located sporadically throughout the floor area of the aircraft hangars. Fire extinguishers should be added to comply with travel distance requirements of the 2009 AFC, NFPA 10 and NFPA 409. The jet-port office building was provided with fire extinguishers throughout as required by current code.

### **Fire Alarm System**

Neither of the aircraft hangars is provided with a fire alarm system. One manual pull station was observed in both hangars – however, no fire alarm control panel or transponder panel was observed. It is unclear if the manual pull stations report directly to the Addison Fire Department.

The jet-port office building is not provided with a fire alarm system. Single-station smoke detectors are provided near the elevator and floor opening between the first and second floors. Manual pull stations were not observed in the building. A fire alarm panel or transponder panel was not observed at the facility.

Both of the aircraft hangars and the jet-port office building would be required to be provided with a fire alarm system to comply with the 2009 AFC. The fire alarm systems would provide electronic supervision of the required automatic sprinkler system, supervision of required smoke detectors (including duct detectors) and transmit signals to the supervising station / Addison Fire Department.

Visual and audible notification is not currently provided in the aircraft hangars or jet-port office building, but is required to be provided in public areas and employee work areas to comply with the 2009 ABC and 2009 AFC.

The fire alarm systems should be provided with battery provided secondary power.

#### Smoke Control System

The building is provided only with shutdown of mechanical supply if a duct detector is activated.

Stair pressurization and other forms of smoke control are not provided.

#### Fire Protection System Testing and Maintenance

Fire extinguishers are inspected monthly by the facility staff and yearly service / inspection is performed by a fire protection contractor according to the tags. Annual servicing was current.

There are reportedly no outstanding fire code violations for the building.

### **6. Other Building Systems**

#### Emergency Power

The hangar buildings and the jet-port office building are not provided with emergency generators.

#### Elevators

The hangar buildings are not provided with elevators. The jet-port office building is provided with a single hydraulic elevator that connects the first and second floors. Area smoke detection is provided near the elevator.

### **7. Recommendations/Observations**

The following recommendations/observations resulted from our fire protection engineering survey of the building. These recommendations address conditions observed that could have a current or future impact on the fire protection, life safety and code compliance of the facility. For budgetary purposes, the recommendations are included in the Replacement Reserve Table in Appendix A.

1. All three (3) facilities should be provided with automatic sprinkler / fire suppression systems. It is assumed the fire suppression systems will be installed over a three (3) year period.
2. The West Hangar requires an approved paint spray booth equipped with exhaust / ventilation and fire suppression systems within the booth. It is assumed the paint spray booth will be provided during the second year of fire suppression system installation.
3. All three (3) facilities should be provided with a fire alarm system, including occupant notification. It is assumed the fire alarm systems will be installed over a two (2) year period.
4. Upgrades to the hangar buildings exit signage and emergency lighting are required. It is assumed these systems will be upgraded over a two (2) year period.
5. The exterior walls of the East and West Hangars (walls facing other hangar) are required to be provided with a 2-hour fire-resistance rating due to the proximity of the lot lines. It is assumed these walls will be upgraded over a one (1) year time period.

## **CONCLUSION**

In general the buildings are in reasonable shape based upon the age of the construction. We recommend the highest priority be given to the fire suppression systems as these systems will provide life safety, protect property and bring the building's allowable area into compliance.

Prepared by:

**ROLF JENSEN & ASSOCIATES, INC.**



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Carl W. Chappell, P.E.

Date

CWC/MRG

**APPENDIX A**  
**ESTIMATED COST ITEMS**







**EXISTING ELECTRICAL SYSTEM REVIEW FOR:**

**4726 George Haddaway Drive**

**4730 George Haddaway Drive**

**4505 Claire Chennault Street**

**Prepared by:**

**Scott Swan, P.E.**

**Blum Consulting Engineers, Inc.**

**May 4, 2012**

# Addison Airport – Electrical System Review

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On March 27<sup>th</sup>, 2012 Blum Consulting Engineers, Inc., performed a walk-through review of three existing structures at the Addison Airport in Addison, Texas. The purpose of this review was to perform a visual analysis of the current electrical systems, formulate an opinion of the current systems adequacy and provide recommendations for upgrades to meet current codes. Of the three structures reviewed, two are aircraft hangar metal structures approximately 25,000 square-feet each and the third is a two-story office facility, approximately 8,000 square-feet, currently used for a flight training school and private airplane jet port. For the purpose of this report, the structures will be referred to as:

