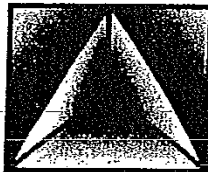
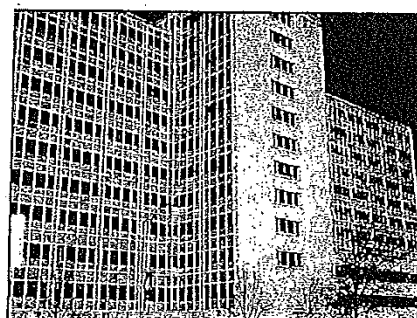
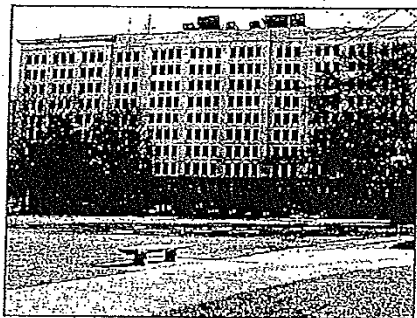


MARCH 2000

DOCKING & LANDON STATE OFFICE BUILDINGS CODE REVIEW

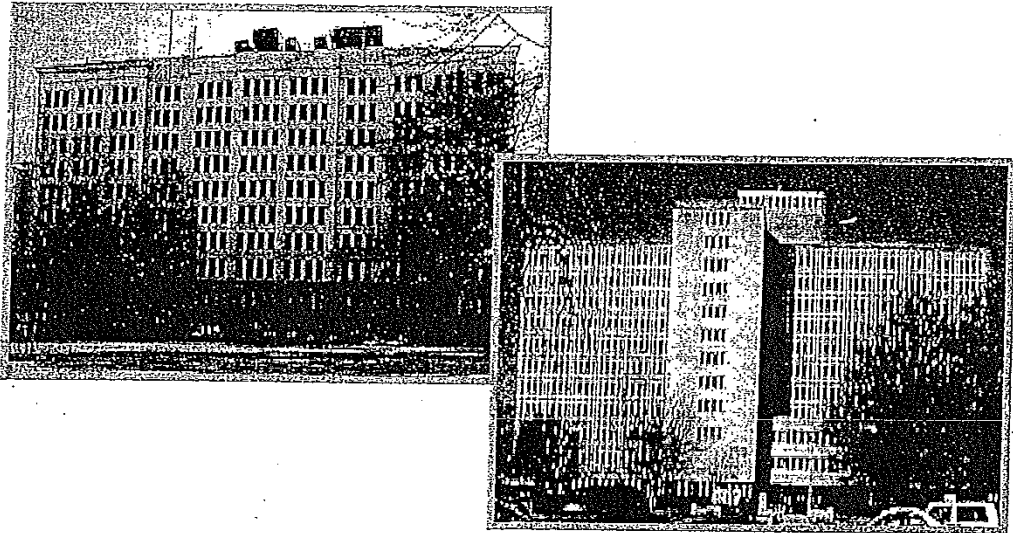


FireDynamics

A division of
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Docking and Landon State Office Buildings



In November of 1998 the State of Kansas Facilities Office sought proposals for the design of fire sprinkler systems and Life Safety Code analysis for two state office buildings, the Landon and Docking State Office Buildings. These buildings sit on either side of the State Capitol north of 10th Street in Topeka, Kansas. The Landon Building was constructed in 1923 and was previously owned by the Santa Fe Railroad Company. The Docking Building was constructed in 1955, with additions in 1969 and 1980.

As with all buildings, many alterations have been made over time to the original construction. Building and fire codes have changed since the buildings were built. Requirements for the treatment of the means of egress, or exiting system, for the buildings also have changed. Although both buildings have fire pumps and standpipe systems, neither was provided with a full fire sprinkler system. Fire alarm systems in both buildings have recently been upgraded.

FireDynamics, a Division of Henderson Engineers, Incorporation, was retained in October of 1999 to perform the life safety code inspections and analysis and complete the design of the fire sprinkler systems. A kick-off meeting occurred on November 17, 1999 with parties from FireDynamics and the State of Kansas.

The project scope consists of evaluation and code analysis of the existing structures. The main part of the project involves the complete retrofit of a fire sprinkler suppression system. Starting with an analysis of the existing fire pumps, associated tanks and underground fire lines, adequacy and life expectancy of the systems were evaluated. It was determined from this analysis that the fire pump in the Landon Building should be replaced, although the pump in the Docking Building could remain.

From mid-December, 1999 to mid-January, 2000 each building was surveyed by **FireDynamics** staff and existing conditions were noted. Complete field survey findings are included in this report. Recommendations for life-safety and fire protection upgrades specific to both buildings follow.

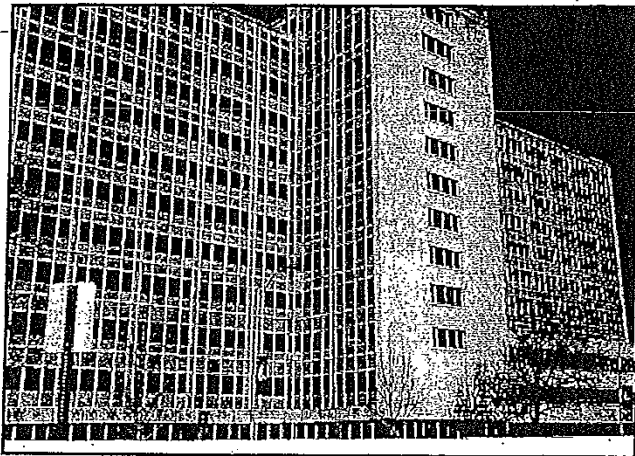
DOCKING STATE OFFICE BUILDING

RECOMMENDATIONS

Recommended modifications to the building include the installation of a complete fire sprinkler system throughout and the removal of existing aluminum ceiling panels, to be replaced with a fire-resistive lay-in ceiling system to re-create the required two-hour floor/ceiling assembly. These improvements alone will greatly increase the level of life safety for the occupants of the building. Additional improvements will include additions to the fire alarm system and the sealing of penetrations in rated walls and floor/ceiling assemblies.

GENERAL INFORMATION

The Docking State Office Building located at 915 SW Harrison Street in Topeka, Kansas was



constructed in 1955 with additions in 1969 and 1980. The approximately 542,000 sq. ft. building is located west of the State Capitol Building and houses several branches of the state government including the Department of Transportation, Department of Revenue and Capitol Police. This building also supplies steam and chilled water to the State Capitol Building and steam only to the Landon State Office Building, Memorial Hall and the Kansas Judicial Center.

This building is a twelve-story high-rise of Type II-Fire Resistive construction in conformance with the 1997 Uniform Building Code. The top two floors are a penthouse with mechanical equipment on the lower level and elevator equipment on the upper. The building has subbasement and basement levels. The subbasement level is used for mechanical equipment including chillers and boilers, generator and fire pump. Other sub-basement areas are used for general storage, the Maintenance Shop, Wood Shop, Plumbing Shop, Paint Shop and Housekeeping Storage. The basement level contains the Kitchen and Dining Area, Service Dock, Print Shop, Photo Shop and offices. The remainder of the building is typical office space.

