Hoffmann Architects

25 SIGOURNEY ST. BUILDING CONDITION SURVEY
XEROX CENTRE
BI-2B-877 HOFFMAN ARCHITECTS SEPTEMBER 30, 1992

1992

#1 Front view of the building from the northeast, viewed from Sigourney Street ramp to I-84.

Building Condition Survey

XEROX CENTRE
HARTFORD, CONNECTICUT

192046

BUILDING CONDITION SURVEY

XEROX CENTRE
25 SIGOURNEY STREET
HARTFORD, CONNECTICUT

STATE PROJECT NO. BI-2B-877
ARCHITECT'S FILE NO. 192046

30 SEPTEMBER 1992

REPORTED TO:

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC WORKS
STATE OFFICE BUILDING
165 CAPITOL AVENUE
HARTFORD CT 06106

REPORTED BY:

HOFFMANN ARCHITECTS
432 WASHINGTON AVENUE
NORTH HAVEN CT 06473
203/239-6660

#1 Front view of the building from the northeast, viewed from Sigourney Street ramp to I-84.

BUILDING CONDITION SURVEY

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HARTFORD, CONNECTICUT

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EXECUTIVE SUMMARY

ARCHITECTURAL

Xerox Centre at Park Place is a modern office building in a location convenient to downtown Hartford and to interstate highways. The property is in good condition and requires little corrective work.

Elevator arrangement is confusing and less than ideal for use by the physically challenged. Elevator capacity is adequate for the size and type of building, however, and elevators are accessible once they have been found and reached. Primary access to the building is through the attached parking structure, and the way from the garage elevators to the mezzanine level where building elevators are located is not at all clear.

Thirteen tenant floors are laid out to be used as open plan space, wrapped around an L-shaped central core. Space utilization is good. The level of finishes in the tenant spaces is to current standards, and the finishes in the lobby and mezzanine public spaces are of high quality.

The condition of the parking garage floor slabs is a concern, and we recommend both a review by a rehabilitation consultant experienced in parking garage work, and that the slabs be coated with a traffic-bearing membrane to prevent deterioration of the reinforcing steel.

This survey did not include determination of the presence or absence of hazardous materials.

MECHANICAL/ELECTRICAL

The property purchases chilled and hot water from a commercial generation utility serving the downtown Hartford area, and is unique among similar properties in that it can shut off the supply loop and run on an economizer cycle. The building has neither boilers nor chillers. Equipment is all good quality and has generally been well maintained.

Electrical service is adequate for present and anticipated future requirements. There is an emergency generator for emergency lighting, communications and elevator power. The entire building is protected by an alarm system connected to the Hartford Fire Loop System. Electrical equipment is in good condition.

The building is protected throughout with an automatic sprinkler system, which is supported by an electric driven fire pump. The one major reservation regarding plumbing is that there is no backflow preventer on the fire service water line.

SUMMARY

This is a relatively new building of better than average construction for speculative construction. It has been well maintained for the five years it has been occupied. We found a total of roughly $550,000 of remedial and preventive maintenance work which we consider necessary to place the property in excellent condition.

END OF EXECUTIVE SUMMARY

1992

INTRODUCTION

ARCHITECT RETAINED

In response to a call from Mr. Robert McNulty of the Department of Public Works, State of Connecticut, a meeting was arranged to discuss the scope of a building condition survey for the building known as Xerox Centre at Park Place, located at 25 Sigourney Street in Hartford, Connecticut. On 8 September 1992 Messrs. Brian Schafer and Harwood Loomis of Hoffmann Architects visited to site of the building and then met with Mr. McNulty to discuss the scope of a proposed survey. Hoffmann Architects submitted a verbal proposal for services to perform the proposed survey on 8 September, and Mr. McNulty issued a verbal authorization to proceed. Hoffmann Architects submitted a written proposal as confirmation on 8 September 1992, and received written notice to proceed on 28 September 1992.

PURPOSE OF SURVEY

This survey was requested by the State of Connecticut as part of a feasibility study for possible acquisition of the property by the State. The report is intended to provide an overview of the condition of major Architectural, Mechanical, Electrical and Fire Protection systems in the building at the time of the report, along with recommendations for remedial work to items felt to be in need of maintenance, repair or replacement. The survey is also intended to provide a professional opinion of the projected construction costs to effect the recommended maintenance, repairs and/or replacements.

This report does not address possible changes a new owner might make in building interior finishes, layouts, partitions, or telecommunications systems; nor does it address every possible modification or alteration which might subsequently be required to fully comply with access requirements of the Americans with Disabilities Act (ADA), some of which requirements have yet to be clarified and interpreted by the United States Department of Justice and the court system.

METHODS OF INVESTIGATION

Review of the property consisted of visual observations conducted at the site on 16 September 1992 by Harwood W. Loomis, AIA, of Hoffmann Architects, North Haven, Connecticut; and Dean M. Azzam, P.E., George V. Keithan, and Christian B. Hagen, all engineers with Melchiori and Associates of Wallingford, Connecticut. Construction drawings of the building were not available to the inspection team. A set of drawings labeled variously as "preliminary," "for review," and "not for construction" was made available for inspection by the review team at the site. These were generally dated in April of 1985 and were noticeably incomplete with respect to details, detail cross-referencing, and other information beyond general design intent. It appeared that these drawings are the best information available to the building manager, as they are maintained in the maintenance office for purposes of managing the facility. The site

visit provided an opportunity to observe how closely the physical construction conformed to the information presented in the design drawings, and to observe the general condition of the building and the level of workmanship and quality of materials used in the construction.

Access to the building was provided by Mr. John Scobie, a principal of Sterling Realty Group, Incorporated, and Ms. Gale Johansen, Property Manager with Xerox Hartford Associates. The Building Engineer, Mr. Kenneth Garreau, accompanied the engineers on the review team through most of their observations. Mr. Garreau and Ms. Johansen were both familiar with the operation of the building and were very helpful in responding to questions regarding equipment and maintenance and operating practices and history.

At the time of the inspection, tenant floors six through 16 were vacant. This entire block of floors had been occupied by components of the Aetna Insurance Company and were only recently released. The availability of a large number of vacant spaces greatly facilitated observation of finishes and equipment by the review team. However, it also hampered some observations due to equipment shut-downs. For example, only half of the elevators were in operation.

This survey did not include determination of the presence or absence of asbestos or other hazardous and toxic materials. We recommend that independent consultants specializing in environmental hazards be engaged to evaluate the property for the possible presence of toxic or hazardous materials.

BUILDING DESCRIPTION

The building is a free-standing structure located on the west side of Sigourney Street in Hartford, immediately adjacent to the Sigourney Street interchange with Interstate 84. The building comprises a total of 18 stories, plus a penthouse level which is considerably smaller than other floors and roughly half devoted to mechanical equipment spaces. Of the 19 stories, the first three are devoted to parking and are below the level of Sigourney Street. (Floor numbering follows the convention of omitting a 13th floor.) The main entrance (to both the building lobby and to the parking garage) occurs on level 4, and the security/concierge station and elevator lobbies are located on the fifth level. In addition to parking spaces beneath and within the office tower "footprint," there is also a five level ramped parking structure located behind and connected to the tower. There is a secondary access to the parking structure from the west, from what is now known as Park Place (formerly Woodbine Street).

Total occupiable floor area is approximately 450,000 square feet, exclusive of parking, lobby and mechanical spaces. The typical tenant floor (representing floors 6 through 19) is approximately 32,500 square feet and is conceived as all open space surrounding an L-shaped central core. Marketing literature indicates that 1200 parking spaces are available. The building and attached parking garage actually contain only 900 spaces, of which a substantial number are narrow spaces (7'- 6" wide) marked as "compact car only." The additional 300 spaces are located in a surface lot across Park Place and not part of this property. The building

manager reported that these spaces have been released back to their owner but would still be available for lease by a new owner of the building.

Architectural design of the building was by Welton-Becket Associates (New York office), with associated architects Brennan-Beer-Gorman, also of New York. The structural engineer was Lev Zetlin Associates, of New York; the mechanical/electrical engineer was Burton and van Houten of West Hartford, Connecticut; and the landscape consultant was CR3 Incorporated, of Simsbury, Connecticut.

The drawings available for inspection did not include any of the code-related (and required) information describing the building use group and construction type classification. The entire building appears to be of reinforced, cast-in-place concrete construction. The tower portion of the building uses convention reinforced concrete slabs 9 inches thick with 5 inch drop shear heads at column locations. The attached parking structure uses post-tensioned concrete slabs on cast-in-place beams and columns. The building is enclosed with a brick veneer, with glass curtain walls at prominent corners and above the front entrance, which is a 3 story high atrium.

At the time this building was designed and constructed (late 1985 through 1987), Connecticut was using the State of Connecticut Basic Building Code/1978, which became effective September 1, 1981, and remained in effect until April 15, 1987. Under this code, the occupancy classification for the tower would have been Use Group B (Business), and Use Group S-2 (Low-hazard Storage) for the attached open parking structure. (This is reflected in the Certificate of Occupancy, which we reviewed in the Building Manager's office. The classification of construction type would have been dependent upon the fire resistance ratings of structural elements such as beams, columns, and floor slabs. Because this information was not provided in the drawings we reviewed, we cannot report on class (type) of construction with any certainty. Based on the method of construction and the use of the building, we believe the construction would probably have been considered to be Type 1 (Fireproof) or Type 2 (Non-combustible protected) under the Building Code in effect at the time of construction.) Without more specific information than what was available to us, we cannot classify the construction type any more accurately than this. The entire building is protected with an automatic sprinkler system, as well as standpipes in the central core.

The allowable tabular area per floor varies under the Code, depending upon the class of construction. Although we do not have sufficient information to calculate the allowable tabular area, we feel that the Hartford Building Department probably reviewed this closely at the time they issued the building permit, and that the design probably complied with Code requirements.

OBSERVATIONS

1. GENERAL

Xerox Centre (also known as Park Place Xerox Centre) is located at 25 Sigourney Street in Hartford, immediately adjacent to the Sigourney Street interchange of Interstate 84. Sigourney Street is elevated at this location, providing walk-in and drive-in access to the fourth level of the building. At grade, Capitol Avenue runs along the north side of the building and serves the delivery entrance and loading dock. Running south from Capitol Avenue, Park Place (formerly Woodbine Street) provides drive-in access to the west end of the open parking structure at the second level. The building is approximately three blocks from the State Capitol, and two blocks from Farmington Avenue.

The present parking layout provides for 900 spaces in garage parking located entirely on site. Many of these spaces are "compact car" spaces which appeared extremely narrow and inconvenient, with a stall width of only 7'- 6". The present arrangement was accomplished by repainting the stall lines on the "inboard" parking aisles on all levels; the previous lines were painted over and can still be seen on the slabs. The "outboard" stalls are lined off to a width of 7'- 9" but, because they are spaced with three stalls between columns located 24 feet on center, their effective width is greater. According to Ms. Johansen, the capacity was 877 spaces before restriping. There are 18 designated handicapped parking spaces, distributed among the parking levels. All handicapped spaces are located adjacent to doorways to lobbies serving the parking garage.

From the parking garage, access to the building is gained by two elevators which discharge at both the lobby and mezzanine levels. The lobby level provides no access to the upper stories of the building. A total of eight passenger elevators run from the mezzanine level; four "mid-rise" elevators serve floors 6 through 12, and four high-rise elevators provide express service to floors 14 through 19. There is one service elevator, which serves all floors except the penthouse. The penthouse level is not served by elevator, and is reached by a stair from the 19th floor.