East Hangar – 4730 George Haddaway Drive

West Hangar – 4726 George Haddaway Drive

Flight School – 4505 Claire Chennault Street

## **East Hangar - 4730 George Haddaway Drive**

The first structure reviewed was the East Hangar. This structure is currently being utilized as a partial maintenance shop for old war planes and spill-over space for a historic aircraft museum. The northern portion of the building serves as a storage site for various airplane parts and munitions, all of which we presumed to be unarmed. The southern portion of the building is where the antique aircraft and miscellaneous equipment is stored. The western portion of the building serves as office space for the staff members. The east side of the building is where the restrooms and various smaller storage rooms are located. There is a second level at the east side of the building which appears to have been office or classroom space at one time, but is currently abandoned and not in use.

On the outside of the structure, at the northwest corner, there is a set of three 50 KVA pole-mounted utility transformers which take high voltage service from the utility company overhead lines and step it down to 208Y/120V-3PH, 4W service (Photo Exhibit #1). The utility feeders are routed overhead at the north side of the building and originate from a point near Addison Road. The service cables route from the utility pole, through an exterior weather-head and into the building. The building electrical service enters the building from overhead via two (2) 4-inch conduits and two (2) 3-inch conduits through the west wall. The two (2) 4-inch conduits terminate into a surface mounted wireway which feeds four separate disconnect switches of various sizes ranging from 100A to 400A. The two (2) 3-inch conduits terminate into a 400A service rated disconnect switch. Each service switch feeds a variety of panel boards, disconnect switches and miscellaneous equipment (Photo Exhibit #2). The total capacity that this system is capable of delivering is approximately 6 watts per square-foot. Refer to drawing #1 at the end of this report for a schematic riser diagram of the electrical system.

# Addison Airport – Electrical System Review



**Photo Exhibit #1**



**Photo Exhibit #2**

The condition of the electrical equipment leads us to believe it is all original to the building. Much of it has been painted orange and many equipment nameplates are missing or unreadable (Photo Exhibit #3). It is unlikely that replacement parts are available and even if parts could be found, they would come at a premium price. It appears that, over the years, as occupancy and use has changed that the electrical system was expanded as needed with no real direction for future growth/expansion. Certain risks are elevated when utilizing over-current protection devices of this age as time destroys certain components that are necessary for the device to operate properly. Given the fact that much of this space is unconditioned only increases the risk for component failure. The better part of all of the electrical system in this building would be classified as past its life expectancy. No lightning protection system was identified on the premises. We could not readily identify the grounding system for code compliance. Further investigation by a licensed contractor is required to fully disclose the grounding system.



**Photo Exhibit #3**



**Photo Exhibit #4**

We noted several equipment areas that did not provide the minimum required working clearances as outlined in the National Electrical Code Article 110 (Photo Exhibit #3). This article states that all electrical equipment (panel boards, transformers, disconnect switches, etc.) shall be provided

## Addison Airport – Electrical System Review

with a working clearance of at least 30" in width (or the width of the equipment, whichever is greater), 36" in depth (from the front face of the equipment) and at least 6'-6" in clear height. For such installations, we recommend providing tape marking on the floor to indicate this required working clearance. No objects can be stored within this projected area. We also noted one particular panel board located within a wall cavity inside a storage room that has no cover and all live parts are exposed. This creates a dangerous environment that should be immediately remedied. (Photo Exhibit #5)



**Photo Exhibit #5**



**Photo Exhibit #6**

With the presence of stored fuel (Photo Exhibit #3 & #6), such as that used to power the aircraft, the classification of this building (for specific areas), according to the National Electrical Code Article 500, is a Class I, Division 2 facility. This classification is outlined in article 500.5(B)(2) and indicates the use of volatile flammable gases, flammable liquid-produced vapors or combustible liquid-produced vapors. This article indicates these types of flammable products to be present but would only be exposed by accidental spillage or rupture. New installations for this building shall comply with NEC Article 501 for Class I locations. Equipment installed in areas under this classification will be required to be listed and approved for use in a Class I, Division 2 location.