The basement, subbasement, and penthouse levels are constructed of concrete encased steel columns and beams with poured-in-place concrete floors. Floors one through twelve are constructed of concrete encased steel columns with unprotected steel beams and an approximately 5-inch thick concrete floor on steel corrugated decking material. There is an approximately 2" deep-cellular floor duct system which is used to route electrical and communication lines across the building.

There is a metal lath and plaster "fire ceiling" attached to a steel frame and suspended from the floor structure with metal ties. This ceiling is no longer serving a fire-resistive purpose due to significant penetrations through it and missing sections. Access above the fire ceiling is through 90-minute fire rated steel hatches located at various locations on each floor. The assembly is currently constructed similar to UL Design #D404, which has a minimum fire resistance rating of 3

hours. We are recommending replacement with a membrane ceiling tile and grid, new tented light fixtures, and diffusers, similar to UL Design #G256, to allow a 2-hour fire resistive rating, in conformance with code.

A perforated aluminum ceiling is suspended below the plaster ceiling on the first through twelfth floors. Electrical and mechanical equipment is routed above. The space between the fire ceiling and the perforated aluminum ceiling is a return air plenum. It is a code violation to use the corridors as part of the air return system. It is recommended that the corridor walls extend to structure, and air is ducted across the corridor from open plenums to mechanical areas.

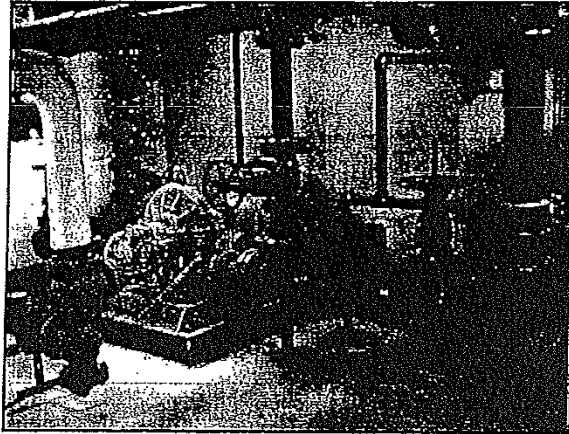
HVAC equipment is located on each floor. The first through third floors have two mechanical equipment rooms. The fourth through twelfth floors have mechanical equipment rooms located north of the elevator lobby. Air supply is ducted to the diffusers; return is through the existing plenum space.

The building has four enclosed stairways with walls constructed of 8-inch concrete block, which exceeds the required two-hour fire resistance rating. The stairwell doors are 90-minute rated, self-closing fire doors. The maximum allowed exit access travel distance from any space in the building to an exit is 250 feet. In suppressed buildings, this distance is increased to 350 feet, with the last 100 feet of travel in a one-hour rated corridor. All floors meet this requirement, with the exception of the sub-basement. Corridors on the subbasement, basement and first floors are of rated construction, with walls from the floor to the underside of the floor above. The hallways on the remaining floors do not appear to be rated, but an attempt has been made to separate them on several of the floors. The elevator lobbies on the second through twelfth floors are separated with 4-inch masonry block with one-inch thick face marble. The walls extend from the floor to the underside of the floor above with 90-minute rated, self-closing fire doors on magnetic hold-open devices. Elevator lobby separation is not required by the 1997 Uniform Building Code since the hallways are permitted to be non-rated.

An "area of rescue" assistance system is provided on the basement through twelfth floors, adjacent to the Center Stairway. No "area of rescue" is provided or required on the first floor, the level of exit discharge. These areas are enclosed with two hour rated walls with 90-minute rated, automatic-closing fire doors interconnected with the building fire alarm system. A smoke detector, manual pull station, fire alarm audio/visual device and emergency lighting are provided in these areas. Each area is provided with a two-way communication panel, connected to the Capitol Police Monitoring Station, located on the first floor.

FIRE PROTECTION SYSTEM OVERVIEW

The building is equipped with a Class II standpipe system with 2-1/2-inch hose valves with 1-1/2-inch threaded hose connections in cabinets located outside of each stairway on all floors. The



system is fed by a 500 gpm at 125 psi horizontal split-case fire booster pump located in the subbasement. The pump is arranged to start automatically. The fire pump had not been tested in many years. Refer to the attached fire pump test report at the end of this document. The fire pump takes suction from a six-inch connection to the public water supply. Static pressure and a limited water supply are maintained in the standpipe system by an approximately 3,000 gallon water storage tank located in the Mechanical Penthouse. The tank is maintained approximately 2/3 full and

is pressurized to approximately 80 psi at the tank. The tank is connected to the discharge of the pump with a 6-inch main.

It is recommended that minor maintenance is performed on the fire pump and the pump is kept in service. The pump performed satisfactorily during the flow test on March 15, 2000. The new sprinkler system will be designed with the option of adding a new fire pump, jockey pump and controller at some time in the future when it is determined that this expense is justified.

Sprinkler protection currently is provided in a few areas of the basement and subbasement including the plumbing shop and large storage areas. There are 1-1/2" hose connections located in the basement. Hoses have been removed from the racks. All existing piping appears to be Schedule 40 black steel with threaded fittings. Existing piping and sprinklers will be removed in the new design, and replaced with new products.

There is a Honeywell FS-90 fire alarm control panel located in the basement with a remote annunciator located in the Capitol Police Monitoring Station on the first floor of this building. Manual pull stations and audible/visual devices are located at each exit stairwell adjacent to the standpipe hose cabinets. Audible/visual devices are located in the elevator lobbies on each floor. Smoke detectors are located in the elevator lobbies on all levels and at various locations within the hallways on the basement and first floors.

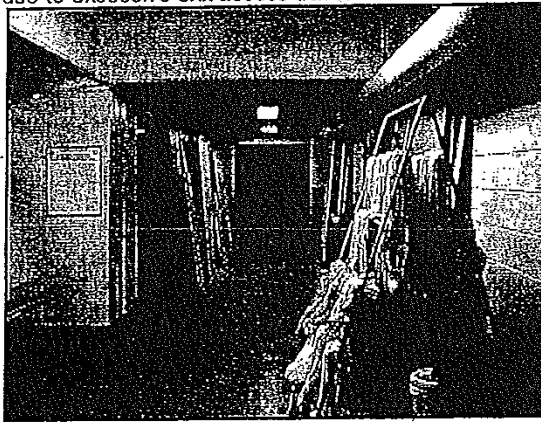
At some future date the fire alarm system should be upgraded to meet current code and ADA standards. Speakers and strobes should be provided throughout all public spaces, in restroom facilities and in conference and open office areas. Smoke detectors should be provided throughout all means of egress as required by code for "intervening spaces" or non-rated hallways. Smoke detectors also should be provided in mechanical, electrical, and elevator machine rooms.

FLOOR BY FLOOR ANALYSIS

Sub-basement Level

The subbasement level contains most of the building maintenance and service equipment. The majority of the walls on this level are concrete block with steel, non-labeled doors. The mechanical areas are required to be separated from each other and the means of egress by one-hour rated walls. All penetrations in the walls should be fire-stopped or filled with material similar to the wall construction. All doors should be provided with closers and kept in the closed position or provided with automatic closing devices tied to the fire alarm system.

The corridors are required to be separated from adjacent spaces with fire resistive construction due to excessive exit access travel distance. There are many significant penetrations in the walls



which need to be sealed or firestopped. Although the physical separation is almost complete for the corridors, the exit access separation needs to be extended near the service elevator. This can be accomplished by constructing a one-hour rated separation with a minimum one-hour rated self- or automatic-closing fire doors west of the south bank of elevators. The double doors at the south end of the hallway should be provided with self- or automatic-closing hardware.

