TERMINAL BUILDING EVALUATION

1.0 INTRODUCTION

This report evaluates the existing Terminal Building at Frederick Municipal Airport (FDK) to determine the suitability of the building for continued use as a restaurant and Airport operations administrative offices. The on-site evaluation was conducted on November 1, 2004 by URS Corporation personnel.

1.1 BUILDING HISTORY

Construction began in 1948; the building opened to the public May 1, 1949. Floor plans of the original structure are not available; however exterior elevations have been obtained. The building served as the terminal building for the Airport until a renovation in the early 1990's, which converted the ground level into the current restaurant. However, the basic structure of the building remains relatively unchanged since the original construction, with the only addition being a prefabricated "walk-in" cooler added with the restaurant renovation on the end of the north wing and the removal of several windows and the subsequent in-filled with masonry. The original interior layout is unknown; however according to conversations with the present Airport Administrative personnel, the layout has been substantially modified to accommodate the restaurant.

PHOTOGRAPHS: TERMINAL BUILDING

Terminal Building from Southwest

Terminal Building from Northeast

Infill Masonry at Removed Windows

1.2 BUILDING ENVELOPE

The building consists of three levels with a partial basement. The ground floor, approximately 2,242 square feet (SF), is occupied by a restaurant business. The second floor, approximately 842 SF, is occupied by the Airport Administration. The third level, approximately 144 SF, is largely abandoned but once served as a weather station (not as an Air Traffic Control Tower). The partial basement is located under the restaurant kitchen area and is dedicated to mechanical and electrical equipment and storage.

The original structure is concrete CMU bearing walls on the first and second level with wood framed interior partitions, and a second floor, and a roof structure. The third floor consists of a small wood-framed tower structure. The first floor is slab-on-grade with a structural poured in-place concrete slab over the small basement area. The basement walls are also concrete CMU walls and appear to be dry with no indication of water problems.

The roof has been a source of problem with numerous reports of leaks. The roof, which was last replaced in 1991, is a nearly level asphalt and felt built-up system on the first and second levels. The tower roof is slightly pitched from the beacon structure down to each edge. All are showing signs of age with separation of lap and edge joints and alligatoring (deterioration of the asphalt coating). An area along the east side of the second level has been built up to provide a slope away from the east parapet, apparently an indication of earlier problems. An area of ponded water was located on the north side of the tower. The roof feels slightly spongy when walking on it, which indicates that there is either a layer of insulation without a cover board installed under the roof membrane or wet insulation. The roof structure is expected to be wood frame and deck. This deck could be deteriorated from continued leakage problems. However, no visual or other confirmation can be provided without some destructive testing (i.e., removal of portions of the ceilings or roof membrane). Drainage is provided by several thru-parapet scupper/headers and downspouts on the exterior surface of the walls of the building. The tower roof has a perimeter gutter and downspout system on all four sides. The roof is approximately 13 years old; therefore, there is little, if any, value left in any warranty received at the time is was last replaced in 1991, especially if routine maintenance procedures were not performed.

The exterior envelope on the first and second levels is stucco on CMU walls with accents of brick at the center core of the building. The stucco exhibits several areas of stress cracks, some of which are where windows have been removed and in-filled with masonry before being covered with stucco. Other areas show indications of minor cracks in the masonry backup wall. The exterior of the tower is metal lap siding.

A small canopy has been installed above the exterior door to the kitchen to provide protection for users of that door. This canopy is damaged and deteriorated and in need of repair or replacement.

Most of the windows are single glazed steel casement type windows with no weather strip or thermal protection. Two windows on the south side of the second level have been replaced with vinyl double hung units with insulating glass. The tower windows are an aluminum-clad wood combination awning and fixed glazing in poor condition as exhibited by misalignment and leaks inside the tower.

The restrooms have large areas of glass block for light. The entrance to the restaurant is a double-glazed aluminum entrance system with single glazing in the aluminum door. The remainder of the exterior doors is wood with wood frames. The tower exterior door has an aluminum storm door installed.