It is our opinion that any future major modifications to this building allow for complete replacement of the existing electrical systems. Not only are the systems past their life expectancy, their ratings and capacities are not easily identifiable. A similar infrastructure system utilizing a field constructed wireway with not more than six (6) service entrance rated switches could be installed. A total capacity of approximately 800A-1000A at 208V could be expected from the present utility infrastructure. New panels would be fed from the service disconnect switches @ the wireway and then branch circuit wiring would run to the applicable load. A complete UL Master Labeled lightning protection system should be installed to reduce the risk of electrical shock and potential for igniting

## Addison Airport – Electrical System Review

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flammable liquids and vapors. New lighting systems could be installed to implement a more energy efficient solution. Providing fluorescent or LED fixtures in the high bay areas would allow for a quicker start time with less lamp 'warm up'. Newer energy codes mandate that most areas of lighting require some means of automatic control that can range from a simple relay panel to occupancy sensors to automatically shut the lighting off when the room is not being used. The grounding system shall be investigated and upgraded as necessary. All panels and electrical system components should be uniquely labeled as outlined in NEC 408.4. A rough order of magnitude cost to complete the items described is approximately \$800,000.

### **West Hangar – 4726 George Haddaway Drive**

The second structure reviewed was the West Hangar. This structure is currently being utilized as an aircraft maintenance shop and also contains a portion of the space as office. The northwestern portion of the building serves as the office space. This portion of the building has heating and cooling. The southern portion of the building is where the aircraft maintenance is performed. The northeastern corner of the building serves as a machine shop and parts storage. There is a second level at the northwest side of the building that is also used as office space, similar to the area below it at the first level.

On the outside of the structure, at the northeast corner, there is a set of three 100 KVA pole-mounted utility transformers which take high voltage service from the utility company overhead lines and step it down to 208Y/120V-3PH, 4W service. The service cables route from the utility pole, through an exterior weather-head and into the building. The building electrical service enters the building from overhead via a single conduit appearing to be 4-inches in trade diameter and penetrates the north wall. The 4-inch conduit terminates into a vertical surface mounted wireway which feeds two separate panel boards both of which are Square D products. The panels are named Panel 1 and Panel 2 and rated at 250A and 100A, respectively (Photo Exhibit #7). The panel boards sub-feed to other panel boards and miscellaneous branch circuit devices throughout the building. The total capacity of this system is capable of delivering approximately 12 watts per square-foot. Refer to drawing #2 at the end of this report for a schematic riser diagram of the electrical system.

## Addison Airport – Electrical System Review



**Photo Exhibit #7**

The condition of the electrical equipment in this building is in better shape than that of the East Hangar. However, we estimate the panels to be at least 20+ years old. Again, finding replacement parts may prove difficult and costly, if renovations are in order. Several of the sub-feed panels appear to be older than the service panels (Photo Exhibit #8). These are Federal Pacific panels, which is no longer in business. Some have been painted, as well, which has masked some of the nameplate information. No lightning protection system was identified on the premises. We could not readily identify the grounding system for code compliance. Further investigation by a licensed contractor is required to fully disclose the grounding system.



**Photo Exhibit #8**



**Photo Exhibit #9**

Again, we noted several equipment areas that did not provide the minimum required working clearances as outlined in the National Electrical Code Article 110. Refer to East Hangar description for clearance requirements. We recommend providing tape marking on the floor to indicate this required

# Addison Airport – Electrical System Review

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working clearance. No objects can be stored within this projected area. Similar to the East Hangar, the presence of stored fuel makes the classification of this building (for specific areas), according to the National Electrical Code Article 500, a Class I, Division 2 facility. Refer to East Hangar for Class I, Division 2 description.