Walk-in access from Sigourney Street, the apparent "front" entrance, is through a revolving door flanked by swinging doors and leading to a formal entrance lobby. From the lobby level, a grand staircase ascends half a level, then splits into two stairs which continue up to the mezzanine level and the security/concierge station. For a handicapped person entering the lobby from Sigourney Street there is no good, readily obvious path of travel. The passenger elevators serving the offices run only from the mezzanine level. The only handicapped access from the lobby level to the mezzanine level is by the parking elevators, which are tucked away off a sub-lobby at the rear of the lobby level, hidden from the entrance by the grand stair and a conference room behind it. There is no signage to inform a handicapped "pedestrian" of the path of access travel.

#2 Lobby grand stair, looking up toward the concierge/security station.

The mezzanine level is considered to be mostly rentable space. The east wing is unfinished and has never been occupied or completed. The unfinished area is approximately 10,000 to 11,000 square feet. This represents the only unfinished, rentable space in the bulding. The north wing was occupied by Aetna Insurance Company as a cafeteria, which was available to all building occupants. Aetna discontinued the cafeteria when they released most of their space in the building and it is now unoccupied. Most of the kitchen equipment has been removed, but a serving sink remains and the dining room and serving area finishes are intact, although the furniture has been removed. At present, there is no food service in the building other than a small convenience store located on the east side of the lobby level.

#3 Vacant serving area of the former cafeteria.

#4 Dining area of the former cafeteria, mezzanine level.

The L-shaped service core includes two fire exit stairways, one at each end. Although the building is L-shaped, the stairs are designated "North" and "South." The north stair has a nominal door width of 40 inches (38-1/2 inches actual), and a stair width of 68 inches. The south stair has a nominal door width of 40 inches (38-1/2 inches actual) and a stair width of 58 inches. Stair construction is concrete fill on steel stringers and steel pans, with steel pipe hand/guard rails. The penthouse floor has access to only the south fire stair, as well as a second (open) stair leading to the 19th floor. Both fire stairs discharge directly to grade at Lobby level. The stairways are equipped with pressurization equipment, which is activated in the event of a fire.

2. SITE

The building occupies most of the site. There is a brick paved circular driveway in the "elbow" formed by the two wings, providing ingress to and egress from the fourth level of parking. The center of the circle and the surrounding perimeter are heavily landscaped, mostly with coniferous shrubs. The perimeter of the building and garage foundation are planted with small pine trees, which are in fair condition but, since they are not particularly visible, do not seem to receive much care or maintenance.

The asphalt pavement of the driveway leading from Park Place into the garage has been patched near the face of the building. The building manager reported that the pavement had settled about two inches, and that she had that section cut out, excavated down to the footing, filled and compacted, then repaved.

3. STRUCTURE

The frame of both the garage and the tower are constructed of reinforced, cast-in-place concrete. Floor (and garage) slabs within the tower footprint are cast-in-place, conventionally reinforced concrete. The drawings indicate that the slabs are 9 inches thick, with 5 inch dropped shear heads at columns. There was no information on the drawings indicating the design live or total load capacity. Advertising literature indicates that all floors were designed for 100 pounds per square foot.

The building structure was mostly concealed, except for one portion of the mezzanine floor, which has never been finished out. The structure at that location appeared normal for the type of building involved. There were no apparent serious cracks or other evidence of structural problems. It was visibly apparent that the structural slab was not very level, and that a leveling fill would be needed at the time of tenant fit-out. The building manager reported that many of the floor slabs were distinctly out of level, and that some floors required two or more inches of leveling compound to bring them within acceptable limits. This is generally considered acceptable practice. Although the depth of the leveling compound required in the most extreme cases seems excessive. Even though the slab was not within published standards for plane and level, the structural integrity does not appear to be adversely affected.

#5 Exposed structural slab in unfinished space on mezzanine level.

In the portions of the parking garage which occur within the building footprint, there were numerous cracks radiating out from the columns. The magnitude of the cracking was impossible to determine because the cracks have been routed out and sealed. This has the dual effect of calling attention to the cracks, and making them appear much more evident than might be the case if they had not been treated.

#6 Cracks radiating from column in garage area.

The ramp parking structure behind the office tower is also constructed of cast-in-place concrete. Conventionally reinforced beams run transverse to the length of the garage and taper down to a cantilever on the outside edges of the structure. Post-tensioned concrete slabs span between the beams, which are located 24 feet on center. The post-tensioning tendons run east to west, parallel to the long axis of the structure and transverse to the beams. All levels show a continuous crack in the top of the floor slab at the point where the slab changes from a simple span to a cantilever. Again, these cracks have been routed and sealed, which both calls attention to them and makes them appear more severe than might be the case. There is evidence of some water leaching through these cracks, forming mineral deposits on the underside of the slabs.

The slabs also show a considerable amount of other cracking, which generally follows a consistent pattern on all levels and on both sides of the traffic aisles. All these cracks have been routed and sealed, so it was not possible to form any conclusion regarding the severity of the cracking. The remedial work does, however, illustrate the extent.

#7 Typical crack running along column line in garage floor slab.

#8 Network of cracks parallel to long axis in garage slab (Level 6).

4. ENVELOPE

The tower is enclosed with a curtain wall made up of a combination of brick veneer (on concrete block backup) and glazed curtain wall system. The brick portions are a medium dark, reddish-brown brick. A few loose bricks were stored in the unfinished space on the mezzanine level; these indicated that they were manufactured by Belden Brick Company, a well-known and respected brick manufacturer. The bricks appear to be machine molded, with a smooth face that appears hardened, although not quite glazed.

Most of the brickwork around the building appears to be in good condition. There was some evidence of efflorescence, particularly at the parapet walls of setbacks. Most of this efflorescence appeared to come from weeps in the masonry and followed a horizontal line, which indicates that flashings and weeps are performing normally. There was, however, extensive efflorescence around the top of Stair Number 1, which is located at the west end of the open parking structure. This efflorescence was not confined to weep locations, nor did it follow a consistent horizontal line.

The glazing system and curtain wall construction appeared to be in good condition. Glazing is insulating glass. The drawings indicated 1-inch insulating glass; there was no way to measure the actual thickness, but it did not appear to be a full inch. Windows, whether curtain wall and spandrel or individual openings surrounded by brick, are non-operable. There are a few sliding doors providing access to small terraces at the 17th and the 19th floors. The building manager reported that opening these doors tends to upset the balance of the HVAC system, and so she makes every effort to see that tenants do not open the doors or use the terraces.

Parapets extend approximately four feet above the roof on all levels. The back (roof side) of the parapets is finished in the same brick as the outside face. The drawings show the parapets covered with a metal cap flashing/coping cover assembly. The actual construction used exposed bricks to form the top of the parapets, with conventional mortar in the horizontal joints on the top surfaces. Many of these joints were cracked, and a significant number of them had been covered with an elastomeric caulking compound. The building manager reported that she had had the parapet caps "repointed" a couple of years ago, and that "control joints" were created at that time. It appeared that the work actually done was simply applying elastomeric sealant over existing mortar in the joints, in some cases not even covering the entire length of a single joint.

#9 Exposed and spot-repaired mortar joints in typical parapet coping.

5. ROOFING

Roofs are loose-laid, ballasted EPDM rubber. The building manager indicated that they are under a ten-year warranty from Carlisle, and the Carlisle logo was visible in a few places on some of the base flashings. We were not able to verify that the warranty is in effect.

On both the main roof and the roof over the penthouse, there is a poured concrete runway for a window washing hoist. The runway was poured directly over the EPDM membrane; we were not able to ascertain whether or not any sort of protection board was provided to protect the rubber membrane under the concrete runway. The runway extends around the building perimeter; between the runway and the penthouse the roof membrane is secured with an application of round stone aggregate. Base flashings at the perimeter parapets are covered with stainless steel. At the penthouse, base flashings are exposed EPDM rubber. Both rubber and stainless steel flashing appeared to be in good condition and to have been well executed.

#10 Main roof, looking north from southwest corner, showing concrete runway and window washer rig "garage".

6. INTERIOR FINISHES

Interior finishes throughout tenant spaces are unexceptional. Walls typically are finished in gypsum wallboard painted an off-white color. Ceilings are virtually all 2' x 2', tegular-edge (half-recessed) lay-in acoustical tile in a pebble finish. Most floors are covered with 12" x 12" carpet tiles. For the most part, walls and floors are in good condition. Most of the carpet tiles are in reusable condition, although in some areas previous furniture layouts are obvious either because of aisles denoted by different color tiles, or because of fading where carpet tiles were not protected by furniture.

#11 Typical tenant floor.

On the 16th floor, there is a 72' x 36' enclosed space with raised pedestal flooring for computer cables and a dedicated cooling unit. Most of this space also has wiring turrets on the floor for connections. The eastern-most 11 feet are separated from the balance of the space by a partition built between the raised floor and the underside of the ceiling. The building manager reported that there is another, similar, space elsewhere in the building.

#12 16th floor computer room.

Toilet rooms are finished in vinyl wallcovering, with ceramic tile floors. Toilet stalls are enameled steel, floor supported partitions. Lavatories are set into marble countertops with marble aprons across the front. In at least one men's room, part of the front apron had been broken off. The building manager pointed out that the toilet rooms are laid out so that stalls and lavatories are separated from urinals. The arrangement allows the partition between the men's and women's rooms to be moved in order to compensate if the ratio of men to women on a floor changes substantially.

The main lobby and public area of the mezzanine level are finished almost exclusively in marble, in two colors. The lobby floors exhibit extensive crazing and appeared to have chips loose and coming out. The building manager reported that the former cleaning service had ignored instructions and used vinegar in the water used to clean the marble, upsetting the p.h. balance of the stone and causing the natural fissures in the stone to open up.

#13 Mezzanine level concierge station. High rise elevator lobby in background.

The main ceremonial stair from the lobby to the mezzanine is finished in marble, with the center portions of the treads covered with carpet. Handrails and guard rails throughout the lobby and atrium are satin finished bronze, which appears in good condition and which was reported to have been refinished approximately a year ago.

7. CODE COMPLIANCE

For a business occupancy, the occupant loading under the 1978 Connecticut Building Code was based on a ratio of one person per 100 square feet of gross building area. On this basis, the theoretical (design) occupant load for a typical floor in this building would be 325 people. The same ratio applies under the 1989 Connecticut Fire Safety Code, which is retroactive.

Fire stairs are located near the opposite ends of the central service core, which is L-shaped. The approximate travel distance from a remote corner to the nearest exit is on the order of 150 feet, measured in a straight line. (The codes require travel distance to be measured along actual paths of travel, so furniture and tenant walls would affect this in an occupied space.) The 1978 Connecticut Building Code and the 1989 Connecticut Fire Safety Code both allow up to 300 feet of travel to reach a fire exit in a sprinklered building used for a business occupancy.

Stair widths are 58 inches for the south stair and 68 inches for the north stair. Doors leading into the stairs are nominally 40 inches wide. Corrected for deduction of stop depth and hinge stile thickness, the clear opening as regulated under the 1989 Connecticut Fire Safety Code is 37-1/2 inches. The doorways into the stairs open directly from the open floor areas or, in the case of hypothetical multi-tenant floors, directly from exitway access corridors. There is no provision for areas of refuge on each floor.

The building manager described the building as a "limited evacuation" building. According to her description, alarm activation initiates an audible and visual alarm on the floor of involvement, one floor below, and two floors above. Signs at the entrance to each fire exit stair designate a floor of refuge, which for each floor is the fourth floor down (for example, floor sixteen would use the fourth floor below for refuge. This would normally be the twelfth floor but, since there isn't a floor designated as 13, the floor of refuge becomes the eleventh floor.)