PHOTOGRAPHS: BUILDING ENVELOPE

Roof Membrane Deterioration

Built Up Slope in Roof Membrane

South Wing Roof

Ponded Water on North Side

Scupper/Downspout System

Tower Gutter System

Cracks in Stucco Finish/Accent Brick Panels

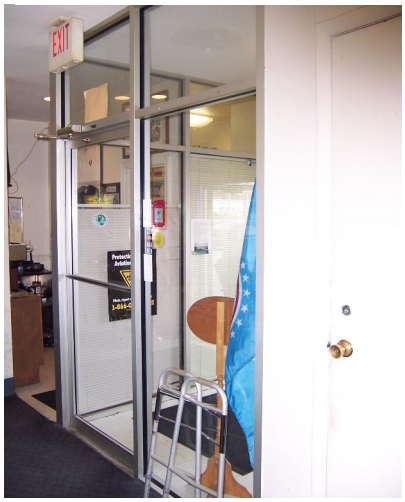
Tower Lap Siding

Canopy Above Kitchen Door

Soffit of Canopy Above Kitchen Door

Misalignment of Window Corners

Water Damage Inside Tower Windows



Entrance to Restaurant

1.3 BUILDING INTERIOR

1.3.1 Restaurant (Lower Level)

All interior wall surfaces of the restaurant areas, including restrooms and kitchen, are painted gypsum wallboard. An area of exposed block at the kitchen wash area indicates that the exterior walls are furred out with approximately 1-1/2 inches of styrene bead board between the drywall and the masonry, which is assumed to be present on all exterior walls of the restaurant. The interior partitions appear to be wood framed drywall. The floor coverings are carpet except in the kitchen and restrooms. Most of the carpet is well worn and in need of replacement. An exposed area in the HVAC closet in the hallway to the women's restroom indicates the carpet may cover a layer of 12 by 12-inch vinyl tile over older 9 by 9-inch vinyl tile, which is likely to be vinyl asbestos tile. The kitchen is a red quarry tile floor and base. The restrooms and dishwashing areas are vinyl composition tile. The ceilings are gypsum wallboard painted. An area of 12 by 12-inch acoustical tile was observed in the HVAC closet, which may indicate that the gypsum wallboard ceiling is hung below an earlier ceiling. Minor repairable damage was noted throughout. A black 6-inch rubber or

vinyl base is installed in all rooms except the kitchen. Interior doors are painted wood in wood frames and are narrow by today's standards. Hardware is cylindrical locksets, all of which are loose and worn.

PHOTOGRAPHS: RESTAURANT

Furred Walls – Gypsum Wallboard on Styrene Foam Insulation

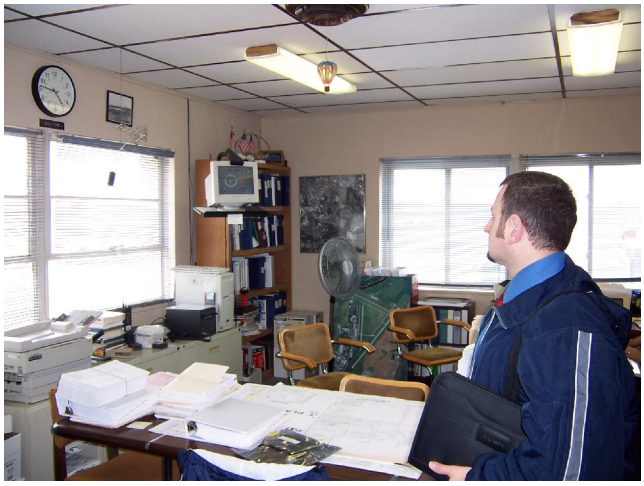
9 X 9 Vinyl Tile Under Carpet

1.3.2 Airport Operations (Second Level)

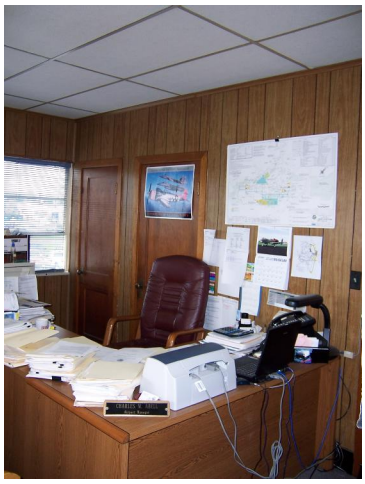
The upper level is inexpensive wood paneling, some of which has been painted. The exterior walls are masonry, and the interior partitions are wood frame. It is unknown if the exterior walls are insulated. The floor system is carpet on an unknown substrate, probably over vinyl tile on a wood frame floor structure. The carpet is worn and in need of replacement. The ceiling is suspended 2 by 4-foot acoustical panels in a grid system suspended several inches below an earlier 12 by 12-inch acoustical tile system, probably glued to a gypsum board substrate. The ceilings indicate several areas of staining from roof leaks and areas where mismatched new panels have been installed to replace panels damaged by leakage. The grid is yellowed and needs cleaning and painting or replacement. Doors are original stained wood rail and stile panel doors in stained wood frames with what appears to be original hardware; they appear to be in very good condition. The doors on this level are narrow by today's standards. Except for two vinyl replacement windows, as discussed previously, all windows are single glazed steel sash that allow excessive infiltration and heat loss.