Modifications to this building would require replacement of most of the electrical systems. However, for any major renovation we would recommend replacing all of the electrical panels. A similar infrastructure system utilizing a field constructed wireway with not more than six (6) service entrance rated switches could be installed. A total capacity of approximately 1600A at 208V could be expected from the present utility infrastructure. New panels would be fed from the service disconnect switches at the wireway and then branch circuit wiring would run to the applicable load. A complete UL Master Labeled lightning protection system should be installed to reduce the risk of electrical shock and potential for igniting flammable liquids and vapors. New lighting systems could be installed to implement a more energy efficient solution. Providing fluorescent fixtures in the high bay areas would allow for a quicker start time with less lamp 'warm up'. Newer energy codes mandate that most areas of lighting require some means of automatic control that can range from a simple relay panel to occupancy sensors to automatically shut the lighting off when the room is not being used. The grounding system shall be investigated and upgraded as necessary. All panels and electrical system components should be uniquely labeled as outlined in NEC 408.4. A rough order of magnitude cost to complete the items described is approximately \$850,000.

## **Flight School – 4505 Claire Chennault Street**

The third and final structure reviewed was the Flight School building. This structure is currently being utilized as a flight training school as well as a jet port for private planes. This building is located towards the northeast end of the airport, as opposed to the southeast location of the two hangars. There are stairs to access the second level on both the north and south ends of the building. No elevator access to the second floor was noted. There is also a two story open space in the center of the building leading up to a glass block clerestory.

The building is served from a pad mounted utility transformer located at the southeast corner of the building. It appears the transformer is rated at 112.5 KVA (Photo Exhibit #10). The transformer is fed on the primary side by a high voltage utility line that drops down a riser pole (Photo Exhibit #11). The feeders route below grade from the riser pole to the pad mounted transformer. From the transformer, it appears the secondary service conductors route underground below the building to a location where they rise vertically within the exterior wall and then terminate into wireway located in the main electrical room. The main electrical room is located on the second floor. There are five (5) panels directly tapped from the wireway feeders that comprise the building's electrical system (Photo Exhibit # 12 & #13). The current electrical utility infrastructure will allow for approximately 14 watts per square-foot. Refer to drawing #3 at the end of this report for a schematic riser diagram of the electrical system.

## Addison Airport – Electrical System Review



**Photo Exhibit #10**



**Photo Exhibit #11**



**Photo Exhibit #12**



**Photo Exhibit #13**

The condition of the electrical equipment leads us to believe that it is original to the building's construction. The panel boards are outdated and manufactured by Federal Pacific, which is no longer in business. Some replacement parts may be attainable, but should be considered difficult and less cost effective than a new comparable product. No lightning protection system was identified on the premises. We could not readily identify the grounding system for code compliance. Further investigation by a licensed contractor is required to fully disclose the grounding system.

Again, we noted several equipment areas that did not provide the minimum required working clearances as outlined in the National Electrical Code Article 110 (Photo Exhibit #14). Refer to East Hangar description for clearance requirements. We recommend providing tape marking on the floor to indicate this required working clearance. No objects can be stored within this projected area.



## Addison Airport – Electrical System Review



**Photo Exhibit #14**

We could identify no fire alarm system for this building. The International Fire Code requires buildings of more than 500 total occupants or more than 100 occupants above the lowest level of exit discharge to contain a manual fire alarm system. We assume this building does not comply with either of these requirements and no system is required. However, several smoke detectors were noted randomly throughout the floor plan. The smoke detectors appeared to be stand alone style similar to what would be installed in a residence (Photo Exhibit #15). In our experience, installing a fire alarm device in one portion of a building will require the entire building to be brought up to code with full coverage of all devices. Emergency lighting is handled by wall mounted light fixtures with battery units (Photo Exhibit #16). The emergency lighting was not complete to comply with the requirements of IBC 1006.2. Egress exits from the building did not have emergency lighting coverage. All exit sign locations appeared to sufficiently mark the egress exits.