Exits from the open parking structure are stairways located at the west end of the garage (Stair No. 1) and in the building at the east end of the garage (Stair No. 3). Stair No. 1 discharges directly to the exterior at grade. From the uppermost parking level (Level 6), Stair No. 3 leads into the building and down to Level 5, where the stair run is interrupted by a railing blocking the stair landing to force travel through the doorway provided at that location. However, the door appeared to be locked; I was unable to turn the knob to open the door. The building manager reported that the handle turned in the opposite direction, but this door was not equipped with a lever handle, and knobs usually operate in both directions.

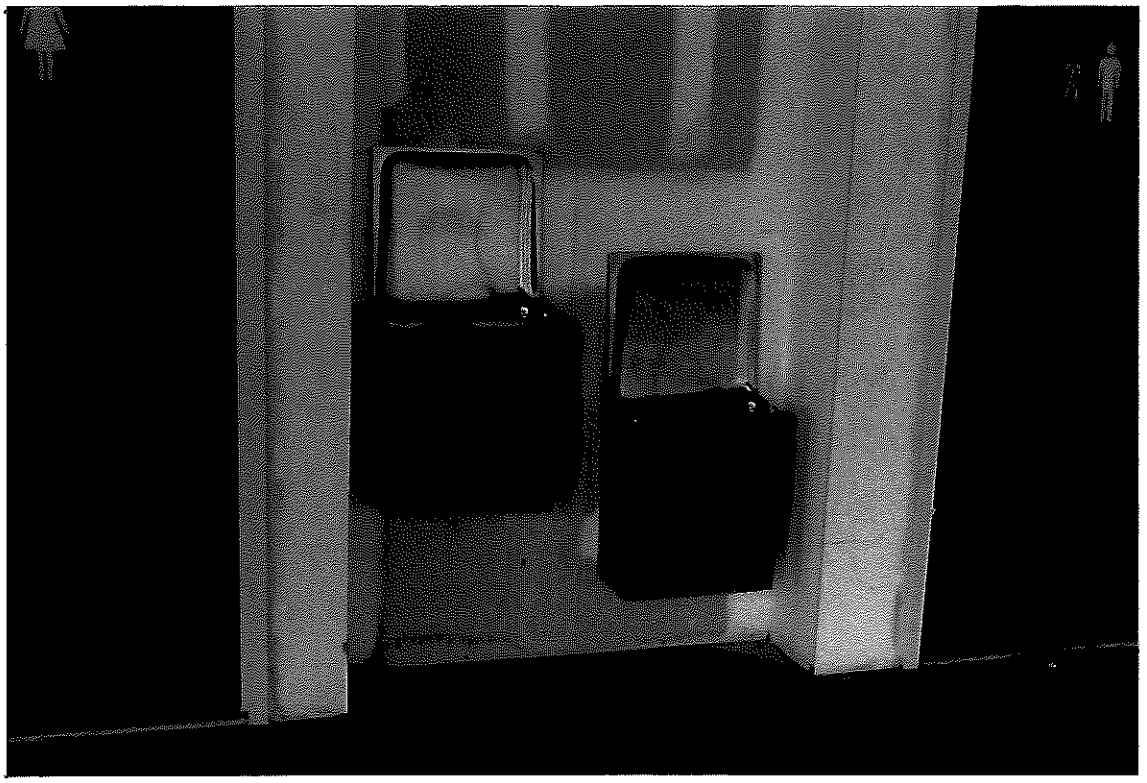
There is at least one location in each fire stair, just below or just above the Mezzanine level, where a steel beam framing the landing protrudes down to reduce the headroom in the direction of exit travel to 6'-2-3/4". In the north stair, there is an additional concrete beam at the Mezzanine level which is 6'- 7" above the landing.

Toilet rooms are arranged in a dual compartment configuration, with an outer room or compartment containing three urinals and three lavatories in the Men's rooms and empty space in Women's rooms. Urinals are all set at the same height. The inner compartment or room contains toilet stalls and additional lavatories. The toilet stalls and lavatory counters are arranged in a continuous row, with provision made to allow relocating the partition separating the Men's and Women's room on each floor to adjust the number of toilet compartments and lavatories depending on the ratio of occupants of each gender. Each toilet room contains one handicapped toilet stall, 60" by 60" in dimension and equipped with a rear and a single side grab rail arranged to accommodate only side transfer use. There are a total of seven conventional toilet stalls and seven lavatories in the inner compartments on each floor. On most floors these are distributed at a ratio of four stalls and four lavatories in the Women's rooms, and three stalls and three lavatories in the Men's rooms. A few tenant floors have been configured for five stalls and five lavatories in Women's rooms, and two stalls and two lavatories in Men's rooms. (Plus one handicapped stall in each, and plus three lavatories in the outer compartment for each Men's room.)

#14 Typical accessible toilet stall.

Lavatories are set in continuous counters. The countertop height is 31-1/2 inches, with a clear height under the front apron ranging from 26 inches to 27 inches. Countertop depth is 22-1/2 inches, and faucet handles (which are single lever type) are set back 14 inches from the edge of the counter to the front of the lever handle. Hot water supply piping and waste piping beneath the counters is not insulated.

Each floor is equipped with at least two drinking fountains, one with the bubbler at 42 inches from the floor and one with the bubbler at 32 inches from the floor. A number of floors have additional fountains located toward the north or east ends of the wings, on "wet" columns. Where additional fountains are provided on tenant floors, they are set with the bubblers at 42 inches from the floor.



#15 Typical paired drinking fountains. "Accessible" unit is not cantilever design for wheelchair access.

Most doors are equipped with 8-inch metal kick plates at the bottom edges.

8. VERTICAL TRANSPORTATION

The parking structure is equipped with two hydraulic elevators, which serve parking levels 1 through 5 and connect to the main building by way of lobbies located at the main lobby and mezzanine levels. These elevators are rated at 3000 pounds capacity and operate at 120 feet per minute. Cab controls have raised numbers and symbols adjacent to the control buttons, and braille number plates on the elevator door jambs at a height of 60 inches above the floor.

The building itself is served by a total of eight passenger elevators and one freight elevator. Passenger elevators are all geared traction elevators, rated at 3500 pounds capacity and operating at 500 feet per minute. They are distributed in two banks of four each. The four in the south (or east) wing serve from the mezzanine through the 12th floor, while the four in the north wing run express to the 14th floor and serve floors 14 through 19. The 20th floor ("Penthouse") is not served by elevator. Passenger elevator cab controls have incised (not raised) numerals and symbols adjacent to the control buttons, and no braille symbols either on the control panels or the hoistway door jambs. The only audible annunciation is a single chime as the elevator passes each floor stop.

The freight elevator serves all levels of the building except the penthouse. It is a geared traction elevator, rated at 4000 pounds capacity and operating at 500 feet per minute.

All elevators were manufactured by Otis and are under a maintenance contract with Otis. The building manager reported that, due to the reduced occupant load of the building at the time of our visit, only half of the passenger elevators were in service at any time. She said that an Otis service technician rotates the cars in service on a weekly basis.

High-rise cars available to us appeared to operate normally and acceptably. The northwesterly low-rise car (designated Number 9 according to the security agent on duty) rumbled and vibrated badly when we rode it. The building manager attributed this to lack of use, since all floors served by this elevator are now vacant.

The building is also provided with two window washer cars. Both ride on concrete platforms cast over the top of the roof membrane. One is on the main roof level and provides access to all windows except those on the inside of the "elbow" of the two wings, above the atrium entrance. The second is located on the penthouse roof and serves only the "elbow" location not served by the other car. Neither car was tested as part of this inspection. The drawings we reviewed indicated tie downs in the concrete runway for anchoring the rigs when in service. We did not see any tie downs in the course of our observations; if they are present, they are not located in the runways, as shown on the drawings.

EVALUATIONS AND RECOMMENDATIONS

1. GENERAL

The location of the property is excellent, with good access to highways by Interstate 84 (with an interchange immediately adjacent to the building) and close proximity to the state capitol building (about three blocks east). Farmington Avenue is two blocks north of the property. The building is somewhat isolated, however, being on the opposite side of I-84 from Farmington Avenue and the large insurance company offices located in the neighborhood. With the closing of the cafeteria in the building, there are no amenities immediately available except those provided by the small convenience store in the building. Farmington Avenue is within walking distance in good weather, but would be inconvenient during winter or rainy weather.

Despite having a visual main entrance from Sigourney Street, the building is clearly oriented toward people arriving by automobile and parking in the building's own parking garage. From the Sigourney Street lobby entrance, it is not immediately evident upon entering where the elevators are located or how to get there. This confusion is worse for handicapped visitors, since they must find their way around the monumental stair in the center of the lobby to the garage elevators located in the back in order to reach the mezzanine level, where the tower elevators begin. The monumental stair is open underneath. While this makes an attractive geometric shape in the space, it is configured in such a way that it also creates a "head knocker" hazard because it is possible to walk up to and under the stair where there is insufficient headroom for safety. This might be partially rectified with judicious placement of planters or other decorative elements.

There is no signage on the lobby level to direct a visitor to the mezzanine level for elevator service. There is also inadequate signage when entering from the garage. Upon this writer's first visit to the building, we made several trips up and down the run of the garage elevators until we accidentally found which stop provided access to the lobby. We observed other visitors playing the same game of "guess which button to push." In addition, the sixth parking level is not served by the elevators, which is not made clear to visitors. Although designated handicapped parking spaces are provided on other levels, there is nothing to alert a mildly challenged individual that parking on the sixth level would not provide access to an elevator without having to travel the driving aisle all the way down to the fifth level.

The layout of the building is very well done. The typical tenant floor has approximately 85 percent of its floor area available as useable space (15 percent circulation and utility). The typical tenant floor also has nine (9) potential corner offices, although two of these have a view which is primarily the corresponding opposite corner. The structure is arranged on a 30' by 30' grid and floors are set up to be configured as completely open space, although some floors have non-structural partitions in place to subdivide the space. The previous tenant accomplished power and communications wiring by means of feeds in the ceiling plenum and power poles at work stations. The cast-in-place concrete floors do

not have power duct in them. The use of carpet tiles could also offer the possibility of power and communication distribution through the use of flat cable laid on the floor slabs under the carpet tiles.

For an owner/tenant such as the State, the fact that the north wing of the mezzanine level is already configured for use as a cafeteria is a significant benefit. The nature of the kitchen operation could range from full preparation to a warming kitchen only, and the cost of equipping the kitchen would vary accordingly. In a similar vein, most State office buildings provide a small "sundries" shop on the premises, and the convenience shop in this building appears to be appropriate in location, size and configuration for such an operation. We did not, however, investigate the terms under which it is being operated. In order to make the shop available for operation by people with visual disabilities, as is usual in State buildings, it might be necessary to either buy out the current operator's lease or wait for it to expire.

The number and size of parking spaces in the garage are less than desirable. The present layout provides 900 spaces. At a code-mandated ratio of one person per 100 square feet, the potential occupant load of the building (after subtracting out the 15 percent core space) is approximately 3600 people. The available parking thus amounts to one space for every 4 people.