The second level is limited in area to approximately 842 SF in space. The appearance is that the space is too small for the functions it contains. There is a need for more circulation space between desks, additional file and storage space, and an overall upgrading of the environment. Electronic capabilities, computers, radio communications, etc. need upgrading.

PHOTOGRAPHS: AIRPORT OPERATIONS



Upper Level Interior Finish



Upper Level Interior Finish

Upper Level Ceiling

Upper Level Doors

1.3.3 Tower Level

The tower level is a wood frame with paneled walls, vinyl tile flooring, and vinyl flooring. The window system has badly deteriorated and the finishes inside the tower are being destroyed.

1.3.4 Restrooms

The building contains two restrooms, both on the ground floor. The female restroom is located in the north wing, and the male restroom is located in the south wing. Both are in fair to poor condition. The female restroom contains two water closets in stalls and a single vanity type lavatory in a counter along with standard accessories, soap dispensers, towel dispensers, mirrors, and waste receptacles. The male restroom has two water closets in stalls, two wall-mounted lavatories, a urinal, and a sloped HC mirror mounted on top of the normal mirror as well as the standard accessories. One stall in each room has grab bars but neither qualifies as handicapped accessible. Partitions are metal overhead rail

braced steel that have been repainted. Finishes are vinyl tile floor covering, vinyl or rubber base, and painted gypsum board walls and ceilings. These finishes are not sanitary and require maintenance to retain a presentable appearance.

1.3.5 Building Circulation

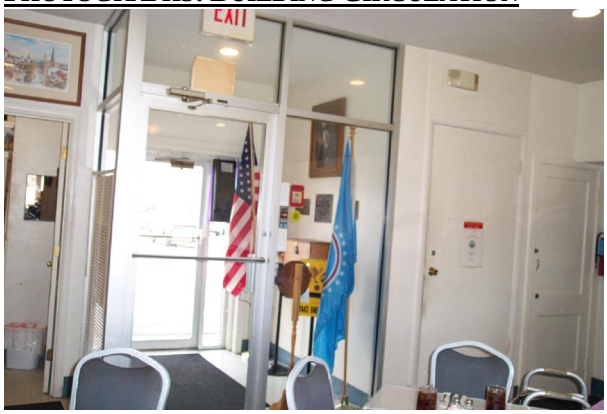
The ground floor of the current facility is dedicated to the restaurant operation with the second floor occupied by the Airport Administration offices. The third level (tower) is not occupied and is vacant.

Restaurant access is through the main door at the west face of the building with one exit door at the end of the south wing. The kitchen has exterior access from a door on the north wing above the basement door that does not qualify as an exit except from the kitchen. Access to each restroom is by narrow corridors along the west side of each wing and is not in compliance with ADA requirement criteria.

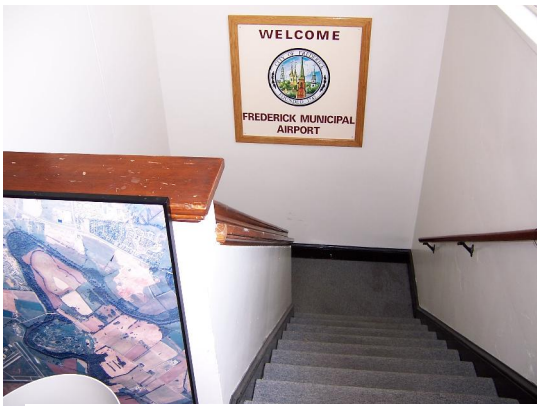
Access to the Airport Administration offices is by way of a narrow, steep stair adjacent to the entrance of the building, but through the restaurant dining room. This stair has no bottom landing and does not meet current code criteria for tread width and riser height. The only available restroom facilities for the Airport Administration are on the lower floor within the restaurant.

Access to the tower level is by way of a very narrow and very steep stair from the Administration offices that has no handrail and inadequate headroom.