The northwest portion of this floor houses the Wood Shop, Housekeeping Storage and Paint Shop. The paint used and stored appears to be mostly water-based and most of the aerosols and flammable solvents are stored in approved flammable liquid cabinets. The quantities of hazardous materials are within allowable limits. The doors separating the Paint Shop from the Wood Shop and the hallway were not of rated construction. Several unprotected openings were noted between the Paint Shop and the hallway to include a fan, grill, waste piping and wiring.

The General Storage Area is divided into spaces with wood-frame and wire mesh partitions. The wall separating the General Storage Area from the adjacent hallway is 4-inch concrete block. The two sets of double doors connecting this area to the adjacent hallway do not appear to be fire rated but are of solid-core metal-clad construction with steel frames without closers.



The southeast portion of this floor is the Capitol Chiller Room, which was constructed in 1969. This room is two stories in height and houses the chillers for the State Capitol Building, as well as the 400 kW diesel powered emergency generator for the Docking Building. Offices and shops are located on both levels of the north end. A 90-minute rated fire door connects this addition to the original building.

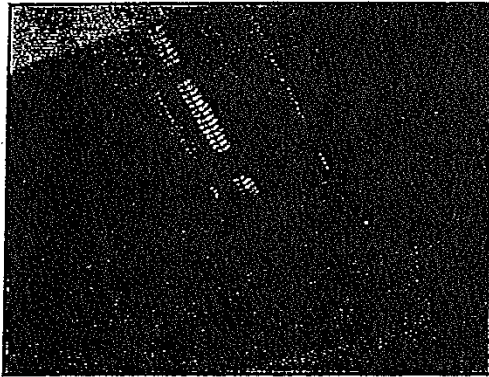
The Boiler Room is north of the Capitol Chiller Room and contains the boilers that provide steam to the State Capitol Building for heating. This area is two stories in height and was constructed in 1980. The door connecting this area to the original building is a 3-hour fire rated door. A 12-inch thick concrete wall separates the Boiler and Chiller Rooms. The doors connecting these areas to the original building are of adequate fire-rating, but were propped open during this visit. The doors should be maintained in the closed position, or provided with fire alarm magnetic hold-open devices and automatic-closers.

Basement Level

The Kitchen, Dining Area, Service Dock, Print Shop, Photo Shop and offices are in the Basement Level. At the south end of this floor is the Duplicating Unit, a large printing area. The inks and solvents used in this area are nonflammable and do not exceed allowable quantities. This area is currently provided with sprinkler protection. The Photo Shop, along the east side of the south hallway, is divided into several rooms. Sprinkler protection is provided in various rooms of the Photo Shop. The remainder of the east half of this floor is occupied by various departments and offices, both occupied and vacant. An Electrical Room is located at the north end. Approximately 20% of these areas are provided with sprinkler protection.

The Kitchen is located along the west side of this floor, north of the Chiller Room. The cafeteria, north of the kitchen, is currently being remodeled, and will be reduced in size considerably. The remaining areas are to become offices. Sprinkler protection is to be provided in these areas with the remodel.

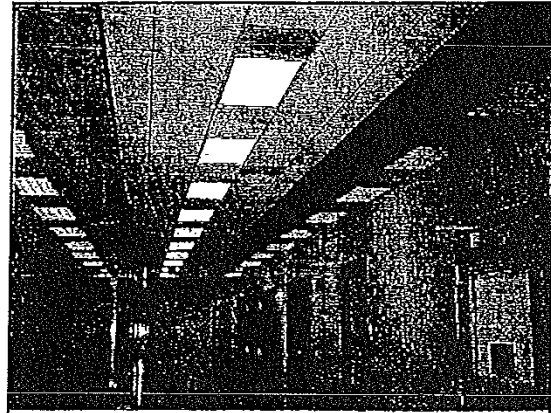
The elevator lobby is constructed of concrete block walls. There is a portion which is currently being remodeled. Numerous penetrations are visible through the block walls above ceiling which has been partially removed. All penetrations should be sealed with similar type construction or an approved fire-stopping method. Hallways are separated from adjacent spaces by walls that extend to the structure above. The hallway ceilings are gypsum board with plaster ceiling above. There are smoke detectors in the elevator lobby and along the hallways on this level. Although the hallways are not required by current code to be separated with fire resistive construction due to the exit access travel distance, they should be maintained in their current condition and any penetrations in the rated walls should be sealed.



First Floor

This floor is the level of exit discharge for all four (4) stairways. Typical offices occupy this floor, subdivided with noncombustible, non-rated partitions. The lobby walls extend from the floor through the "fire ceiling" to the bottom side of the structure above, which is typical for the remaining floors.

The north, south and west exit stairways discharge directly outside and the center stairway discharges into the south hallway. The walls of the hallway are a single layer of gypsum with metal studs. There is a suspended ceiling at approximately 12 feet. This hallway is not required to be fire-rated with the installation of a complete automatic sprinkler system on this floor. The hallway is separated from the lobby by double 90-minute rated automatic-closing fire doors.



Smoke detectors are installed in the hallways, adjacent to the automatic-closing doors leading in the Main Lobby. Doors are 90-minute rated throughout the floor with the exception of the double doors of the Department of Revenue, an area in the east wing that was recently renovated. These new doors are 20 minute rated fire doors with non-wired glazing.

Second through Tenth Floors

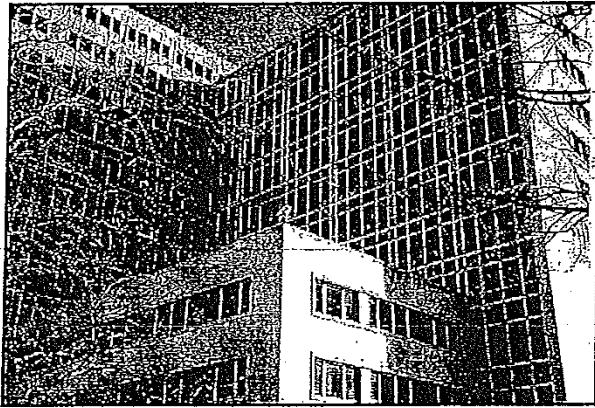
These floors are predominately typical office spaces subdivided with noncombustible, non-rated partitions. The second and third floors are approximately 55,600 sq. ft. each. The fourth through eleventh floors are approximately 32,000 sq. ft. each. The twelfth floor has only the east and west wings and is approximately 16,000 sq. ft.

All of these floors have access to all four exit stairways. The lobby walls on all floors extend from the floor through the plaster ceiling to the bottom side of the structure above. Once sprinklers are installed, the hallways on each floor are not required to be separated with fire resistive construction. The elevator lobbies are not required to be separated from the hallways, however, all existing doors leading into the hallway and elevator lobby are 90-minute rated, self- or automatic-closing fire doors. The bathroom doors have return air louvers. With the addition of fire sprinklers, these louvers are not required to be sealed.

A single smoke detector is located in the elevator lobby of each floor, connected to the building fire alarm system. Fire alarm speakers and strobes are located sparingly throughout the floors.