The 900 spaces are based on some stalls with a width of 7'- 9" and others with a width of 7'- 6". We feel that both are inadequate. The current edition of Architectural Graphic Standards recommends stall widths of 8'- 0" to 8'- 6" for all-day parking, and 8'- 6" to 9'- 0" for standard car parking. Typically, wider spaces are recommended where traffic "turns over" during the day, as opposed to occupants parking in the morning and remaining until evening. The actual pattern of use for a State building would be dependent upon the agency or agencies in the building but, in any event, we feel that the minimum parking stall width should be 8'- 0". Since the column module for the open parking structure is 24', the "outboard" spaces which are lined out at 7'- 9" can be considered to be 8' stalls because the full widths of columns have been lined off and there are three spaces per structural bay. However, the "interior" stalls at 7'- 6" are far too narrow for comfortable parking and use even by most small cars. We estimate that adjusting all parking stalls to 8 feet in width would reduce the number of spaces to approximately 870. We include the following cost projection IF reallocation of stall sizes is to be considered:

Probable cost for restriping parking stalls $3,600

2. SITE

Because the building occupies such a large percentage of the site area, site considerations are virtually nonexistent. The landscaping in the Sigourney Street circular driveway appeared to be healthy and well maintained. Trees planted along the south side of the open parking structure appeared not to have had any significant maintenance over time, but this manifested primarily as a slightly ragged appearance. These trees appear healthy for the most part, needing only minor pruning for shape. We feel that they will ultimately be found to be too close to the structure. As the tree crowns mature, they will require regular trimming to keep them clear of the building.

The recent patching of the driveway outside the west entrance to the parking structure is in good condition. The building manager reported that she insisted the contractor excavate all the way to the footing, remove any loose or poor material, and compact the fill when it was replaced before repaving. Accepting that this was done as described, we do not anticipate any further repairs to this area in the foreseeable future.

3. STRUCTURE

The structure of the office building appears to be well constructed and in good condition, with no evidence of any structural problems. We have no further comments or recommendations regarding the structure of the main building.

The open parking structure presents major concerns. The apparent severity of the cracks in the slabs is visibly magnified by the fact that the cracks have been routed out and filled with sealant. Nonetheless, the extent and the pattern of the cracks gives rise to concerns. The cracks typically run parallel to the long axis of the structure, which means that they run parallel to the direction of the post-tensioning tendons. The worst of the cracks are located toward the outer edges of the slabs, such that the cracks generally correspond to the position where the supporting beams pass over the columns and become cantilevers. The cracks suggest that there is insufficient reinforcing in the beams (and, possibly, in the tops of the slabs) to resist the negative bending moment induced where the beams pass over the columns. There are additional cracks toward the "inboard" sides of the slabs. Since these edges are not cantilevered, under theoretical conditions there should be no bending moment at the edge, and increasing compression in the top surface of the slabs progressing toward the middle of the span. However, zero moment is possible only where the end support condition is a hinged joint, free to rotate. This is impossible to accomplish with concrete construction such as this. We feel that the end conditions may have unintentionally created a moment connection which imparted some tension to the upper surface of the slabs toward the "inboard" edges, and that the reinforcing in the top of the slabs was insufficient to resist this tension.

We have two recommendations regarding the open parking structure. First, we suggest that a consultant experienced in parking structure rehabilitation be engaged to conduct an analysis of the design of the garage structure. This should be based on the final construction drawings (or even shop drawings) for the garage, if those can be obtained, rather than preliminary drawings such as we reviewed, which may not be accurate. The analysis should be conducted by an engineer experienced in both post-tensioned and convention concrete construction.

Probable cost for structural review $5,000

Our second recommendation is to coat the top surface of all suspended slabs in the garage structure with an elastomeric, traffic-bearing waterproofing coating, such as 3M's "ScotchClad" traffic membrane. This is to prevent chloride-laden water from penetrating the slabs and attacking the reinforcing steel. If an engineering review indicates that the reinforcing is at all marginal, it will become especially important to prevent any deterioration of the reinforcing in order to preserve the integrity of the structure.

Probable cost of garage slab coating $350,000

4. ENVELOPE

The building envelope is substantially in good condition. There has been effloresence along some of the parapets, primarily at weep hole locations. This is an aesthetic rather than a functional concern, and can be remedied by cleaning the masonry if the effloresence is felt to be objectionable. The extreme effloresence observed at the top of the enclosure for Stair number 1, at the west end of the parking structure, indicates leaks in the roof or perimeter flashings of the stair tower. While this stair is apparently rarely used, leaks should nonetheless be corrected before they cause more permanent damage. Although we were not able to ascertain the exact cause or source of the leak, we feel that a budget which would support replacing the roof of the stair tower would be sufficient to accomplish whatever repairs further investigation might indicate are necessary.

Probable cost for repairs to Stair number 1 . . . . . $3,500

The tops of the parapets of the office building were not constructed as shown on the drawings we reviewed. The drawings showed a metal coping cover, while the actual construction used exposed brick as a coping. We believe the change was driven by aesthetics. The problem is that brick joints in horizontal surfaces exposed to weather deteriorate very quickly and are not watertight. Although the building manager reported that she has had the copings "repointed," it appears that the contractor (or contractors) involved did not cut out the mortar, but rather applied a thin coating of some kind of caulking or sealant on top of the existing mortar joints. This was not done consistently, but sporadically around the parapets. Such "repairs" are not adequate, and have a limited efficacy and duration.

The less costly approach to correcting this problem would be to install a metal coping cover system, such as shown on the drawings on file in the building. Although we consider stainless steel and lead-coated copper to be more durable materials, a coping cover system could be fabricated from aluminum that could be painted to closely match the color of the brick. Although this would be an aesthetic change, if the color is closely matched, most observers from the street level would not be aware of the difference.

A more costly approach, but one which would maintain the existing appearance of the building, is to cut out all the mortar joints in the copings and to properly seal them with backer rod and elastomeric sealant. Since we feel that this is the more expensive repair, we offer a budget projection for this approach with the understanding that it should be adequate to provide for a metal coping cover if that approach should be favored.

Probable cost to seal parapet copings $50,000

5. ROOFING

Aside from looking at the condition of exposed flashings at the perimeters of the roof, there was little to see in order to evaluate the roof condition. The membrane was covered, either with round stone ballast or with the concrete runway for the window washing rig. The roof was apparently installed in 1987. It is under a ten-year warranty by Carlisle Syntec Systems (warranty number 0070186). The warranty was issued 29 January 1988. It runs with the building, and so it is transferable to a new owner. The system employed is a ballasted EPDM rubber membrane. This is a proven system, manufactured by a company with an excellent reputation in the roofing industry. The building manager reports that the roof is performing well.

Ballasted EPDM systems are relatively inexpensive to install, but they are expensive to repair when problems occur. The membrane is covered with ballast, which must be physically moved in order to examine the membrane. In circumstances involving a concrete runway, such as this, temporary removal for examination is impossible without damaging the membrane, so it becomes important to make every effort to eliminate other possible sources for leaks before breaking up the runway and replacing the membrane beneath it.

Under certain circumstances, Carlisle is willing to sell an extension to an existing warranty, provided that they inspect the roof and that the Owner pay for making all repairs which Carlisle might require at that time. While this is worthy of consideration, there are conditions which might argue against this.

The time when this roof was installed was a transition period for Carlisle, when they were making a change from neoprene-based seam adhesives to butyl-based. Before extending the warranty on a neoprene-adhesive roof, Carlisle requires that all field seams be exposed and stripped in with their "Elastoform" flashing membrane. Since it is impractical to rip out the concrete runway to do this, Carlisle might elect to exclude the runway area from the extended warranty and require a cutoff at that point. Carlisle imposes an inspection fee of $350 to check the roof and prepare the list of repairs which the Owner must have made, and the extended warranty itself costs $.06 per square foot - which comes to approximately $1980 for this building.

A properly installed and maintained EPDM roof should have a life expectancy of fifteen years or more. Rather than incur the expense of extending the warranty, with the limited protections that provides, it might be wiser to engage a quality roofing contractor to remove the ballast (where possible), inspect and strip in the field seams, and make any other repairs needed at the time of purchase. After replacing the ballast, the roof should be in condition to last for several more years.

Probable cost to inspect and repair roof $15,000

6. INTERIOR FINISHES

The condition of the marble floors in the main lobby is a concern. Because of improper cleaning in the past, natural fissures in the stone have begun to open up, and small chips have come out of some of the stones. The building manager reported that the cleaning contractor has been replaced and that the condition has not progressed since the change was made. We feel that some pieces of marble may deteriorate due to wear simply because the surface has been weakened already. The building manager reported that there is a stock of replacement stone for such a contingency, so the cost involved would be only for labor and setting materials. We foresee this as an eventual need, not immediate.

Probable cost for lobby flooring repairs (labor) $1,500

We did not inspect every toilet room. Spot checks revealed one broken apron on a vanity counter, and two with some delamination of the ceramic tile flooring from the structural slab. The condition of walls and toilet stalls was generally good, and not much work should be required to restore all toilet rooms to move-in condition. For a rough projection, we used one-half person-day per toilet room for labor, plus an allowance for materials.

Probable cost for toilet room renovations $5,000

Carpet tile throughout the tenant spaces is, aside from some fading of colors, about 90% to 95% usable. While replacement is not called for on a condition basis, different colors were used to delineate traffic patterns and, possibly, departmental boundaries. Therefore, some replacement or rearrangement may be desirable for facilities management purposes. Consideration should be made for that in budgeting for tenant fit-out, but we do not carry a cost for that because most of the carpet is usable at present. The figure below represents the cost of replacing approximately 5 percent of the carpet tile in the tenant floors.

Probable cost for necessary carpet replacement $50,000

Ceilings throughout the tenant spaces are almost exclusively 2' by 2' regular edge, lay in acoustical tiles. The building manager thought that most tenant-erected partitions on the tenant floors were built up to the bottom of the ceiling grid. However, our observation was that many of the tenant partitions, where used, were built <u>through</u> the ceiling to the underside of the structural slab above. Unfortunately, although the same type of ceiling was generally used on both sides of these partitions, the grids on both sides do not always line up in both the vertical plane and horizontal layout. This is not a concern if the existing partition layouts suit, or can be adapted to, the new occupants' requirements. If new occupants require relocation or demolition of existing tenant partitions, in many cases this will also require removing and rehanging areas of suspended ceiling - both tile and grid. Without knowing what layouts are contemplated for potential occupancy, there is no way to assign a dollar value to this. It should be allowed for in any budgets for potential tenant fit-out.

7. CODE COMPLIANCE

Under the building and fire safety codes in effect at the time of construction, fire stair widths were adequate for the number of occupants on each tenant floor. However, the two exit doors provided only 3 units of exit width under the then-existing regulations, which would accommodate only 300 people. The code-mandated occupant load is based on gross floor area, and is approximately 325 for a typical tenant floor. Once constructed, however, buildings fall under the purview of the Connecticut Fire Safety Code, which is retroactive. This means that the provisions of the most recent edition apply to existing buildings. When Connecticut adopted new editions of its building and fire safety codes in 1989, it adopted a new way of calculating the required width of exits. Under the new rules, exit stairs must provide 0.2 inches of exit width for each occupant of a floor or area, and exit doors must provide 0.15 inches of width per person. This means that the building now needs to have a total stair width of only 65 inches, and a total door width of 48.75 inches. The two exits easily satisfy these requirements.

Because the building is protected throughout with an automatic sprinkler system, the travel distance to the nearest exit can be up to 300 feet. The travel distance from the most remote corner to the nearest exit in a direct line is about 156 feet; even with allowances for egress paths around furniture and equipment, the travel distance requirement appears to be easily satisfied.

The current codes in effect require a place of refuge on each floor, protected to the same requirements as an exit stair, so that handicapped occupants who cannot negotiate stairs will have a safe place to remain until they can be evacuated by fire fighters. Areas of refuge are not provided in this building. Stair landings within the fire stairs are not large enough to provide code-compliant areas of refuge within the stair enclosures. They can be constructed outside the stairs, as vestibules, but doing so will disrupt the clean circulation pattern that the plan established around the central core on each tenant floor. In order to comply with current life safety technology, we recommend that areas of refuge be constructed at the entrance to each fire stair on each tenant floor. These should include connection to the building emergency communication system, as required by current code.