PHOTOGRAPHS: BUILDING CIRCULATION



Door to Operation Office on Upper Level to the Right of Restaurant Entrance door



Stair to Operations Level from Top

1.4 STRUCTURAL EVALUATIONS

The building was built in 1948. The building has a two-story center portion with one story wing on left and right side of the center portion.

1.4.1 Construction of the Building

The foundation is 1-foot thick and 1-foot 8 inches wide concrete strip footing for all CMU walls according to "As Built" drawings. The bottom of footing is 4 feet 9 inches below the finished grade according to "As Built" drawings.

The outer walls of the building are CMU with stucco applied to the exterior except at the entrance. The entrance has a brick panel. The inside of the walls are finished with gypsum boards attaching to furring strips on CMU walls. Wood beams support the roofs of the one-story wings. It was not possible to observe the beams because of a gypsum board ceiling attached to the bottom of the wood beams. The ground floor is concrete slab-on-grade except for the south portion of the north wing that has a structural concrete slab as a floor spans over the basement below.

The basement is 12 feet wide and 25 feet long. The basement walls are 8-inch thick CMU. It was observed that the ceiling of the basement was a concrete slab and was supported by several courses of bricks on top of CMU walls. The floor of the basement is concrete slab-on-grade. The clear height of the basement is 7 feet 3 inches. The steps leading to the basement are concrete. The walls of the stairwell are 8 inch CMU.

A wooden stair connects the first level to the second level. The second level floor is wood on top of wood beams (determined by walking on it). The CMU walls of the second floor are finished with furred paneling on the inside. The ceiling is suspended 2-foot x 4-foot panels. The roof/floor structure above is concealed by 12 inches x 12 inches perforated tiles that are attached to wood joists. It is assumed that the roof is made of wood joists with plywood deck on top of the joists. The roof is waterproofed by using built-up membrane.

Above the second level is a weather tower accessed by a steep wooden stair. The weather tower is framed of wood. The walls are finished with paneling inside and metal siding outside. The floor and roof are made of wood joists and wood rafter, respectively. All four sides have windows.

1.4.2 Structural Conditions

The building foundation is not visible. It is assumed that some footing settlement has occurred, which has caused cracks in the CU walls.

The CMU walls are finished with a stucco exterior. There are numerous cracks in the stucco. Some are diagonal starting from the corner of windows. Some are horizontal at the corner of the building. The interior of the walls does not show any distress. The basement walls do not show any cracks, but the walls around the stairwell leading to the basement have diagonal cracks.

Roof joists for the single story wings are not visible because of the ceilings, but any roof leakage, which has been reported, will eventually weaken them structurally.

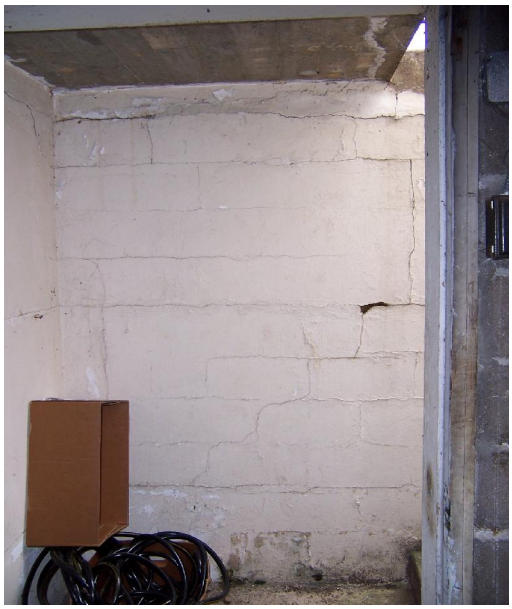
The second level floor has some unevenness, which may be caused by the settlement of outside walls. The second floor roof leaks in heavy rain; ponding on the second floor roof contributes to the leaking. The second floor wood joists are also not visible due to the ceiling, but continuous wetting of the wood joists may have damaged the wood.

The first floor of the building is used as restaurant and second floor is used as office area. The live load, per IBC 2003 Code requirements, for a restaurant is 100 psf and an office area is 50 psf. The office corridors, as per code, are 80 psf. It is not possible to determine whether the building was designed for these loads without further examination of the structure including removal of some ceilings. It is not known whether exterior walls have vertical and horizontal reinforcement. The height of the wall first floor to second floor is approximately 12 feet, and with 20-psf wind load, the walls will be overstressed if they are without reinforcement.