Eleventh Floor

The north wing of the eleventh floor is utilized for computer equipment. The area is provided with an approximate 12-inch raised floor, beneath which communication cable, electrical wiring and mechanical supply air are routed. There are operative and non-operative fire alarm devices in this area. An abandoned automatic smoke detection system is located at the ceiling and beneath the raised floor. Improperly spaced operative smoke detectors also are at the ceiling, connected



to the building fire alarm system. Mechanical systems for this wing are located in this area, not separated from the space. An additional air-handling unit is located in the Mechanical Equipment Room on the twelfth floor, ducted to above the aluminum suspended ceiling on this floor. A damper should be provided at floor level within this duct.

All abandoned fire alarm equipment should be removed from the building including the control panel, smoke detectors and associated

wiring from the north wing of the eleventh floor.

With the addition of sprinkler protection throughout the building, a double-interlock preaction sprinkler system is recommended for the north wing of this floor. This system would provide sprinkler coverage, as required by code, yet also a delay in water application to the computer equipment. Sprinkler water will only discharge when both a local smoke detector in the room and an individual sprinkler head activate. There will be an abort switch in the room to prevent water discharge, in the event of a false alarm. Automatic fire alarms will be provided at the ceiling and beneath the raised floor interconnected with the preaction fire alarm panel. The preaction fire alarm panel will be connected to the building fire alarm control panel for monitoring and alarm.

At the north end of the eleventh floor is an area used for duplicating and photocopying. The ink or toner utilized in the equipment has a flashpoint of 103°F, a Class II combustible liquid. The toners are stored in five (5) approved flammable liquids cabinets. A maximum of 480 gallons is allowed when stored in approved storage cabinets and the area is sprinklered. The limit does not appear to be exceeded. However, the 1996 edition of NFPA 30 limits the storage of Class II combustible liquids to 60 gallons per cabinet and a maximum of 3 cabinets per fire area. The volume of combustible liquids in the space should be reduced by relocating the excess amounts to other floors of the building or reducing the amount stored onsite altogether.

A single smoke detector is located in the elevator lobby, connected to the building fire alarm system.

Twelfth Floor

The twelfth floor is accessible only by the west and center stairways. The twelfth floor is occupied by office space.



A Division of Henderson Engineers

FIRE PUMP TEST RESULTS

The following are the results of the test of the 500 gpm. at 125 psi fire booster pump for the Docking State Office Building, performed by Jayhawk Fire Sprinkler and witnessed by Cindy Gier and Darrell Stein, Fire Dynamics on March 15, 2000:

Date	No. & Size of Nozzles	Pump Pressure			Pilot Pressure	Flow	RPM	Volts			Amps			Corrected to 1750 RPM	
		Disch	Suct	Net										Net PSI	Flow
3/15/00	0	212	75	137	0	0	1771	203	205	204	107	108	109	134	0
	(1) 1-3/4	202	72	130	12	310	1755	203	204	203	152	155	154	139	310
	(1) 1-3/4	178	69	109	32	506	1738	202	202	202	189	193	193	111	509
	(2) 1-3/4	150	65	85	18, 18	760	1719	201	201	201	222	226	228	88	764
	(2) 1-3/4	105	52	53	34, 36	1059	1705	201	201	201	239	243	242	56	1086

Prior to the pump being started, it was noted that the packing glands were wet, but not dripping, as they should be. An attempt was made to loosen the packing gland retaining bolts, however only one of the four bolts could be loosened. The remaining three bolts were corroded and would not loosen. After the pump was started, the packing glands became hot, but cooled sufficiently so that the test could be performed. It is recommended that the pump be thoroughly inspected and any necessary maintenance performed prior to connecting any additional sprinkler piping to the existing system.

The net pressures measured at the first three points were slightly below the theoretical curve, however the performance of the pump is considered satisfactory. At this time, the existing fire pump will adequately supply the proposed sprinkler systems, however the pump is not large enough to supply the standpipe flow and pressure demands. The standpipes can be supplied by the fire department through the fire department connection.

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LANDON STATE OFFICE BUILDING

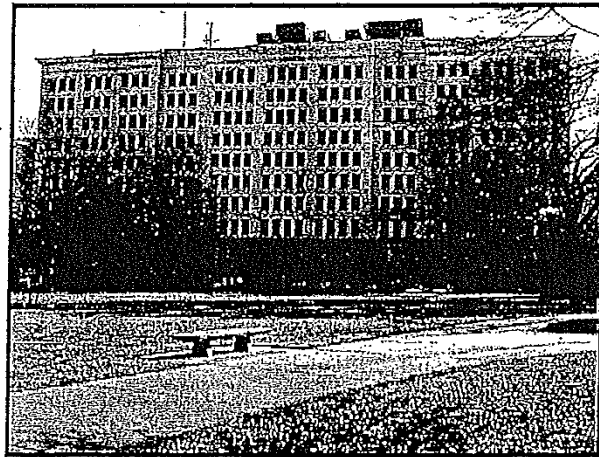
RECOMMENDATIONS

Recommended modifications to the building include the installation of a complete fire sprinkler system throughout and the removal of existing aluminum ceiling panels and plaster ceiling above. The existing 2-hour rated concrete floor should have all vertical penetration through it sealed. These improvements alone will greatly increase the level of life safety for the occupants of the building. Additional improvements will include additions to the fire alarm system and the sealing of penetrations in rated walls and floor/ceiling assemblies. Several significant vertical chases currently penetrate the floors in the building. These provide a shaft for smoke to spread throughout the entire building, originating from any floor, and need to be sealed. At some point the fire alarm system should be upgraded to meet current code and ADA standards.

GENERAL INFORMATION

The Landon State Office Building at 900 SW Jackson Street in Topeka, Kansas was previously built and occupied by the Santa Fe Railroad Corporation. The original building was constructed in the 1910's and was three stories. In 1923 the middle section and north wing were constructed, along with the upper seven floors. The building was purchased from Santa Fe in 1984. Today, the building houses several branches of the state government in its approximately 450,000 square feet.

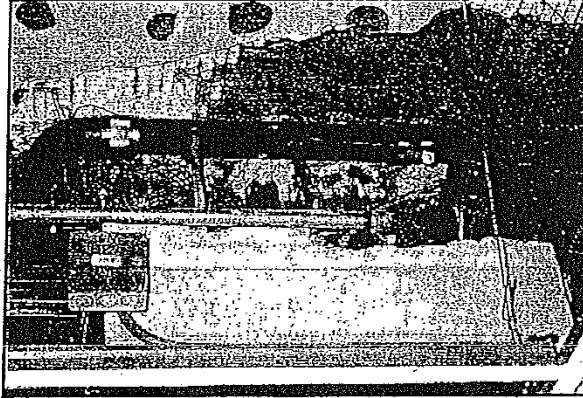
The Landon building is an eleven story office building of Type II Fire Resistive (II-FR) construction, in accordance with the 1997 Uniform Building Code. The building includes a basement space with maintenance and housekeeping offices, shops, storage areas, boiler rooms, chiller plant and mechanical/electrical rooms. Floors 1 through 10 are general office areas with typical corridors and restroom and service core areas. Floors 6, 7 and 8 have large data processing computer rooms with dedicated fire sprinkler and fire alarm systems. Floor 11 is a storage penthouse with locked, non-separated storage areas. This level is not normally occupied.