**Photo Exhibit #15**



**Photo Exhibit #16**

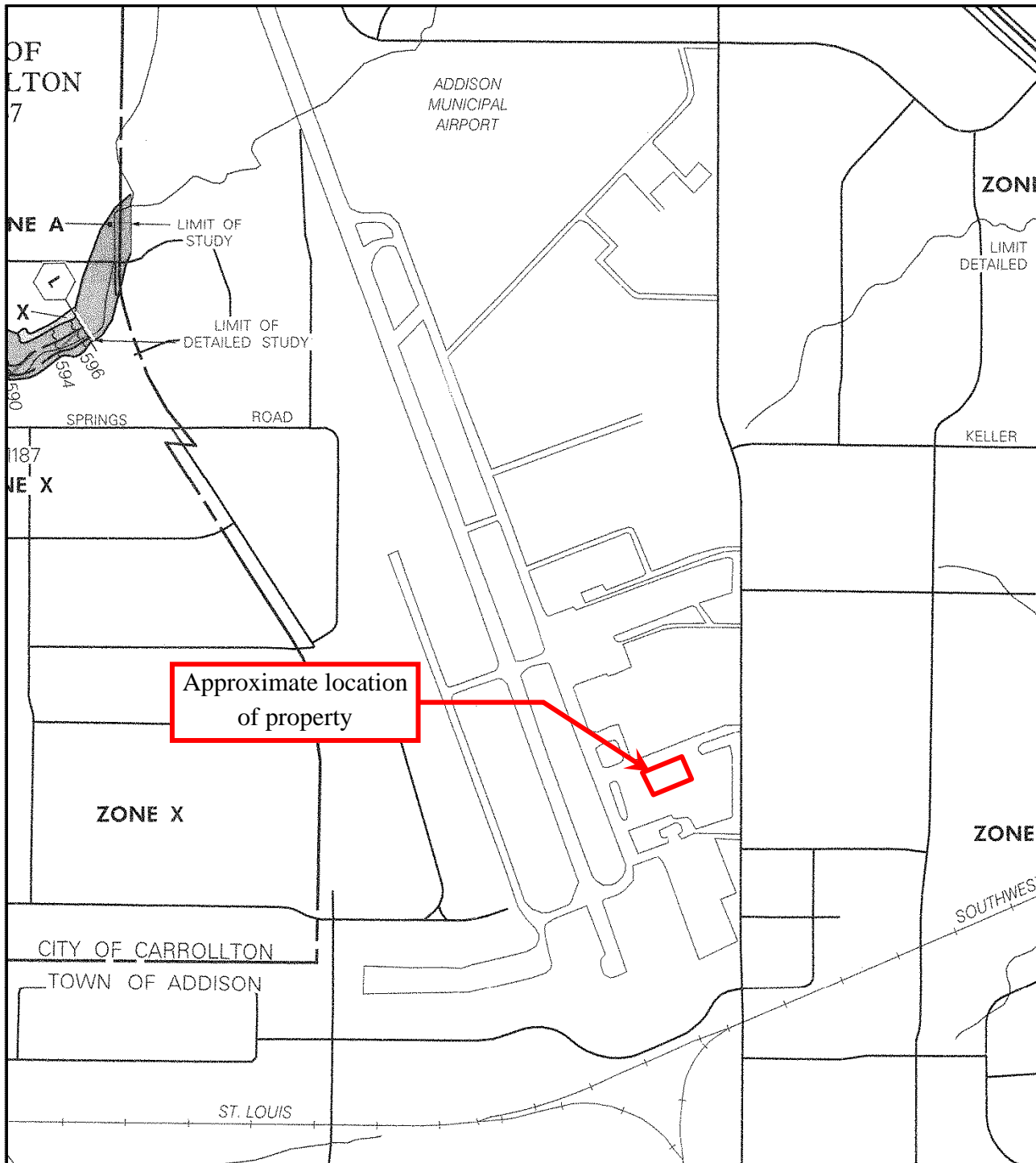
## Addison Airport – Electrical System Review

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Upgrades to this building would require certain aspects of the building to be brought into current codes. Emergency lighting would need to be provided throughout to fully cover all egress exit paths from the building, including the egress spills at the exterior of the building. With the main electrical disconnecting means for the building being on the second floor, the National Electrical Code required the vertical rise of the service conduits to be encased in concrete with a minimum coverage of 2" or be installed in a chase of concrete or brick of at least 2" in thickness (NEC 230.6). Much of the lighting will need to be replaced. The current lighting system utilizes many incandescent light fixtures. Today's energy code wattage allowances will minimize the amount of incandescent lighting present in a remodeled facility. Lighting controls will need to be upgraded to provide automatic shut-off via relay panels and/or occupancy sensors. The grounding system shall be investigated and upgraded as necessary. All panels and electrical system components should be uniquely labeled as outlined in NEC 408.4. A rough order of magnitude cost to complete the items described is approximately \$225,000.