PHOTOGRAPHS: STRUCTURAL CONDITIONS

Cracks in Masonry Walls

Cracks in Masonry Walls



Cracks in Stairway Wall

Cracks in Stairway Wall

1.5 MECHANICAL SYSTEMS

The building contains both an air-conditioning unit located on the main level and a gas fired furnace in the basement. These two systems supply heating and cooling to the building. The cooling to the upper level offices is by overhead ductwork located in the ceiling space to ceiling-mounted diffusers located in each of the rooms. The ductwork for the restaurant is located in a bulkhead that runs down the sidewall of the room. A rooftop air-conditioning unit serves the extended dining area.

As indicated by Airport Administration and restaurant personnel, the existing heating and cooling system does not provide adequate heating and cooling in the upper level offices. The heating and cooling system has only one thermostat that is located in the restaurant area. This cycles the unit on and off depending on the selected temperature in the restaurant and not in the rest of the building. Wall units have been added to the upper level offices to provide supplemental heating and cooling to the offices.

PHOTOGRAPHS: MECHANICAL CONDITIONS

Ceiling Mounted Diffusers Located in Upper Level Offices

Side Wall Diffuser Located in Bulk Head in Restaurant Dining Room

Extended Dining Area Served By Rooftop Unit

Air Conditioning Unit located Adjacent To Restaurant

Through the Wall AC Units added to Offices on Upper Level

Condensing Unit for Interior Air Conditioning Unit

1.5.1 Kitchen

The kitchen is located on the main level of the building adjacent to the dining area and houses various appliances associated with a kitchen. The kitchen contains an exhaust hood above the griddle and fryers. The hood is connected by ductwork through the roof and connects to two exhaust fans. The hood contains an automatic fire suppression system.

PHOTOGRAPHS: KITCHEN

Kitchen Exhaust Hood and Fire Suppression System

Kitchen three (3) Compartment Sink

1.5.2 Plumbing Systems

The domestic water for the building is supplied from the City main. The water then supplies the restrooms and the kitchen on the main level.

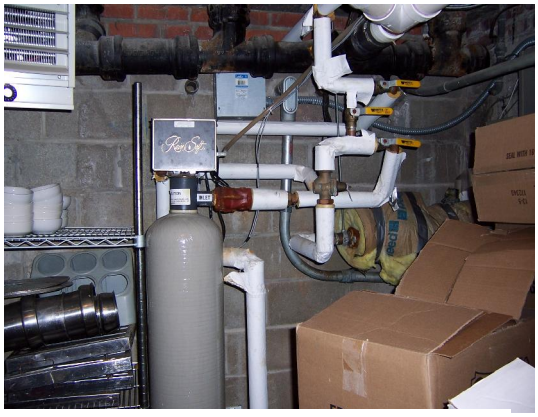
The hot water for a 75-gallon gas provides the building fired storage heater. Information on the heater indicated that it was manufactured in 1994. The hot water heater is located in the basement level. The unit is a gas-fired heater with a natural draft flue, which has been installed within the existing chimneystack. The piping serving all of the kitchen appliances and equipment is located within this space at high level.

PHOTOGRAPHS: PLUMBING SYSTEMS

Water Heater in Basement

Piping from Kitchen Installed Above the Main Electrical Meter and Panels.

Piping from Kitchen Installed Above the Main Electrical Meter and Panels



Water Filtration/Softener System Located in Basement

Insulation Burnt from Flue Gas (Inadequate Removal of Flue Gases Through Flue Pipe)

1.5.3 Restrooms

The restaurant office and cashier area contains a male and female restroom, neither of which is ADA compliant. The male restroom contains a urinal and two toilets with two wall-mounted lavatories in fair condition. The female restroom contains two toilets and a single counter top lavatory in fair condition.

The restrooms are exhausted via ceiling grills to roof mounted exhaust fans, one per restroom. These exhaust rates probably do not comply with the required ventilation as required by the Mechanical Code today. These were taken from the Code requirements at the date of design. The Code requirements today are 75 cfm per fixture.

PHOTOGRAPHS: RESTROOMS

Male Toilet Room Existing Fixtures were in fair condition

Male Toilet Room Existing Fixtures were in fair condition

Female Restroom Existing Fixtures were in Fair Condition

1.5.4 Sprinkler Systems

There is no sprinkler system contained within the building.