The building structure is reinforced concrete for major structural elements, columns, beams and floors, with masonry, plaster and lath or gypsum board walls and ceilings. Attic roof beams are unprotected steel supporting a concrete roof deck. Wood is used for stair rails in both interior stair towers as well as for wire cage walls in storage areas. The concrete deck between floors is approximately six inches thick. The floor slab carries a minimum of 2-hour fire resistance rating in conformance with the 1997 Uniform Building Code.

The original corridor doors had operable transoms installed above each door for ventilation. These have been sealed with plywood. It appears that the sashes of the transoms are wood construction. Most of the doors are original and are non-rated solid-core wood construction. The doors to the newer emergency fire exit stairwells are rated and labeled fire doors.

The ceiling construction in the office areas is plaster over metal lath. This surface was attached directly to the concrete beam structure. A 12" x 12" ceiling tile is glued to the plaster. A new lay-in ceiling has been installed above all office areas. The corridors on most floors have a lay-in



ceiling with a sheet rock or plaster ceiling located 4" to 8" above the lay-in ceiling. The sheet rock ceiling was installed to create a one-hour separation between the corridors below and the return-air plenum space above. Now, the sheet rock ceilings have numerous penetrations for pipe, cable and conduit runs that are not fire caulked. These penetrations need to be sealed to create a complete fire separation. On several floors, a grill for return air is installed in the hard ceiling of the corridors.

It is recommended that the plaster ceiling be removed and all penetrations above be sealed with an approved fire-stopping method. The new ceiling membrane is not required to be fire-resistance rated due to the thickness of the existing floor slab.

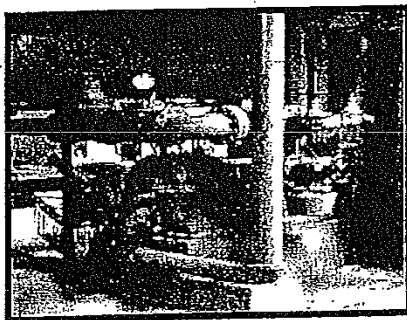
The building has four enclosed stairwells that are constructed with two-hour fire resistance-rated concrete enclosures. The maximum exit access travel distance from any space in the building to the stairwell is 225 feet. Corridors are not currently rated. The sixth floor is being remodeled and it appears that an attempt is being made to rate the corridor through the space.

FIRE PROTECTION SYSTEM OVERVIEW

The building is equipped with a Class II standpipe system with 2" hose valves and 1-1/2 threaded adapters. One standpipe is located in the north stairwell. Another is located in a rated wall near the south toilet area. A third standpipe is located at the east end of the north tower leg. Standpipe piping appears to be Schedule 40 threaded piping. The condition of the inside of the piping can not be determined at this time. There is a partial pre-action fire sprinkler system on the 6th, 7th and 8th floors for the Information Technology Department. The building does not have a full fire sprinkler system.

The existing fire pump will be removed and replaced with a new fire pump, jockey pump and controller which meet current code. This design will be included in the next phase of the project. The new pump will be located in the same room, however it will be separated from the corridor with a one-hour fire resistive rated wall and 60 minute rated door.

An existing 80 year old electric split-case, multi-stage, end suction fire pump with an accumulator



tank serves the standpipe system. The controller is an across the line start type with a manual start switch. Corrosion was noticed on the pump shaft where at least 10 percent of the diameter has corroded away near the bearings. The electric motor is an open frame type, non-drip proof design. It is recommended later in this report that the fire pump, tank and controller are replaced with newer and more efficient models.

A Simplex 2001-8001 Series fire alarm system is installed through out the building with the exception of the 6th floor. A Simplex 4010 Series system was recently installed on the 6th floor. Manual pull stations are provided at exit stairwells. Smoke and combination smoke/heat detectors are installed in corridors and storage areas. Fire are provided through out the building. Fire alarm strobes are installed in many areas, however the density of the strobes does not meet current standards. The system is capable of supporting many more notification and alarm devices. It is recommended that future remodels include ADA-compliant fire alarm strobe placement.

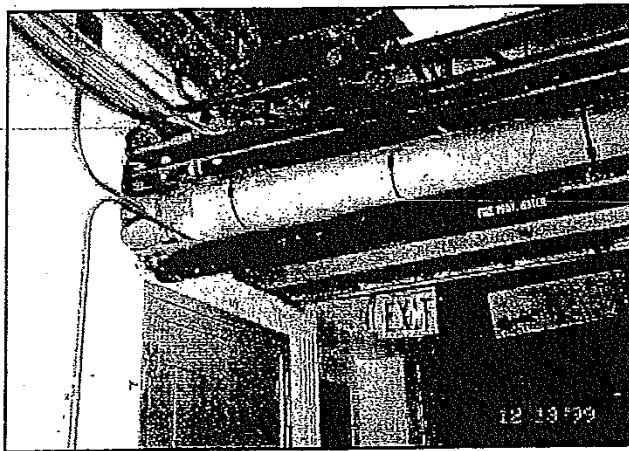
A fire alarm control panel is located on the 8th floor to monitor the halon and pre-action sprinkler systems installed in the computer data processing center located on 6th, 7th and 8th floors. This panel is monitored by the main building fire alarm control panel located in the security office on the first floor of the building.

The halon suppression system discharges below the raised computer room floor as well as from the ceiling into the office spaces. A satisfactory halon "fan pressure" test has not been performed due to significant penetrations and difficulty maintaining separation from shafts between floors. Due to the expense of halon, it is recommended that this system is replaced with a more cost effective product. Vertical wire chases between the computer rooms on level 7 and 8 are used for data cable routing between the floors. Halon will not be contained unless these wire shafts are sealed air tight.

FLOOR BY FLOOR ANALYSIS

Basement Level

The basement level includes maintenance shops, housekeeping offices, communications rooms, electrical switch gear rooms, two boiler rooms, generator rooms with daytanks, and various storage rooms. There is a small sub basement, which includes a large walk-in vault. There is a center hallway, which runs most of the length of the building. The fire pump is near the center of the basement in Room B28. Three stairwells extend into the basement level. The exit access travel distance from this level exceeds the allowable 250 feet in a space provided with sprinklers and smoke detectors.



The west corridor wall appears to have been a rated wall at some time. This wall is built of masonry block and brick of varying sizes. Many louvers and grilles now penetrate the wall to ventilate the battery and electrical switch gear rooms. Numerous unprotected pipe and conduit penetrations are located along the corridor and through out the basement. There are also many old holes in the ceilings where pipe or conduit has been removed.

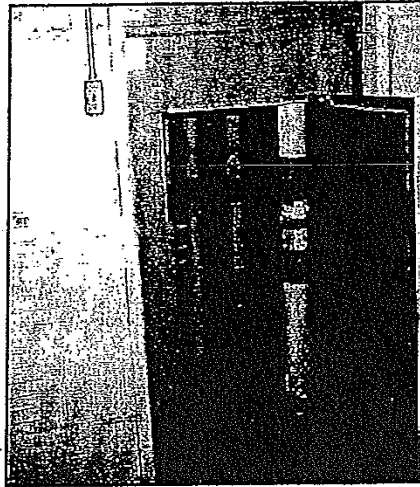
The rating of the existing corridor should be completed and reinstated to its original construction for several reasons:

1. At one time an attempt was made to create a rated separation for the corridor through the basement.
2. Building code prior to the 1997 edition of the Uniform Building Code required a rated corridor for the means of egress. Since the exit access travel distance is exceeded from the most remote point to a rated stairwell a rated corridor is required for the last 100 feet of travel distance.
3. Several large storage rooms and mechanical rooms exist on either side of the corridor. These areas are considered "hazardous" areas and should be separated from each other and the means of egress out of the basement.