Probable cost to construct areas of refuge $25,000

Under the "limited evacuation" concept, a fire on one floor does not automatically trigger a general alarm throughout the entire building. This system is not specifically addressed under either the Connecticut Building Code or the Connecticut Fire Safety Code. The CFSC does make provision for selective alarm activation in buildings where the alarm

system connects to a constantly manned security station, which this building has on the mezzanine level. Combined with voice annunciation, the CFSC allows for selective notification of only areas of a building in proximity to a fire. The concept of "evacuation" to a lower floor, rather than out of the building, is not addressed. As unusual as the concept first appeared, we believe it is in compliance with the codes. The fire stairs lead to exits at grade, so any occupant wishing to could presumably go directly outside rather than stopping at a floor of refuge. According to a representative of the Bureau of State Fire Marshal with whom we discussed the concept, the CFSC requires notification of occupants in the event of a fire, but does not specifically require evacuation. Therefore, designating floors of refuge remote from the floor of involvement is not a violation of any code provision, and fire service personnel could subsequently use the building's communication system to order a full evacuation if they decided such action was necessary.

It is unlikely that there is any way the places in the fire stairs where beams intrude on the required minimum headroom can be physically removed. Although not satisfying strict requirements of the codes, the best solution we can offer is to ameliorate the condition somewhat by painting the offending beams in a bright OSHA warning pattern to call attention to them. The potential effect of striking them could be reduced somewhat, too, by attaching flat plates to the underside of the stairs just above each beam, ending flush with the bottom "leading" edge of the beams. This makes it less likely that an evacuee would run into a sharp corner of a beam flange; he or she would instead find his or her head brushing against a smooth, sloping surface, which would be less likely to deal a knockout blow to the head.

Probable cost of stairway beam protection $500

The door leading from the garage Stair number 3 to the building at level 5 should be repaired so that it opens normally. This requires either repairing or replacing the unit lockset.

Probable cost to repair hardware $150

Current codes require that, where urinals are provided, at least one be installed with a lip height not greater than 17 inches above the floor. None of the urinals in this building meet that requirsment. The building code in effect at the time of construction, however, used a height of 19 inches for accessible urinals, and all urinals meet this requirement. Since the construction was compliant at the time the building permit was issued, it should not be necessary to relocate urinals, which would be expensive.

Lavatories in toilet rooms are set in fixed countertops. The counter height of 31-1/2 inches is within the code maximum of 32 inches, but the typical front apron provides 26 inches of clearance to the floor, and codes require 27 inches clear. There was some variation between floors, and there may be some toilet rooms in the building that comply. If strict compliance is required, the front aprons (which are marble) can be removed, cut to suit, and reinstalled.

Probable cost to modify lavatory counter aprons $10,000

Codes in effect at the time of construction as well as currently in effect required that hot water supply and waste piping beneath lavatories be insulated. This was not done at this building, and should be to prevent possible scald injuries to wheelchair users who have no sensation in their legs.

Probable cost to insulate piping $5,000

Drinking fountains are provided on all tenant floors. At least one fountain on each floor is mounted at a 32-inch height. The code in effect at the time of construction required a height not greater than 30 inches for accessible fountains, but current code allows up to 36 inches, so the fountains would not have to be relocated for that reason. However, accessibility requirements also call for accessible fountains to be a cantilevered design, with a 27-inch high knee space beneath the bubbler for use by wheelchair occupants. The "accessible" fountains in this building are not accessible types; they are conventional units mounted at a lower height, and do not provide adequate knee space for use by people in wheelchairs. To comply with code requirements, the accessible drinking fountains on each floor should be replaced with compliant, cantilevered design units.

Probable cost to replace accessible drinking fountains . . $12,000

8. VERTICAL TRANSPORTATION

The elevators in the building are generally in compliance with code requirements and, with the exception of the low-rise unit number 9, appeared to operate acceptably. We do not feel that any extraordinary remedial measures are called for. The servicing company should be directed to check unit number 9 thoroughly and make any repairs or adjustments required. There are various levels of elevator service contract available, but it is likely that whatever repairs or adjustments are required should be included in the scope of the existing maintenance agreement.

HVAC SYSTEMS

1. General Description

The HVAC systems in this building consist of a chilled water distribution system, a hot water distribution system, and an air distribution system. The air distribution system includes garage exhaust and smoke evacuation systems. The hot water and chilled water for the building which supplies the respective distribution systems is purchased from a district cooling/heating company. A separate description of each of the specific systems is provided below.

2. Energy Supply

Energy Networks, Inc. (ENI) supplies the chilled water and hot water to the building. Both the chilled water and hot water supply enter the building through the parking level and into the main mechanical room. The chilled water supply and return mains are eight (8) inches in diameter. The chilled water is supplied at approximately 40° F. and returns typically at approximately 55° F. to 60° F., according to the maintenance personnel.

The hot water supply and return mains are four (4) inches in diameter. The hot water is supplied at between 190° F. and 230° F. depending upon the outdoor temperature, and requires a 70° F. Delta T. ENI only guarantees that the pressure differential between the supply and return for both chilled and hot water will not be negative. Information for the various rates of the chilled and hot water can be obtained from ENI.

This building enjoys a unique situation. Based upon its initial negotiations with ENI, it is allowed to implement a waterside economizer/cycle such that, during the winter months or low temperature periods, it can produce its own chilled water through a cooling tower and does not have to purchase chilled water during that period from ENI. A notable benefit from purchasing hot water and chilled water from such a district cooling company is that maintenance on a hot water and chilled water plant (such as a boiler and a chiller) is not required.

3. Mechanical Rooms

The main mechanical equipment room is on tower parking level 2. It contains the chilled water distribution pumps, the hot water distribution pump heat exchangers, as well as pneumatic control system air compressors. A 42 inch x 42 inch opening for outdoor air with a motorized louver damper in the opening is located in this main mechanical room. There is also a unit heater in this mechanical room.

Floors 5 through 19 have two mechanical rooms; one North and one South on each floor. Hot water and chilled water risers rise up through the mechanical rooms to feed the air handling units in each mechanical room. A garage exhaust fan room exists in the building. North and South Penthouse mechanical equipment rooms contain the outdoor air intake fans, smoke control fans, equipment for the water side economizer, as well as the penthouse office space air handling unit.

4. Chilled Water Distribution System

Chilled water (CW) is distributed directly from the ENI district cooling/heating loop. There is no heat exchanger between the building chilled water system and the district loop system. From the main mechanical room the chilled water has two main risers: one through each of the stacked mechanical rooms in the office space; and in the North mechanical and South mechanical rooms.

Chilled water pumps in the main mechanical room boost the pressure differential between the district cooling loop supply and return if needed. They are controlled by the pressure sensor on the top floor. If the pressure on the top floor goes below 10 psi, these pumps operate. The two pumps, (one is for stand-by purposes), are Bell & Gossett Series 1510 Base Mounted Pumps, Model No. 6G-12-1/4BFP. Each pump has a capacity of 1,700 GPM at 140 feet of head. Both are equipped with a 75 HP motor. The pumps are controlled by a "Parametrics" variable frequency drive.

Manual shut off valves are located on the supply and return lines from the district chilled water loop as well as a strainer on the supply line coming into the building.

Throughout the chilled water distribution system are several secondary chilled water loops connected into the main chilled water lines for various ancillary cooling equipment. Most of this cooling equipment is for computer room cooling. In the main mechanical equipment room, one of the secondary loops is pumped by a Bell & Gossett Series 80 Pump Model 1-1/2 x 7B which has a capacity of 14 GPM at 31 feet of head and is supplied with a 3/4 HP motor.

The chilled water piping throughout the building is Schedule 40 steel with either flanged, victaulic, or screwed fittings depending on the size of pipe. Water was noticed dripping from the insulation covering a chilled water main elbow in the mechanical room. Where visible, the piping was found to have adequate insulation.

A. Water Side Economizer

A water side economizer is part of the chilled water system. Free cooling is accomplished by a Marley 700 ton closed loop cooling tower located on the roof of the building. The cooling tower is a splash filled, cross flow, induced draft type with a propeller fan. Nameplate data on this cooling tower was not found; however, we know the propeller fan is powered by a 50 HP motor.

A concrete sump is adjacent to the cooling tower. Above the sump is an enclosed space which contains mechanical equipment related to the water side economizer. Located in this space is a Alpha-Laval plate and frame heat exchanger type A15BFG with 3,447.2 sq. ft. of surface area. This heat exchanger separates the chilled water distribution loop from the closed loop of the cooling tower. The cooling tower water piping is Schedule 40 galvanized coated steel piping with victaulic fittings. The cooling tower water pump is a Bell & Gossett

Series 80 Size 8 x 8 x 9-1/2 in-line type. The pump has a capacity of 1,600 GPM at 50 feet of head and has a 30 HP motor. The make up water to the sump is supplied through a reduced pressure backflow preventer. The sump is directly fed with chemical inhibitors and an algaecide. The cooling tower fan is shut down when the water temperature, as sensed by the sump temperature sensor, is low enough to permit further energy savings. The cooling tower is in good condition and is mounted on spring vibration isolators. When the system goes into economizer mode a control valve on the return to the district cooling water loop closes, effectively shutting off the district loop from the building and creating a closed loop chilled water system within the building. The return water from the air handlers in the building is routed to the cooling tower heat exchanger, where it is cooled, then returns to the chilled water pumps. In this mode, the chilled water system now becomes a closed system. It requires air separation as well as provision for expansion. This occurs in the North penthouse mechanical room. Nameplate data on the air separator and expansion tank is not visible. The plans call for an Amtrol AX-144, 77 gallon, expansion tank.

There is no means of isolating the ENI chilled water supply during economizer mode; such as a check valve or control shut off valve before the chilled water pumps. According to the maintenance personnel, however, this economizer system has been operating effectively since the opening of the building.

5. Hot Water Distribution System

The 4 inch heating hot water service that comes in to the building from the district loop splits and flows to two Plate & Frame heat exchangers for the building's two separate closed loop hot water systems.

The first system is an approximately 40% glycol water mixture that heats the underside of the deck between the top level of tower parking and the bottom level of occupied space. This is to keep the floors in the bottom levels of occupied spaces at a comfortable temperature. The glycol mixture is for freeze protection because the piping is located in the unheated garage. The supply and return pipe for this system at its inception is 2-1/2" in diameter. The heat exchanger for this system is an Alpha-Laval Plate & Frame Type P2BLCH with 73.6 sq. ft. of surface area. The nameplate data for the circulating pumps for this system was not visible but it was found that each has a 1-1/2 HP motor. A pot feeder allows for fluid and chemical introduction into this system. According to the maintenance personnel, an outside chemical company is responsible for insuring the water has the proper inhibitors and glycol/water mixture. No make up water was found to be directly or "hard" piped into the system. This is good practice because it prevents the system from being inadvertently diluted to the wrong mixture of water and glycol. A hose from the domestic water service is within convenient proximity to the pot feeder. The water line feeding this hose is equipped with a pressure reducing type backflow preventer. An air separator, expansion tank, and all the required valves and specialties seem to be incorporated within this system.