In summary, all three buildings are in need of general maintenance and labeling of the electrical system components in order to provide a safe environment with components labeled for easy access and identification. Many system components are worn and out dated and will require extensive time and cost to repair. Managing and maintenance personnel should inform tenants of the hazards associated with blocking access to panels with storage materials.

End of Report



APPROXIMATE SCALE IN FEET

1000 0 1000

**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
FLOOD INSURANCE RATE MAP**

**DALLAS COUNTY,  
TEXAS AND  
INCORPORATED AREAS**

**PANEL 180 OF 725**

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:  
COMMUNITY

COMMUNITY	NUMBER	PANEL	SUFFIX
ADDISON, TOWN OF	481069	0180	J
CARROLLTON, CITY OF	480167	0180	J
DALLAS, CITY OF	480171	0180	J
FARMERS BRANCH, CITY OF	480074	0180	J
DALLAS COUNTY, UNINCORPORATED AREAS	480186	0180	J

**MAP NUMBER  
48113C0180 J**

**EFFECTIVE DATE:  
AUGUST 23, 2001**



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

## APPENDIX C: QUALIFICATIONS

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Michael T. Chang  
Project Manager



***Education***

B.S. in Environmental Technology, North Carolina State University

***Registrations***

North Carolina-Licensed Asbestos Inspector (No.12453)  
South Carolina-Licensed Asbestos Inspector (No. BI-00537)  
AHERA Certified Asbestos Building Inspector  
OSHA 40-hour HAZWOPER Certification  
OSHA 8-hour HAZWOPER Annual Refresher

***Summary of Professional Experience***

Mr. Chang has 6 years of experience in the environmental, engineering and industrial hygiene service industries. He has significant experience in due diligence assessments for a variety of property types and the needs and requirements of a varied number of reporting standards, including ASTM standards, EPA's All Appropriate Inquiry (AAI) and customized client formats. Specifically, Mr. Chang has performed Phase I Environmental Site Assessments, Environmental Transaction Screens, Phase II and III Subsurface Investigations, Property Condition Assessments (PCAs), Small Loan PCAs, Regulatory Compliance Assessments, Asbestos Surveys, Lead-based Paint Surveys, Radon Studies, Mold Assessments and Lead-in-water sampling and analysis.

Mr. Chang currently serves as a Project Manager for Partner Engineering and Science, providing solutions to clients' due diligence and engineering needs. He is responsible for ensuring consistency, quality, and on-time delivery of due diligence and engineering services provided by Partner. Current day-to-day responsibilities include project oversight, staff supervision, and report review.

Mr. Chang has been personally involved in the details of hundreds of real estate transactions for various client types and therefore understands the specific needs and scopes of work required for the different parties involved in the transaction. Mr. Chang has served as an environmental scientist, project manager, or senior author for projects associated with over 700 real estate transactions. Mr. Chang is familiar with the due diligence requirements of a varied number of reporting standards, including the new standard ASTM E1527-05, EPA's All Appropriate Inquiry (AAI). He also has experience with fulfilling numerous customized client scopes of work.

Previously, Mr. Chang was a Project Manager and Client Manager for a Fortune 500 international engineering firm and was responsible for managing due diligence projects throughout the United States. He was also responsible for business development for due diligence services within North Carolina and South Carolina, staff management, and QA/QC review of all Phase I ESAs, asbestos surveys, and Industrial Hygiene-related reports. In addition, Mr. Chang was the project manager on numerous Phase II assessments and remedial

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investigations with cleanups under various regulatory programs for former drycleaners and industrial facilities located in the southeastern United States. Mr. Chang was the PCA lead for the North Carolina operations. He was also responsible for conducting asbestos, lead-based paint, and mold surveys, and the oversight of subsequent abatement projects. He also performed regulatory compliance audits and indoor air quality assessments to evaluate potential worker exposure issues.

Finally, Mr. Chang's diversity across residential, industrial, municipal, and commercial environments is a major contribution to Partner Engineering and Science's Associate team in the Southeast region of the United States.