1.5.5 Roof Drainage

The roof is drained by rainwater pipes located on the exterior of the building. The rainwater pipes are in poor condition and have been flattened or dented in places, which inhibits the flow of water draining down to grade.

PHOTOGRAPHS: ROOF DRAINAGE

Roof Drained by Exterior Rainwater Pipes

Roof Drained by Exterior Rainwater Pipes

1.6 ELECTRICAL SYSTEMS

1.6.1 Power

The building contains ten electrical panels. These panels, which vary in age, are located on the upper level, main level, and in the basement. The majority of the panels are the original square D panels, which were installed when the building was built. The original panels could not be evaluated for capacity as many of the fuses were missing, and no fuse size was indicated on many of the existing screw fuses. Newer panels have been added in the basement, for the kitchen equipment, air conditioning units, furnace, and the exterior lighting.

A new 400-amp electrical panel is located on the main level and serves the kitchen equipment and main level lighting and receptacles. The new electrical panel in the basement is a 200-amp panel, which serves the kitchen equipment on the main level. There were no spares or spaces in any of the panels.

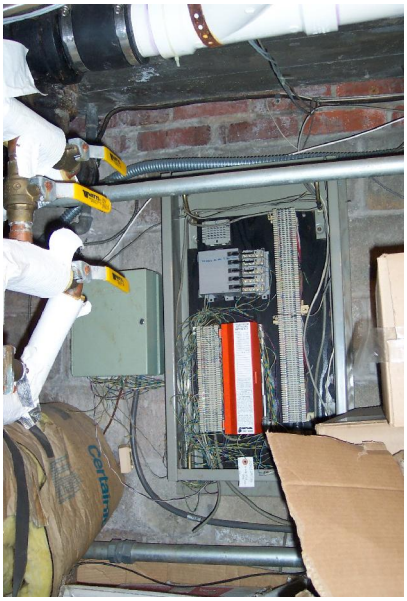
PHOTOGRAPHS: POWER

Newer Electrical Panel On Main Level for lighting and receptacles for Dining Room, Women's Restroom and Kitchen Receptacles.

Original Electrical Panel With Screw in Fuses on Main Level for Lighting and Receptacles in Dining Area.

Existing Panel for Kitchen Lighting and Power Receptacles. New Electrical Panel for Kitchen Equipment – Exhaust Hood Fans, Griddles, and Ovens.

Piping from Kitchen Above Installed Above Panels. A Drip Pan Installed under the Piping to avoid water Dripping onto Panels.



Existing Telecom Panel located in Basement Level.

Existing Panel on Upper Level for Lighting and Power Receptacles for office spaces.

1.6.2 Lighting

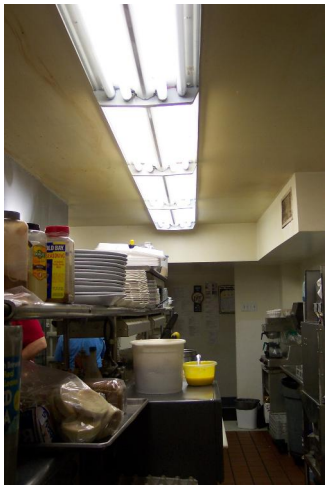
The office areas on the upper level contained ceiling-mounted 1 foot by 4-foot two-lamp fluorescent light fixtures.

The building contained emergency lighting in the main dining area, kitchen, and the upper office areas.

Exit signs are located above all exits out of the building.

PHOTOGRAPHS: LIGHTING

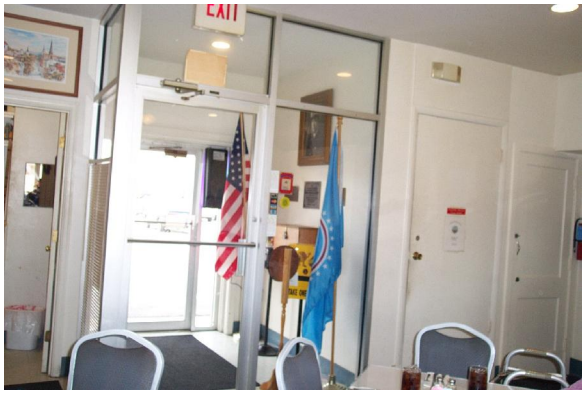
Ceiling Mounted Light Fixtures Located in Upper Level Offices.