Vertical penetrations through the existing 2-hour fire resistance rated floor/ceiling assembly are created in several locations. A vertical penetration between floors creates a shaft, or "flue" for smoke to spread rapidly throughout all floors of the building. Non-enclosed vertical shafts pose a significant threat to overall building safety and the means to safely exit the structure in the event of an emergency. Several different types of vertical penetration violations are exhibited in the lower levels of the Landon State Office Building.

A sheet metal duct is capped at the ceiling of Room B23, the Electrical Inverter Room, and extends to floor above. The opening to the duct is not rated. The old ventilation duct outside Room B27 is being used as a pipe and conduit chase. A steam condensate pump is installed at the base of the shaft. The shaft itself is not fire rated and has many holes from pipe and conduit penetrations in it.

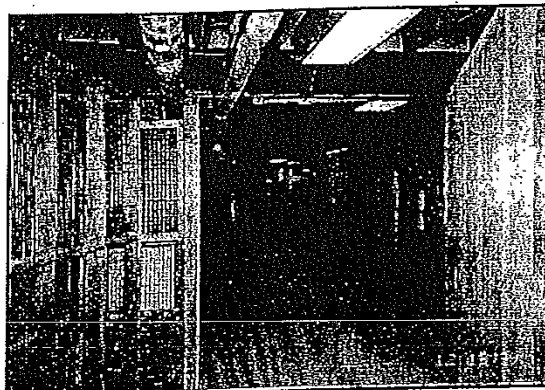
Old ventilation shafts are being used as pipe and conduit chases. A steam condensate pump with motor starters is located in the ventilation shaft near column 53. The shaft extends up through the building and communicates with every floor. There are doors into the shaft on every other floor level. The shafts are not rated and have many penetrations in them that would allow smoke from the basement to spread through out the building. Combination fire/smoke dampers and firestopping should be installed at every intersection of every horizontal to vertical communication. Rated fire doors should be installed at every opening. Sealing of this shaft will be nearly impossible, as has been demonstrated already in an attempt to perform the halon test. It is advisable to provide a sprinkler within the shaft at every level, due to the quantity of combustible cable and insulation visible in the shaft.



There are several other locations where pipe, conduit or ductwork extends through the ceiling of the basement into and beyond the first floor. Again, these penetrations should be filled with similar material and firestopped.

The fire pump is located in a space that is open to the corridor and is used for housekeeping storage. Current code requires a protection of a fire pump and controller from exposure to fire and dangerous situations. Condensate tanks are located outside the fire pump room, open to the corridor. There are several motor control centers and transformers that are located in the north tower leg that are not isolated from the corridor. All of these areas should be separated from the "means of egress". A new fire pump will be provided in the next phase of this project. The fire pump will be located in the same room, separated from the corridor, and isolate in the corner of the room.

There is a large storage area, (B02, B04, and B05) used by the different departments occupying the building. Individual storage "lockers" are created by wood studs and "chicken wire". Large, non-separated aisles are provided for exit access between the storage areas. This area is protected with smoke detectors and fire alarm. The area can be viewed as a separate storage "room" and separated from the adjacent building corridor. The smoke detectors will provide "early warning", along with the fire alarm strobes, allowing any occupant to escape to the corridor and exit stairs.



The exhaust duct along columns 29 and 30 is being used for storage.

The North elevation lobby rolling fire door on the west end is still active. All other rolling vertical fire doors in the building have been rendered inoperative by disabling the fusible link. The East roll up door has been disabled in this manner. The doors were disabled since current code does not allow rolling fire doors in the "means of egress" since their activation may hamper exiting.



Room B35 is located just east of the north elevator /stair lobby and is used as a paint booth, welding shop and carpentry shop. A paint booth with filters and exhaust fan has been installed in the room. Supply air for the paint booth comes from the corridor via open wire grilles in the double doors. The fan exhausts through a window well to the outside of the building. The paint booth, itself, is of wood construction. There are three fire-rated flammable storage cabinets in the room. The fire code limits the number of cabinets in a single storage area to three. Various paints and paint thinners are installed on top of the flammable cabinets. The cabinets were full of mostly combustible liquids. The paint booth should be separated from the corridor and adjacent areas. A fire in the paint booth would most likely block two of three possible exit paths from the basement.

A cable tray extends from room B34 through rooms B35, B36 and into Communication Room behind the stairs. If the paint booth room, B35, is separated, the cable tray needs to be fire-stopped at the wall penetrations.

Room B33 is used for non-hazardous chemical storage and testing. This is a small room located next to the elevators. The room is not rated and is open to the north mechanical area. A lay in ceiling is the only separation between the chemicals and the corridor.

Room B54 is a storage space that is also open to the corridor. Smoke detectors are installed in this area however wood framing and wire fencing separate the area from the hallway. Occupants must pass in front of storage area to reach exterior stair and a fire in this area would block one of the three exits from the basement.

First Floor

The first floor has two large open office areas, a copy center, mailroom, conference rooms and smaller office areas. The main fire alarm control panel for the building is located in the basement and the remote annunciator and voice consoles are located in the security office adjacent to the north entrance. The first floor has two main entrances that serve the building. There are two rear courtyard stairwells that discharge at the rear of the building. Smoke detectors are located throughout the first floor. Fire alarm speakers are also well distributed. Fire strobes are located in the corridor and open office areas, however the quantity does not provide adequate coverage.

There is a mechanical air handler room located at each end of the building. Each room has two air handlers. The rooms and ceiling spaces are part of the return air plenum. Fire/smoke dampers are not installed in the room to separate the room from the return air plenum in the event of a fire. Smoke detectors are installed in the rooms. Since an open air plenum is used for single floor air return, it is not possible to seal all horizontal communication. Again, an attempt should be made to seal all vertical penetrations to limit the smoke spread throughout the building.

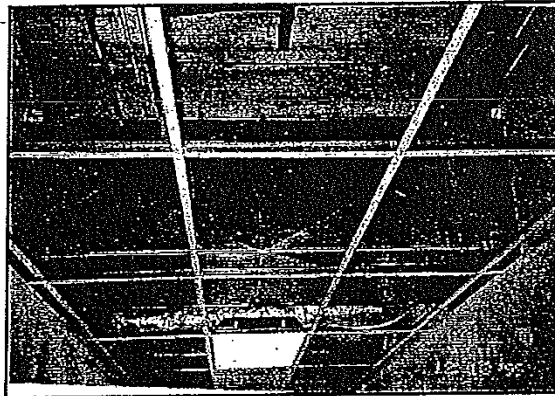
The corridor ceilings are gypsum board construction. Office areas have lay-in ceilings. Doors in the main corridor are non-rated doors with magnetic hold opens and smoke detectors on each side of the doors. The old roll up fire door at the north elevator lobby has been disabled.

The electrical closet adjacent to column 20 has floor and ceiling penetrations that are not sealed. In addition the space is open to the return air plenum above the corridor ceiling.