The second hot water heating system serves the rest of the building. This system distributes hot water to five (5) hot water risers that rise through the office space of the tower. Two of these risers go through each of the two mechanical rooms on the floors and feed the main air handling units. The other risers run through columns within the office space. Runouts from these column risers are piped to the fan powered perimeter VAV boxes to provide zone reheat. The hot water serving the air handling unit coils is to temper the main supply air while the hot water perimeter VAV boxes handles the envelope heat loss during the heating season. Limited baseboard fin tube radiation is served by this heating hot water system. This radiation is located in the cafeteria and the South rental area on the mezzanine level.

Located in the main mechanical equipment room on level P-2 is the Plate & Frame heat exchanger for this system which is an Alpha Laval type A10BFD with 333.25 sq. ft. of surface area. Circulation for this system is provided by two Bell & Gossett base mounted Series 1510 pumps Model No. 3G 12-1/8 BF. These pumps each have a capacity of 320 gallons per minute at 140 feet of head and are powered by 20 HP motors. A chemical pot feeder air separator and all the required valves are in place for this system. The expansion tank for this system is located in the North Penthouse Mechanical Room.

The piping for the hot water systems was found to be both Schedule 40 steel as well as copper piping. The copper pipe which has sweat fittings is located near the perimeter VAV boxes and is smaller diameter pipe. Victaulic fittings were found on the larger diameter steel pipe as well as some flanged fittings where required. The smaller size hot water steel piping has screwed fittings. On all occasions where steel was connected to copper, a dielectric fitting was used.

6. Air Distribution

The main air distribution system which is repeated on each floor throughout each typical office space in the building is a primary/secondary variable air volume system. There are two main air handling units on each of the typical floors; one in the North mechanical room and one in the South mechanical room. Each supply air into a common high pressure primary loop duct system. From the loop duct system there are take offs to parallel variable air volume shut off boxes. The air valves in the variable air volume boxes open and close to control the supply of air to each of the zones. The VAV boxes serving the perimeter zones are fan powered mixing boxes with hot water reheat. Downstream of the VAV boxes is the low pressure secondary duct system with flex duct take offs to feed diffusers that supply air to each space. The perimeter diffusers are linear slot type diffusers while the interior zone diffusers are typically square ceiling diffusers. Above the ceiling on each floor is a return air plenum. The air moves into the return air plenum through return air light troffers. The return air is transferred from the plenum into the mechanical rooms of each floor through return air transfer ducts with motorized dampers. Outside air comes from an outside air shaft and is introduced into each mechanical room through a motorized damper. Each mechanical room basically is a large return air/outside air mixing box.

The primary high pressure ductwork is spiral wound galvanized flat oval and round insulated with fiberglass wrapped insulation while running in the return air plenum. This was verified in several places. Air velocities in the high pressure ductwork were designed as high as 2,500 ft. per minute. The secondary or low pressure ductwork is fiberglass. The velocity in the second network was designed for about 1,000 feet per minute.

There are two fresh air openings from the fresh air duct into each of the mechanical rooms; one for minimum fresh air which occurs during normal operations, the other for pressurization during a smoke evacuation situation. The system is not equipped with an air side economizer, thus fresh air will remain constant during normal operations at the minimum setting. A typical mechanical room was noted to have a 28 x 16 opening for minimum outdoor air through a motorized damper. According to maintenance personnel, an inch static pressure is maintained in the fresh air shaft. Outdoor air for the building comes in through a large outdoor air louver in the penthouse mechanical rooms and is moved by axial fans. The main outdoor air fans are OSAF 1 & 2. These fans have 30 HP motors and variable speed "Parametric" drive controllers. They are specified to supply 49,000 CFM at 1" static pressure, and are Twin City Blower Size 49 Type ASL-ASW.

The air handling units in each of the mechanical rooms are Trane Co. draw through type climate changers with filter sections. In one of the mechanical rooms, the unit type number was noted to be CCD825SNEE, with a 15 HP motor. Referencing the building drawings, the typical office area air handling units were specified as Carrier Model No. 39ED29 with a maximum of 14,500 CFM at 1-1/4 inches external static pressure and a minimum of 3,900 CFM. They were also specified to have 2,200 minimum outdoor air CFM. The supply volume of the air handling units is controlled by "Parametrics" variable frequency drives. The variable frequency drives are typically located in the North mechanical room.

Typical return air opening to the mechanical room was found to be 66 inches wide by 28 inches high. It was noticed that in the South rental area of the mezzanine level the return air ducts did not come out of the mechanical room with "T" fittings for sound attenuation. No acoustical lining was also noticed. This may not by typical throughout the building. All axial fans in the penthouse mechanical rooms, whether they are used for outdoor air intake or stair pressurization, are hung on spring vibration isolators.

In observing the typical tenant space no dirt or soot build up in or around the diffusers was found. This indicates that the air systems up to this point have been well maintained and the filters have been kept clean.

A. Garage Exhaust

There are several garage exhaust fans and garage exhaust duct systems to insure that the carbon monoxide is kept at an acceptable level in the garage areas. According to the maintenance personnel the garage exhaust fans are controlled by CO sensors. When the level of CO is sensed to be unacceptable, the fans are activated and kept on by a timer. One garage exhaust fan was found with its louver unattached. The fan was determined to be inoperable and the louver was in need of repair. According to maintenance personnel, repair was planned.

B. Smoke Control

The building is a high rise building which means it is required to have a smoke control system in the event of a fire or smoke condition. The building has a stairwell pressurization system activated by the sensing of a smoke or fire condition. The main stairwell pressurization is accomplished by two (2) axial fans in the penthouse mechanical rooms. These fans were specified to supply 10,000 CFM at 1.6" static pressure. The system also has the ability to pressurize the floors above and below any floor where a smoke condition is occurring. This is accomplished by an extra opening into the mechanical rooms at each floor from the outdoor air duct. The extra duct smoke control opening in each mechanical room is 44" wide x 28" high equipped with a pneumatic actuated damper. In the event of a smoke or fire condition on the floor, the floor will be exhausted. The main smoke exhaust fan is located on the roof and was specified for 28,000 CFM at 0.625 inches H_2O external static pressure.

C. Controls

The building HVAC control system is a combination electronic and pneumatic control system. A "Facilitech" energy management system is located in the building engineer's office. The system's control sensors and relays are electronic and are by Barber-Coleman. The actuators are pneumatic powered. Copper pneumatic tubing runs throughout the building. Pneumatic air compressors which are located in the main mechanical equipment room are two Ingersoll-Rand Model 230 air compressors each with a 20 HP motor. A Hankison compressor air dryer Model No. 80100 is attached to each air compressor as well as two (2) storage tanks. No capacity or nameplate data was available for these storage tanks, but they were measured at approximately 3 ft. diameter x approximately 5 ft. high. One is located in the main mechanical room; the other in the North Penthouse mechanical room. On each typical office space floor, a temperature sensor is connected to the VAV box. The VAV box will open and close to satisfy its sensor. The air handling units will adjust their supply volume to maintain a specified static pressure in the primary ductwork. For the perimeter zones as the VAV box closes to its minimum position when the temperature and the space is still too low, the VAV box induction fan will come on and mix more return air with the supply air. If the zone is still not satisfied, then the valve for the hot water reheat coil will open further heating the air to the space.

8. Miscellaneous

Throughout the building are various miscellaneous equipment sub-systems. These include:

- On the mezzanine level South rental area, there are three Liebert "Challenger" units that have not been installed.

- Outside the building is an underground 2,000 gallon oil storage tank used to serve the emergency generator. The storage tank is believed to be fiberglass single wall type. It was installed at the time the building was built; circa 1985/1986.

- On typical office floors, up to and including floor #12, there is one "smart closet" on each of the floors. From floor #14 up to #19, there are two "smart closets" on each of the floors. Each smart closet contains a Liebert air conditioning unit. These Liebert units are chilled water units piped from the chilled water distribution loop. They are designed to cool the internal load generated by equipment within the smart closet.

- There are additional data rooms on the 9th, 14th, 15th, and 16th floors. The 16th floor data room has a raised floor. These data areas have Liebert Mini-Mate Air Conditioning Units mounted in the ceiling. All of these units are served by chilled water from the chilled water loop. In many of these data areas, the chilled water system has its own secondary loop and pump.

8. Conclusion

In general, the HVAC system for this building is in excellent condition with no major visible deficiencies. Its expected remaining useful life with proper maintenance is in the order of 15 - 20 years.

PLUMBING

The building is served by a 4" city water main entering from Capitol Avenue at which point it is metered. The domestic water system utilizes City water pressure for parking levels 1 through 5, lobby, mezzanine, and floors 6 through 12. A domestic water booster pump system provides pressure for floors 14 through 20 (please note there is no 13th floor). The booster pump system is a skid mounted duplex type with a unit mounted control panel, two (2) 7.5 HP, 3470 RPM, 3-phase, pumps and two (2), approximately 50 gallon, diaphragm type expansion tanks located in the penthouse. All domestic water piping appears to be copper and insulated with the appropriate thickness of fiberglass insulation. All toilet room plumbing fixtures appear to be vitreous china and of a commercial grade and quality. All flush valves are of the "Flushometer" type. Sanitary, waste and vent piping appears to be standard weight cast iron; no-hub joints. Storm drain piping appears to be a combination of Schedule 40 galvanized steel with threaded drainage fittings and standard weight cast iron; no-hub joints. Sanitary and storm building drains run by gravity to the City storm and sewer mains without the need of a sump pump or sewage ejector. Proper backflow protection appears to be provided where required and maintained properly. Roof drains appear to be adequate, except drains are not equipped with gravel stops. The accumulation of gravel from the membrane roof around the roof drains restricts the roof drain's capacity. We would suggest that roof drain gravel stops be installed on the drains.

Domestic hot water is generated at each floor by an A. O. Smith Model DSE-20, 6 KW, 20 gallon, electric water heater, with the exception of the 20th floor which is generated by an A. O. Smith Model ELJF-15-910, 1.5 KW, 15 gallon electric water heater located in the mechanical room. There is no domestic hot water recirculating system since there is one water heater per floor and they are centrally located between the core toilet rooms. It appears all the water heaters are in good condition with no apparent defects.

The Janitor's Closets are equipped with floor type mop sinks which appear to be one-piece molded plastic composite and appear to be in reasonably good condition. One standard height and one handicapped electric water cooler is located at each floor adjacent to be central core area and appear to be in good condition.

The building is equipped with three (3) wet columns located on each floor which consist of a 4 inch cast iron waste pipe and a 2 inch cast iron vent pipe capped above the ceiling for tenant's requirements. Also, there are three (3) 1-1/2 inch copper cold water stubs with valves and caps above the ceiling extending from the central core area at strategic locations for tenant's requirements. The landscaped area adjacent to the building's main entrance is provided with an irrigation system that is protected against possible cross-connection with a reduced pressure backflow device.

We estimate the probable construction cost for installing gravel stops on the roof drains to be approximately $5,000.00.

We estimate the remaining life of the major components of the plumbing system in this building to be approximately 15 to 20 years.

FIRE PROTECTION

The building is equipped with a wet pipe sprinkler system for all heated, occupied areas and a dry pipe sprinkler system for all parking areas and unheated areas. The building is also equipped with a standpipe in each stairwell with one 2-1/2 inch hose valve and one 2-1/2 inch hose valve within a recessed hose cabinet at the central core area on each floor. Water is provided to the building via a 8 inch incoming fire service entering the building from Capitol Avenue. The fire protection system utilizes City water pressure for parking levels 1 through 3. An electric driven horizontal split case fire pump provides pressure for parking levels 4 and 5, lobby, mezzanine, and floors 6 through 20. The fire pump is a 60 HP Fairbanks-Morse rated for 1,000 GPM at 75 PSI. The piping system appears to be Schedule 10, mechanically coupled pipe throughout the main distribution and sub-risers and Schedule 40 Steel with welded flanges near the fire pump. The sprinkler system appears to be in good condition, well laid out, and reasonably accessible. The fire pump and jockey pump are controlled by individual controllers. It appears the system is exercised on a yearly basis as outlined in NFPA 20 standard for the installation of centrifugal fire pumps.