Ceiling Mounted Light Fixtures in Kitchen

Concealed Down Lights located in the Dining Area.

Ceiling Mounted Light Fixtures Located in Extended Dining Area.



Emergency Lighting and Exit sign on Main Level Entrance/Exit to Building

1.7 SITE

The site consists of auto parking to the west and south of the building and aircraft ramp area to the east. The ramp area to the east is separated from the building by small grassed lawn areas, and the area to the north is grassed with outside seating areas. The site is level with very little slope, and the building floor elevation is very close to the site elevation.

1.8 HAZARDOUS MATERIALS

There is no known hazardous material report on the building, but due to its age, it is likely that hazardous materials exist in the building. Areas of 9 by 9 inch vinyl tile, which are usually vinyl asbestos tile, were noted in the mechanical closet on the ground floor. They appear to be overlaid with 12 by 12 inch vinyl tile and subsequently, carpet in the restaurant area. The second floor is carpeted, probably over existing flooring which might be the same as the first floor. Visible piping insulation appears to be fiberglass with a kraft paper surface. Other likely areas of hazardous materials may be piping insulation in concealed areas, vinyl tile adhesives, roof flashings and cements, old light fixture ballasts containing PCB's, and lead paint. It is recommended that a hazardous material survey be performed prior to any work being performed on the building, including testing water for lead. Any work on the building should be with a caution to not disturb any suspicious materials.

1.9 RECOMMENDATIONS

Physically, the current structure has numerous conditions that need to be addressed for continued use as a restaurant and the Airport Administrative offices. These conditions are as follows:

- The current roof system is in need of replacement. Although a more in-depth examination is needed to determine if the current leakage during storms is actually from the deteriorated roof system or problems in the tower structure above, the roof system needs attention. Due to its age, the roof should be replaced whether the building is to remain in service or just to protect the building and contents from further damage and deterioration. Further examination should be

made to verify the condition of the roof framing, and if damage is found, the extent of the damage.

- The existing fenestration system (widows and doors) is substandard in relation to current energy standards. Single glazed windows should be replaced with thermal break windows and insulating glass. Exterior wood doors should be replaced with steel or aluminum doors that are more resistant to the effects of weather.

- Exterior walls have many small cracks in the stucco surfaces in addition to the cracking where previous openings have been closed with masonry and are in need of much repair. It appears that some of the cracking may be settlement cracks; others may be thermal stress cracks. Typically infill openings, such as these, are hard to control to prevent further cracking in the future.

- The existing structural system needs to be evaluated to assure that the structure can safely accommodate the uses that it contains.

- All interior finishes, floors, walls, and ceilings should be upgraded to present a more attractive atmosphere as well as easing maintenance chores.

- The entire mechanical, heating, cooling and ventilation systems are outdated and need to be replaced with newer more efficient equipment.

- Some of the electrical system appears to date back to the original construction. Most of it is substandard and dangerous by today's standards and needs to be replaced.

- Upgrading all communications systems. Computer cabling and telephone lines have been installed as surface runs and should be updated.

Functionally, the facility has numerous problems that inhibit efficient operation and any future growth. These problems are as follows:

- Extensive work would be needed to bring the building circulation paths up to current standards including widening doorways, extending and widening stair, adding an elevator to the second level for handicapped access, providing the second level with a private entrance, etc.

- The second level should be provided with restroom facilities so that the Administration personnel and visitors do not have to use the restaurant's facilities.

- Existing restrooms should be enlarged and made handicapped accessible.

1.10 SUMMARY

URS Corporation has been tasked to evaluate the existing structure for current physical condition and for continued use as Airport administrative offices and a restaurant and evaluate the building with regards to continuing existing uses with the possibility of expansion.

The existing structure is not large enough to accommodate required interior modifications additions and retain its current appearance or function. Exterior additions would be required. If the building were to be maintained close to its original appearance for any historical reasons, these additions would severely hamper that goal. It may be better to relocate the existing functions and restore the existing structure back to its original condition and use it for a museum.

If the building is not restricted by any historical requirements, additions could be added but will drastically change the appearance of the building. The next consideration is whether additions to the building can be accommodated by the existing structural system and whether additions are economically feasible. It may be easier and less expensive to relocate these functions to a new structure.

If the Airport is considering reestablishing passenger service through the Terminal, expansion of the Airport administrative facilities, or the installation of an Airport control tower function, or any combination of these, a new structure would be in order.