In checking the spaces above the corridor ceiling it was found that a significant portion of the above ceiling corridor walls is open. Some of this is for return air, but some of it is where old ductwork was removed or for pipe and conduit penetrations. When the fire alarm system was updated, numerous holes were added through the corridor walls and ceilings that were not fire stopped.

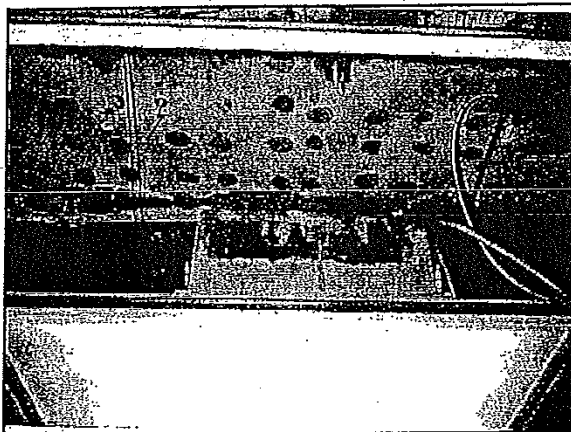
Floors 2 through 10

The original corridor doors on the tenant floors had operable transoms installed above each door for ventilation. These have been sealed with plywood panels. It appears that the sashes of the transoms are wood construction. Most of the doors are original and are non-rated solid-core wood construction. The doors to the newer emergency fire exit stairwells are rated labeled fire doors.



The corridors were not originally designed as fire-resistance rated egress elements. The 1997 Uniform Building Code allows non-rated "hallways" in office buildings if the exit access travel distance is less than 250 feet when provided with a full sprinkler and smoke detection system. Therefore, upgrading of the existing corridors on each floor, with the exception of the Basement, is not required. Interior hallways within tenant spaces are not required to be fire-resistance rated either.

It is a code violation to use the corridors for air exchange. Without a requirement for rated corridors, it is still required that the return air plenums above office spaces are separated from the corridor environment. Corridor wall, therefore, are required to extend to structure and be smoke-tight. Rated doors are not required in the corridor walls. The plenum is required to extend across the corridor in duct-work to the mechanical room on the other side. This is similar to the remodel recently completed on the 6th floor.



The original ceiling construction in the office areas was plaster over metal lath. This surface was attached directly to the concrete beam structure. A 12" x 12" ceiling tile was glued to the plaster. A new lay-in ceiling has been installed above all office areas.

The corridors on most floors have a lay-in ceiling with a sheet rock or plaster ceiling located 4" to 8" above the lay-in ceiling. The lay-in ceiling has been removed on some of the floors. The sheet rock ceiling was originally installed to create a one-hour separation between the corridors below

and the return-air plenum space above. Now, the sheet rock ceilings have numerous penetrations for pipe, cable and conduit runs that are not fire caulked. These penetrations need to be sealed to create a complete fire separation. On several floors, a grill for return air is installed in the hard ceiling of the corridors.

The electrical panel board chase located next to column 20 has unprotected openings in the floor and ceilings and into the return air space above the corridor. The vertical penetrations should be sealed, to allow for continued use of the above-ceiling space as a return air plenum.

The janitors closet to the east of the electrical closet has louvers in the door and a large grille high in the side interior wall. The grille connects to the return air plenum and to the vertical ventilation shaft located behind the stairwell. This appears consistent on all floors, but existing wall construction limits verifying exact openings above the ceilings. This was observed on level 6 where the north wing is currently under construction.

Portions of Floors 6, 7 and 8 contain a data processing center with a raised computer room floor. The below floor areas and the space above are protected with Halon 1301. The quantity and location of halon nozzles is inadequate for a complete flooding system. The above floor areas are also protected with a preaction sprinkler system. The main fire alarm panel for the computer room area is located on the 8th floor near column 8. There are several vertical cable shafts running between the floors. The shafts are unprotected floor to floor and have unrated doors on each level. The shafts also are open into the raised floor areas. Halon containment adequate to suppress a fire will be difficult until the cable shafts are properly protected. Since the center shafts provide communication between only two floors, code does not require enclosure in fire-resistance rated assemblies. It is recommended that an attempt is made to firestop any vertical penetrations between these floors, around the existing cable system.

There is a mechanical air handler room with two air-handlers located at each end of the building. The rooms and ceiling spaces are return air plenums. Fire/smoke dampers are not installed in the room to separate the room from the return air plenum in event of a fire. Smoke detectors are installed in the rooms.

A cafeteria with a small kitchen is located on the 5th floor. The kitchen hood has an Ansul chemical fire suppression system with a manual release. The release lever is located approximately 7-1/2 feet above the floor on the Ansul cylinder, directly adjacent to the hood. It is unlikely that someone would be able to reach the manual release if a fire occurred under the hood. The manual release is required to be located 10 feet from the kitchen hood system. The kitchen hood exhausts through the wall to the exterior of the building.

The air shaft located near column 53 that was mentioned in the basement portion of this report has access doors on even numbered floors.

Penthouse 11th level

The 11th level is used for storage and is not normally occupied during business hours. The space is divided into various storage areas. Most of the storage walls consist of wood framing with wire mesh screen. There are also several rooms at the north end that have solid walls with penetrations through them.

The roof above is a concrete slab supported by concrete blocks /bricks. Unprotected steel beams are located within the storage space to support the concrete block walls.

RECOMMENDATIONS

1. Provide a full fire sprinkler system throughout the building. Replace the existing fire pump, tank and controller.
2. Upgrade or remove the Halon system on the 7th and 8th floors. Replace with a pre-action system.
3. Upgrade visible and audible fire alarm devices throughout the building.
4. Provide smoke detectors throughout the building in all means of egress.
5. Provide emergency lighting throughout the building to meet current code standards.
6. Provide a one-hour fire resistive rated corridor in the basement as outlined above. Seal all penetrations. Separate all adjacent hazardous areas.
7. Separate from the corridor the old ventilation shafts, now being used as pipe and conduit shafts. Eliminate the communication between all horizontal and vertical spaces. Seal and firestop all vertical penetrations between floors. Maintain horizontal air return plenums, as required.
8. Provide a one-hour rated fire resistive enclosure for the fire pump room.
9. Separate the paint booth and associated rooms from the remainder of the basement with 1-hour walls, doors and rated penetrations.

Docking Replacement Cost by Alternate Methods

Costs for a comprehensive "floor-by-floor" renovation are very similar to the cost of a completely new building. The savings of the bare structure used in renovation are counter balanced by demolition, complexity of "fitting in" systems, and logistical inefficiencies of working the construction piecemeal.

RSMeans provides an approximate technique, which applies to 11-20 story office buildings. The resulting estimated cost is \$63.4 million. Below this estimate is another estimate based a simple inflation of the original office cost of \$8.5 million to 2002 dollars, which confirms the estimate without unique additives.