It was noted in this system that there is no reduced pressure backflow preventer on the incoming 8" fire service, which may be required by the local water company since the fire protection system employees a fire department pumper connection. We would advise that this situation be reviewed with the local water company and fire officials.

We estimate the probable construction cost for installing an 8" diameter reduced pressure backflow preventer to be approximately $10,000.00.

We estimate the remaining life of the major components of the fire protection system in this building to be approximately 25 to 30 years.

ELECTRICAL SYSTEMS

1. Electric Power Service

The electrical power service originates from a dual primary underground feeder from Capitol Avenue to two (2) high voltage electrical switches located in a vault on Level P2, which in turn feeds one pad mounted 3-phase transformer. All primary feeders, high voltage switches, and transformers are owned and operated by CL&P.

The secondary side of the pad mounted transformer provides a 480Y/277 volts, 3-phase, 4-wire, service which runs overhead into the building's Federal Pacific brand switchgear located adjacent to the high voltage switch vault. There are two overhead feeders from the utility company transformer. The first is a 5,000 amp bus, and the second is a 1,600 amp bus which feeds a second service.

The building's 5,000 amp services is composed of an 800 amp fire pump fused Pringle switch, a 4,000 amp fused, ground fault protected, Pringle switch. The 4,000 amp service in turn feeds a 4,000 amp Russell Electric automatic transfer switch (ATS). The ATS feeds a 3,000 amp fused Pringle switch "Bus B" and a 1,600 amp emergency main distribution "EOP" switchboard. This first service is utilized for building power and emergency distribution.

The second service is a 1,600 amp Pringle fused switch which feeds a 1,200 amp "Bus C" and a main "MDP" distribution switchboard. This service is not tied to the first service and cannot be connected to the emergency generator. This service feeds mechanical equipment and building power systems which do not require generator backup.

There are two utility company revenue meters for this building. The first revenue meter monitors the 5,000 amp service; the second meter monitors the 1,600 amp service. In addition to the utility company meters, there are building owner revenue meters which are located at each tap of the two major vertical buses. These Emon Manufacturing meters are utilized for local meter readings for specific tenants and are not tied to the two utility company meters.

The service and its related equipment is in good condition and was installed in a neat and workman like manner. It must be noted that the switchgear does not meet the 3 ft. - 6 inch clearance required by the NEC and the Connecticut Basic Building Code. The distribution section on the back part of the switchgear has only 3 ft. - 0 inches clearance. Due to the configuration of the room and the size of the switchgear, it does not appear that this problem can be remedied without major renovation to the high voltage switchgear wall.

It is important to note that the acceptance of a code violation by a local building official does not absolve the Owner of responsibility to comply with code. The local building official has authority only to <u>enforce</u> the code, not to interpret or waive it.

2. Electrical Distribution

Electrical distribution for major pieces of equipment, parking levels, and the lower level mechanical spaces are fed from group mounted molded case circuit breakers through an under slab conduit system. The upper portions of the building are fed from one of the two vertical busses. Each bus enters into an electrical equipment room located within the core of the building. Within the electrical equipment room, the bus is tapped with a fused switch and feeds either large mechanical equipment or 480 volt panelboards. In each electrical equipment room are dry type transformers which range from 30 KVA to 75 KVA. These transformers feed local 208Y/120 volt panelboards. These 208Y/120 volt panelboards feed local receptacles and small motor loads.

The distribution system is in good condition and appears to be adequately sized for this facility. No visible deficiencies were observed.

3. Emergency Generator & Power

The building utilizes a Cummins 500 KW, 625KVA diesel generator for emergency lighting, selected mechanical equipment, and the emergency elevator. The generator is located on the P-2 level with an exterior intake and exhaust louver. The combustion exhaust goes directly to the outside through a wall thimble. Diesel Fuel is delivered via a 2,000 gallon direct buried fiberglass fuel oil tank located outside the generator room. The fuel is then delivered through threaded steel pipes to a 50 gallon day tank located within the generator room.

The generator appears to be in good condition and has been reportedly tested monthly using the building load. It is beyond the scope of this report to determine the mechanical condition of the generator unit, but it also appears to be in good condition.

Emergency power is distributed throughout the building via an emergency distribution system. This system utilizes the 3,000 amp vertical bus with motorized breakers and control relays to shut off selected building loads if the normal power fails and the emergency power system comes on line. This system is controlled in a fail-safe mode and appears in good condition.

4. Life Safety Systems

A. Exit and Emergency Lighting

The building utilizes "Edge-Lit" incandescent "EXIT" signs throughout the common area and rental spaces. The "EXIT" signs obtain their backup emergency power through the emergency generator. These fixtures are high quality, but utilize incandescent lamps which are not energy efficient nor do they have as long a lamp life as fluorescent or low voltage light fixtures. Within the private core spaces lesser quality incandescent "EXIT" signs are utilized. This type of fixture is acceptable for its application, but again does not have a long lamp life or high efficiency.

The emergency lighting for the building is provided by fluorescent and incandescent lighting which is connected to the emergency generator for its backup power source. We could not verify the actual light levels obtained during our field visit since we were not able to transfer the generator onto load; but according to our review of as-built drawings, it would appear that the levels meet code requirements.

In general, the "EXIT" and emergency lighting appears to be in good condition and are of a high quality. Due to the high quality of these fixtures, we would not recommend their replacement until they reach the end of their useful life which is approximately 15 to 20 years.

B. Fire Alarm System

The complex is serviced by a Simplex System 2120 Status Command Center with a Gamewell Master Box System which ties into the Hartford Fire City Loop System. The system utilizes a standard Class "B" wiring system, with manual pull stations, duct smoke detectors, heat detectors, and sprinkler flow and tamper switches for the initiation of alarms. The system utilizes speaker/strobe units for fire alarm tone generation and voice evacuation. The speakers vary from integral fire alarm units to standard ceiling mounted PA speakers. Although actual tone levels could not be measured, the ambient noise levels were negligible; thus, it appears that the speaker coverage was adequate for the space. The system also utilized Firemen phones and Firemen phone jacks which were located in the elevator lobbies and stair towers. Finally, there is a remote fire alarm annunciator panel located within the security desk at the main entrance.

This system appears to be in good condition and adequately covers the building's needs for a fire alarm system. No visual deficiencies were observed.

5. Mechanical System Wiring

In general the wiring for the mechanical systems was installed in a neat and workmanlike manner. The mechanical equipment utilizes local disconnect switches and is protected by overcurrent protection devices.

6. Lighting Systems

A. Common Areas - Main Entrance

The common area lighting at the main entrance is mainly incandescent down lights. A large majority of these lights are located within the atrium area which is approximately 30 feet above the finish floor. This makes lamp replacement difficult and costly since the incandescent lights have a relatively short life span. Special man-lifting equipment needs to be brought in to reach the lamps safely for re-lamping.

There are also incandescent step lights which lead from the front entrance up to the mezzanine level. These units are readily accessible and appear to be in good condition.

All of the main entrance lighting is controlled from the security desk on the mezzanine. There are several pre-set levels which allow for the lights to be turned off during daylight hours, thus conserving energy and extending lamp life.

B. Common Areas - Mechanical Spaces

The lighting throughout the building's mechanical spaces is almost exclusively fluorescent and high pressure sodium light fixtures. The lighting is typically controlled by wall mounted switches located adjacent to or within the room. The lighting levels appear to be adequate for general system observation and minor repair work. All lighting was in good condition and installed in a workmanlike manner.

C. Parking Garage

The parking garage utilizes high pressure sodium pendant mount luminaires at the lower levels and pole mounted shoe box type high pressure sodium light fixtures for the top level. The lighting is controlled by photocells, time clocks, and manual switching. Coverage appears to be adequate for the garage layout. In addition, the garage has several emergency power circuits which feeds a select number of lights. This coverage appears to be adequate under emergency conditions. The light fixtures are in good condition and were installed in a workmanlike manner.

D. Tenant Spaces

The tenant spaces utilize 2 x 4 lay-in 3-lamp fluorescent parabolic Columbia light fixtures with warm white, F40T12 Super Saver Lamps. The system is powered through 277 volt lighting circuits and utilizes a modular wiring system. All common open spaces are controlled by a bank of switches located adjacent to the elevator entrance. Individual offices and conference rooms utilize wall mounted light switches for space lighting control.

In some of the tenant space areas, fluorescent "PL" type down lights were added. These units typically utilize twin tube fluorescent lamps with clear alzak reflectors.

The lighting systems appear to be in reasonably good condition. We did not observe many light fixtures which needed lamp replacement and were advised by the management staff that re-lamping was a priority during the recent tenant occupancy.

7. Branch Circuit Wiring and Devices

The branch circuit wiring utilizes molded case circuit breakers in local panelboards for overcurrent protection. The wiring system utilizes both EMT and armored cable for distribution to loads. The perimeter office

areas and interior wall mounted receptacles are run in armored cable back to the local panelboards. The modular furniture system which was in place with the original tenant utilized large EMT distribution feeders to area distribution junction boxes. From these boxes branch wiring in armored cable was fed to power poles which in turn fed the modular systems. The power poles have been removed but the main distribution junction boxes and armored cable runouts remain. This system of power distribution is a Super Saver wiring method in an office environment whose space planning is dynamic and ever changing. If fixed partition wall systems are to be utilized in future tenant spaces, only limited utilization of the present system will be realized. It appears that the present level of distribution for power to the office environment is adequate to support the needs of future tenants.

The branch wiring systems are in good condition and if incorporated into a modern office environment can be re-utilized to some extent with minimal costs.