Some relevant project experience includes:

- Plum Creek Timberland, Eastern North Carolina – Conducted site reconnaissance, aerial photograph review, regulatory agency database review, meeting with owners representatives, historical research, and report preparation for approximately 55,000 acres of timberland located throughout eastern North Carolina using the ASTM E 2247-02 Standard.
- Confidential Client, Marion, North Carolina – Project Manager and site assessor for a Phase I ESA and Compliance Audit for an approximately 70,000 square foot metal plating facility.
- Equity Office Portfolio, Various Locations, United States – Site assessor for 13 office buildings in Colorado and California ranging from four- to 16-stories and associated parking garages. The buildings contained a total of approximately 2.9 million square feet of office and support space.
- Genworth Financial, Various Locations, United States – Site assessor for numerous commercial properties including: office buildings, apartments, shopping centers, restaurants, and warehouses ranging in-size from 3,000 square feet to greater than 100,000 square feet.
- Dry-Cleaning Solvent Clean-up Act Program, North Carolina - Project manager for DENR enforced assessment of VOC-affected groundwater beneath Dry Cleaning sites within the state of North Carolina. Projects have involved both soil and groundwater assessment activities to define onsite soil source areas and onsite/offsite groundwater plumes. Activities are currently ongoing.
- Asbestos Surveys, Various Locations – Conducted bulk sample collection, report preparation and abatement oversight for private and municipal clients in North Carolina and South Carolina.
- SPCC Plans, Various Locations – Conducted site reconnaissance and report preparation of multiple spill prevention control and countermeasure (SPCC) plans for government and industrial clients. Additionally, prepared and conducted initial training session for SPCC plans.
- Environmental Compliance, Various Locations – Conducted environmental compliance audits, prepared waste stream determination profiles, and updated environmental compliance manuals with federal, state and local regulations for terminal trucking facilities throughout the east coast. Managed Environmental, Health and Safety audits at facilities throughout the

US. Managed the preparation of SWPPPs, submittal of NOIs, and certificate of no exposures throughout the southeast.

- Petroleum Impacted Sites, Various Locations – Remedial activities on petroleum impacted sites including refineries, bulk storage plants, and retail stations. Activities include; remediation system installation and O&M, monitor well installation, underground storage tank removal, and other tasks.

Summer Gell  
Principal



***Education***

B.S. in Environmental Health, *Cum Laude* Western Carolina University

***Registrations***

North Carolina-Licensed Asbestos Inspector (No. 11425)

South Carolina-Licensed Asbestos Inspector (No. 22156)

AHERA Certified Asbestos Building Inspector

OSHA 40-hour Hazardous Materials Safety Certification

OSHA 8-hour HAZWOPER Annual Refresher

***Summary of Professional Experience***

Mrs. Gell has over 15 years of experience in the real estate due diligence field. She has a strong background in providing environmental due diligence for debt and equity transactions, as well as the performance of Phase I environmental site assessments, Phase II subsurface investigations, soil and groundwater remediation, National Environmental Policy Act (NEPA) Reviews and Environmental Assessments, regulatory compliance audits, asbestos surveys, lead-based paint surveys, mold assessments, and indoor air quality studies. She also has extensive portfolio management experience throughout the United States.

Mrs. Gell currently serves as a National Client Manager for Partner Engineering and Science, providing solutions to clients' due diligence and engineering needs. She is responsible for ensuring consistency, quality, and on-time delivery of due diligence and engineering services provided by Partner. Current day-to-day responsibilities include project oversight, staff supervision, report review, and client management.

Mrs. Gell has been personally involved in the details of thousands of real estate transactions for various client types and therefore understands the specific needs and scopes of work required for the different parties involved in the transaction. Mrs. Gell has served as an environmental scientist, project manager, or senior author for projects associated with over 5,000 real estate transactions. Mrs. Gell is familiar with the due diligence requirements of a varied number of reporting standards, including ASTM E1527-05, EPA's All Appropriate Inquiry (AAI), Fannie Mae DUS, Freddie Mac, HUD, and Federal Communications Commission (FCC) 47 CFR Part 1. She also has experience with fulfilling numerous customized client scopes of work.

Previously, Mrs. Gell was a client manager for a Fortune 500 company and was responsible for managing due diligence projects throughout the United States. Mrs. Gell was also responsible for developing report templates to meet the Phase I ESA requirements of Freddie Mac and Fannie Mae's small loan program. Her primary clientele focus included real estate investors, DUS lenders, CMBS lenders, insurance lenders, and real estate equity funds.