Special Factors Used by RSMeans for Typical Office Buildings

SF Area Exterior Wall (LF)	171,500
LF Perimeter (LF, average)	1,105 Average
Floor Height (LF, average)	12.95 Average
Above ground footage	434,342
Basements footage	115,270

RSMeans Typical Cost Identifying Element	Unit Cost	Unit	Quantity	Total
Double glaze/tinted glass envelope	97.7	floor SF	434,342	42,435,213
Perimeter adjust per 100' over 470	27.94	100 ft	434,342	12,135,515
Story ht. Adjust 10 norm. (13-10)	6.00	SF	434,342	2,606,052
Basements	23.85	SF	115,270	2,749,190
Calculated new building bare				59,925,970
Common additives				
Elevators 5,000 lb, 14 stops+freight	245,700		7	1,719,900
Emergency Lighting, NiCd	660.00	each	140	92,400
Fire protections				
Smoke detectors, ceiling type	151.00	each	140	21,140
Total without unique additives				61,759,410
Unique Docking additives				
Access Flooring for data center	36.36	SF	20,000	727,200
Data center walls	80.00	LF	2,000	160,000
Pedestals 12"	17.40	each	6,000	104,400
(alternate data center method - \$38.81per SF by Smith&Boucher = 102%)				
Telephone & Comm systems				600,000
Total Approximate Cost for Replacement Office Building				63,351,010
<i>(RSMeans 2002 Square Foot Reference- page 150)</i>				

Alternate Estimate Based on Inflation of Original Building Cost	Inflation Factor	Cost \$ Millions
Kansas State Office Building -1954	15.3	8.5
Docking State Office Building -2000	101.0	56.1
Docking State Office Building -2001	104.3	57.9
Docking State Office Building -2002	107.2	59.6
Docking State Office Building -2003	109.2	60.7
Docking State Office Building -2004	111.2	61.8
<i>(RSMeans 2002 Square Foot Costs 448- page 150)</i>		

(without unique additives)

3/22/2013							
Docking Cost Estimate							
5 Year Capital Improvement Plan - FY2014							Published
			Movable	Project	Miscellaneous		Estimated
	<u>Construction</u>	<u>Architect's Fee</u>	<u>Equipment</u>	<u>Contingency</u>	<u>Costs</u>	<u>Total</u>	<u>Project Cost</u>
Bus Duct Replacement	\$2,869,408	\$225,297		\$301,334	\$103,960	\$3,499,999	\$3,500,000
Interior Renovations	\$24,836,318	\$1,689,726		\$2,582,867	\$891,089	\$30,000,000	\$30,000,000
Elevators	\$2,939,795	\$230,823		\$308,726	\$106,511	\$3,585,855	\$3,585,855
Curtain Wall Replacement	<u>\$9,355,513</u>	<u>\$834,577</u>		<u>\$992,219</u>	<u>\$342,316</u>	<u>\$11,524,625</u>	<u>\$11,524,624</u>
Total	\$40,001,034	\$2,980,423	\$0	\$4,185,146	\$1,443,876	\$48,610,479	\$48,610,479
		7.5%		10.5%	3.6%		
							Published
			Movable	Project	Miscellaneous		Estimated
5 Year Capital Improvement Plan - FY2013	<u>Construction</u>	<u>Architect's Fee</u>	<u>Equipment</u>	<u>Contingency</u>	<u>Costs</u>	<u>Total</u>	<u>Project Cost</u>
Bus Duct Replacement	\$5,627,585	\$442,990		\$1,015,712	\$778,713	\$7,865,000	\$7,865,000
Fire Protection	\$5,172,336	\$407,154		\$933,546	\$715,718	\$7,228,754	\$7,228,754
Electrical Power	\$2,565,760	\$201,970		\$463,089	\$355,035	\$3,585,854	\$3,585,855
Asbestos Abatement	\$3,040,971	\$239,378		\$548,859	\$420,792	\$4,250,000	\$4,250,000
Lead Based Paint Removal	\$715,523	\$56,324		\$129,143	\$99,010	\$1,000,000	\$1,000,000
Electrical Lighting	\$11,873,010	\$934,615		\$2,142,938	\$1,642,919	\$16,593,482	\$16,593,481
Curtain Wall Replacement	\$10,536,070	\$829,374		\$1,901,636	\$1,457,921	\$14,725,001	\$14,725,000
Air Handling Unit Replacement	\$15,715,633	\$1,237,097		\$2,836,486	\$2,174,639	\$21,963,855	\$21,963,854
Elevators	\$3,624,981	\$285,350		\$654,266	\$501,604	\$5,066,201	\$5,066,201
Plumbing Repairs	\$6,889,093	\$542,293		\$1,243,400	\$953,273	\$9,628,059	\$9,628,058
Heating, Ventilation & Air Conditioning Piping Replacement	\$6,409,909	\$504,572		\$1,156,913	\$886,966	\$8,958,360	\$8,958,360
Stone Tuck-pointing and Repairs	<u>\$547,375</u>	<u>\$43,088</u>		<u>\$98,795</u>	<u>\$75,743</u>	<u>\$765,001</u>	<u>\$765,000</u>
Total	\$72,718,246	\$5,724,205	\$0	\$13,124,783	\$10,062,333	\$101,629,567	\$101,629,563
		7.9%		18.0%	13.8%		



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Website: www.EngDemo.com

November 1, 2013

Mark McGivern
Kansas Department of Administration
800 SW Jackson, Suite 600
Topeka, KS 66612

RE: Docking State Office Building, Executive Summary

Mr. McGivern:

Engineered Demolition, Inc. (ENDE) is pleased to submit our executive summary to the Kansas Department of Administration, for the project referenced above, including multiple options for demolition of the Docking State Office Building, located in Topeka, Kansas.

After extensive site visits, we have confirmed that the pricing and schedule are as outlined. We look forward to working with you and assisting you on this important project. The ENDE team has the experience, the energy, and the will to provide superior support. We believe that we have something special to offer the State of Kansas and the Department of Administration – a commitment, zeal, and a dedication to the client's concerns that has made us a true "partner" with our clients. We are determined to go the extra mile.

Thank you for your consideration of the attached executive summary. We here at ENDE are available for any questions and comments.

Respectfully,

Anna Chong
President, Engineered Demolition, Inc.

Summary of the Project:

The contractor shall perform services for demolition of the Docking State Office Building in Topeka, Kansas. Specifically, the contractor shall provide all labor, supervision, means, methods, operations, materials, equipment, and accessories, necessary to perform all hazardous waste removal and disposal, deconstruction, and site restoration.

Work shall be performed in accordance with all applicable Federal, State and local laws, regulations, standards, and commercial practices with the focus on safety and customer service. The contractor is encouraged and expected to use innovative approaches to efficiently, and in a timely manner, accomplish requirements in a way which fosters pride and ownership in the work performed.

Due to the location of project being directly west of the State Capitol building, careful control for noise, dust, and scheduling will be explicitly considered and evaluated at the time of the bid.

Type of Contract:

1. Performance-based, fixed-price contract
2. Contractors vetted and selected based on several factors
 - a. Technical proposal
 - b. Past demonstration of limiting change orders
 - c. Proposed demolition methods

Schedule of Costs – Removing Basements:

1. Abatement of hazardous materials
 - a. \$1.5 Million, duration of six (6) months
2. Complete Demolition
 - a. \$5 Million, duration of six to seven (6-7) months
3. Site Restoration
 - a. \$1 Million, duration of six (6) weeks
 - b. Restoration will be construction-ready without landscaping or seeding.

Schedule of Costs – Saving Basements:

1. Abatement of hazardous materials
 - a. \$1.5 Million, duration of six (6) months
2. Demolition (Basements Preserved)
 - a. \$6 Million, duration of nine (9) months
3. Site Restoration
 - a. \$1.5 Million, duration of eight (8) weeks
 - b. Water-sealed, no utility changes, no interior changes.