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Mrs. Gell was also the Geoscience Group Manager for an international engineering firm, where she was responsible for business development for due diligence services within North Carolina and South Carolina, staff management, and QA/QC review of all Phase I ESAs, asbestos surveys, and Industrial Hygiene-related reports. In addition, Mrs. Gell was the project manager on multiple Phase II assessments and remedial investigations with cleanups under various regulatory programs for former textile mills, drycleaners, and Brownfields sites located in the southeastern United States.

Prior to being promoted to Geoscience Group Manager, Mrs. Gell was responsible for managing and completing environmental site assessments, and soil and groundwater contamination assessments associated with USTs, drycleaners, and former industrial properties. She was also responsible for conducting asbestos, lead-based paint, and mold surveys, and the oversight of subsequent abatement projects. She also performed regulatory compliance audits and indoor air quality assessments to evaluate potential worker exposure issues.

For a national geoscience company, Mrs. Gell served as a staff environmental scientist and conducted soil and groundwater assessments at multiple petroleum retail sites located throughout Florida.

Some relevant project experience includes:

- Performed, managed, or reviewed due diligence projects associated with more than 5,000 real estate transactions on multi-family properties, agricultural properties, commercial office buildings, retail shopping centers, gasoline service stations, medical and hospitality properties, dry cleaning plants, auto repair shops, industrial properties, and various manufacturing operations throughout the United States.
- Managed a portfolio of Phase I ESAs for over 200 gas stations located in Texas and Utah.
- Managed and served as a team leader for a Phase I and Phase II assessment of five housing areas associated with the Marine Corps Air Station and Parris Island Recruit Depot in Beaufort, South Carolina. Scope of Services included asbestos sampling, lead based paint sampling, mold investigation of housing areas, geophysical surveys for USTs and possible land fill area, and soil and groundwater assessment.
- Managed and performed indoor air monitoring project of a former industrial facility located in Orlando, Florida. Air monitoring parameters consisted of VOCs, formaldehyde, carbon monoxide, carbon dioxide, environmental bacteria, fungi, radon, and lead. Provided expert witness testimony for workers compensation claims filed against the existing property owner.
- Completed UST Closure Reports, Limited Site Assessments, Soil Assessment Reports, Soil Closure Reports, and Corrective Action Plans for submittal to North Carolina Department of Environment and Natural Resources for UST sites owned by various industrial and government entities.
- Completed Tier I, Tier II, and Corrective Action reports for submittal to South Carolina Department of Health and Environmental Control (SCDHEC) for UST sites owned by various developers and industrial entities.

- Conducted soil and groundwater assessments at multiple petroleum retail sites located throughout Florida. Activities included field oversight of groundwater monitoring well installation using mud-rotary, air-rotary, and hollow-stem augers; soil and groundwater sampling; receptor surveys; and elevation surveys of installed monitoring wells and soil borings. Prepared Contamination Assessment Reports (CARs) documenting field assessment activities and evaluation of laboratory analytical results for submittal to the Florida Department of Environmental Protection (FDEP).
- Field Team Leader for Phase I ESAs and subsequent Phase II investigations conducted of multiple closed furniture manufacturing sites located in North Carolina and South Carolina as part of a joint venture between an international engineering firm and a Brownfields investment company.

***Publications***

[Going through a Phase? All About Fannie Mae and Freddie Mac Due Diligence, Scotsman Guide, April 2009](#)

## Extension of Reliance

This report has been compiled for the immediate and exclusive use of the party / parties that originally contracted Partner for its completion.

Any and all reliance on this report shall expire after the duration of six (6) months immediately following the time of its completion.

No portion of this report is to be relied upon or used in any way by any person, business, or entity that was not a party to the original agreement.

Any unauthorized reliance of this report is strictly prohibited by Partner and, therefore, not warranted in any way for accuracy or completeness.

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Company Name:

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Contact Name:

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Telephone Number:

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Email Address:

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Subject Property Address: 4726 & 4730 George Haddaway Drive

Addison, TX 75001

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Partner Project Number: 12-86801.1

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