8. Telephone/DATA Communications Wiring

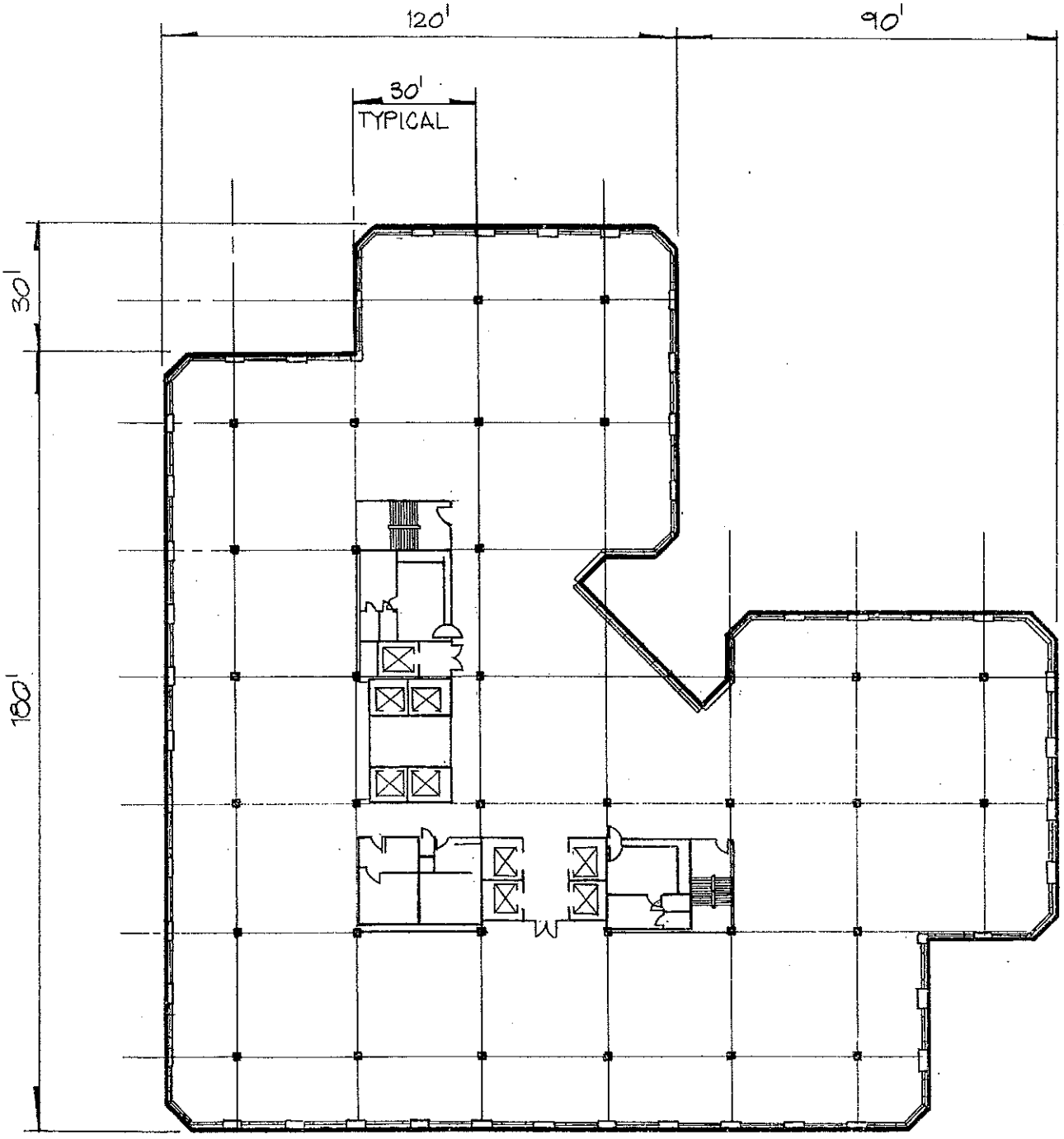
The building is equipped with extensive telephone/data distribution system. This system may have to be partially demolished due to the specific requirements of the past tenant and the future requirements of a new tenant.

Each floor has several telephone/data closets from which distribution wiring emanates. Some of the closets are presently called "Smart Rooms" which are telephone/data distribution rooms with PBX and fiber optic distribution equipment. Many of these rooms have dedicated computer air conditioning equipment, (see HVAC section), telephone switching equipment, and expansive termination equipment. The distribution of telephone/data lines from the telephone rooms to the individual areas on the floor is very well laid out. A wire way system has been installed above the hung ceiling which travels throughout the floor. Within the wire way system cable from the main telephone room can be laid and distributed to remote areas. Presently these trays are filled with cable which will have to be removed prior to a new tenant occupying the space.

In general, the building is adequately auxiliarized to handle proper telephone/data communication wiring. The systems are complete and should allow for adequate growth capabilities.

9. Conclusion

Overall, the electrical systems in this building are in excellent condition with no major visible deficiencies. Given proper maintenance, the electrical systems in this building will have a 15 to 20 year remaining useful life.



Typical Mid-Rise Floor

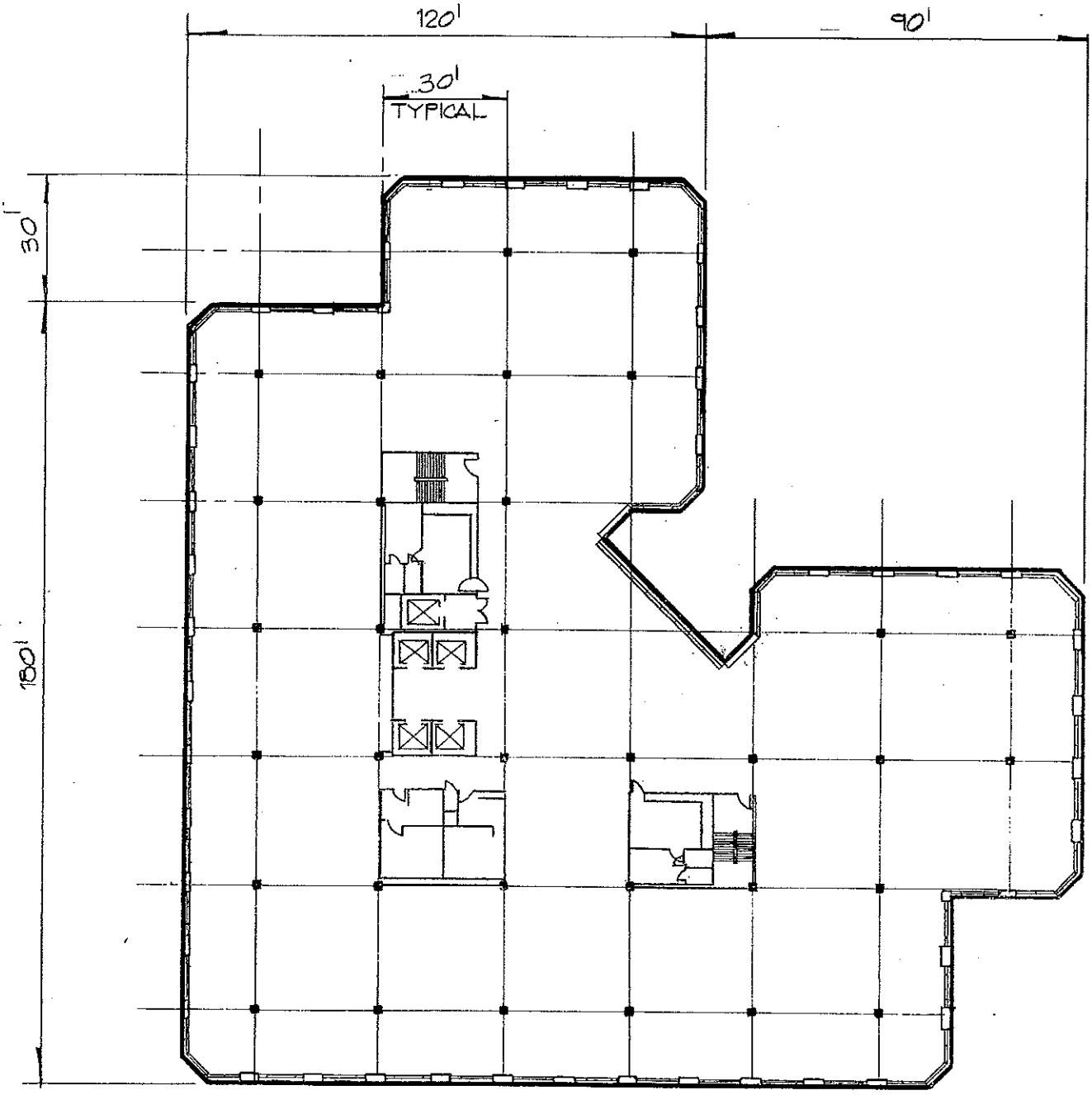
(6 Thru 12)

SCALE: 1" = 40'

Building Condition Survey
XEROX CENTRE
Hartford, Connecticut

1
30 SEPT, 92

Hoffmann Architects
432 Washington Avenue
North Haven, Connecticut 06473
(203) 239-6660



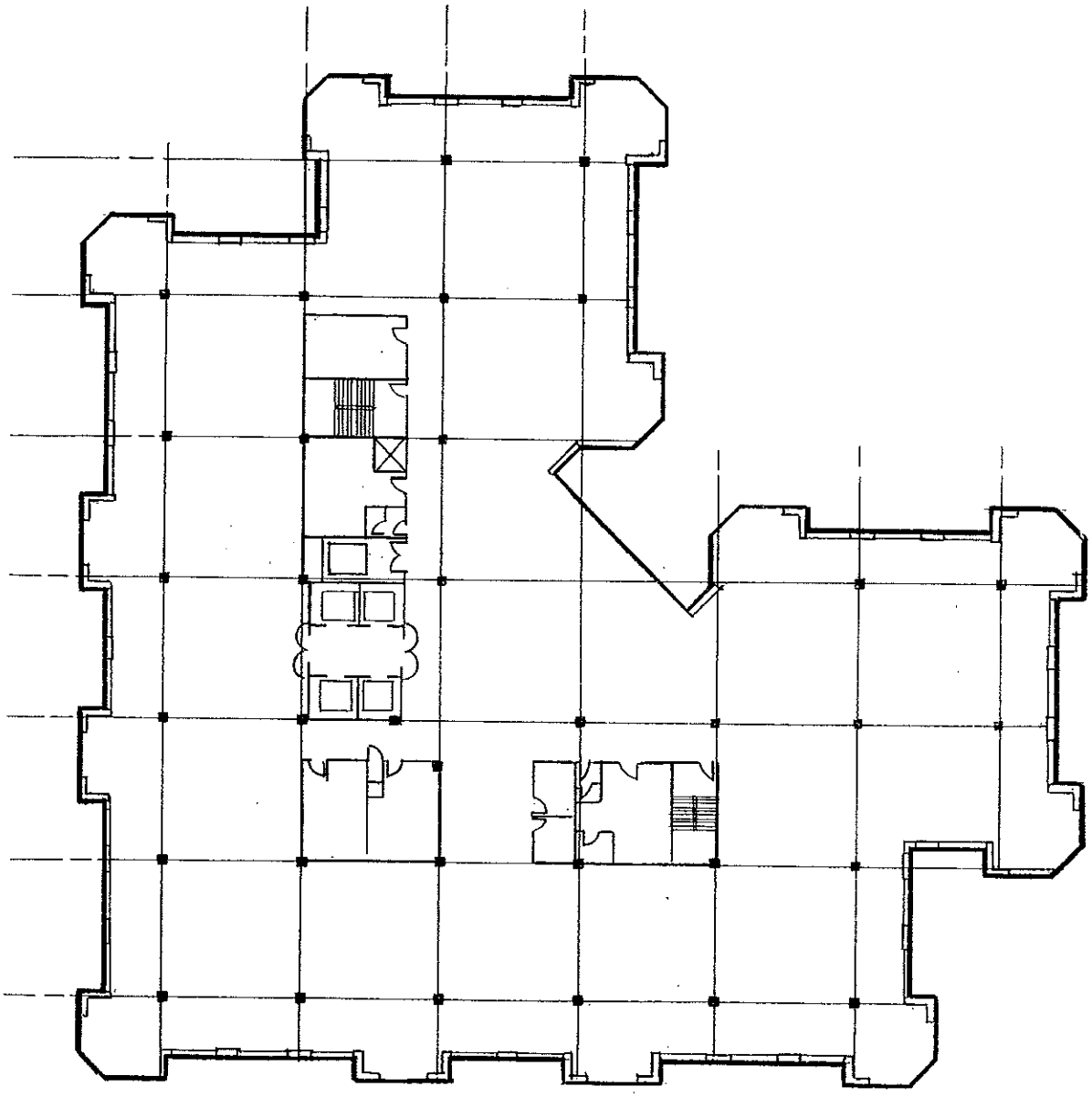
Typical High-Rise Floor
(14 Thru 16)

SCALE: 1" = 40'

Building Condition Survey
XEROX CENTRE
Hartford, Connecticut

2
30 SEPT 92

Hoffmann Architects
432 Washington Avenue
North Haven, Connecticut 06473
(203) 239-6660



Setback High-Rise Floor (17 and 18)

SCALE: 1" = 40'

Building Condition Survey
XEROX CENTRE
Hartford, Connecticut

3

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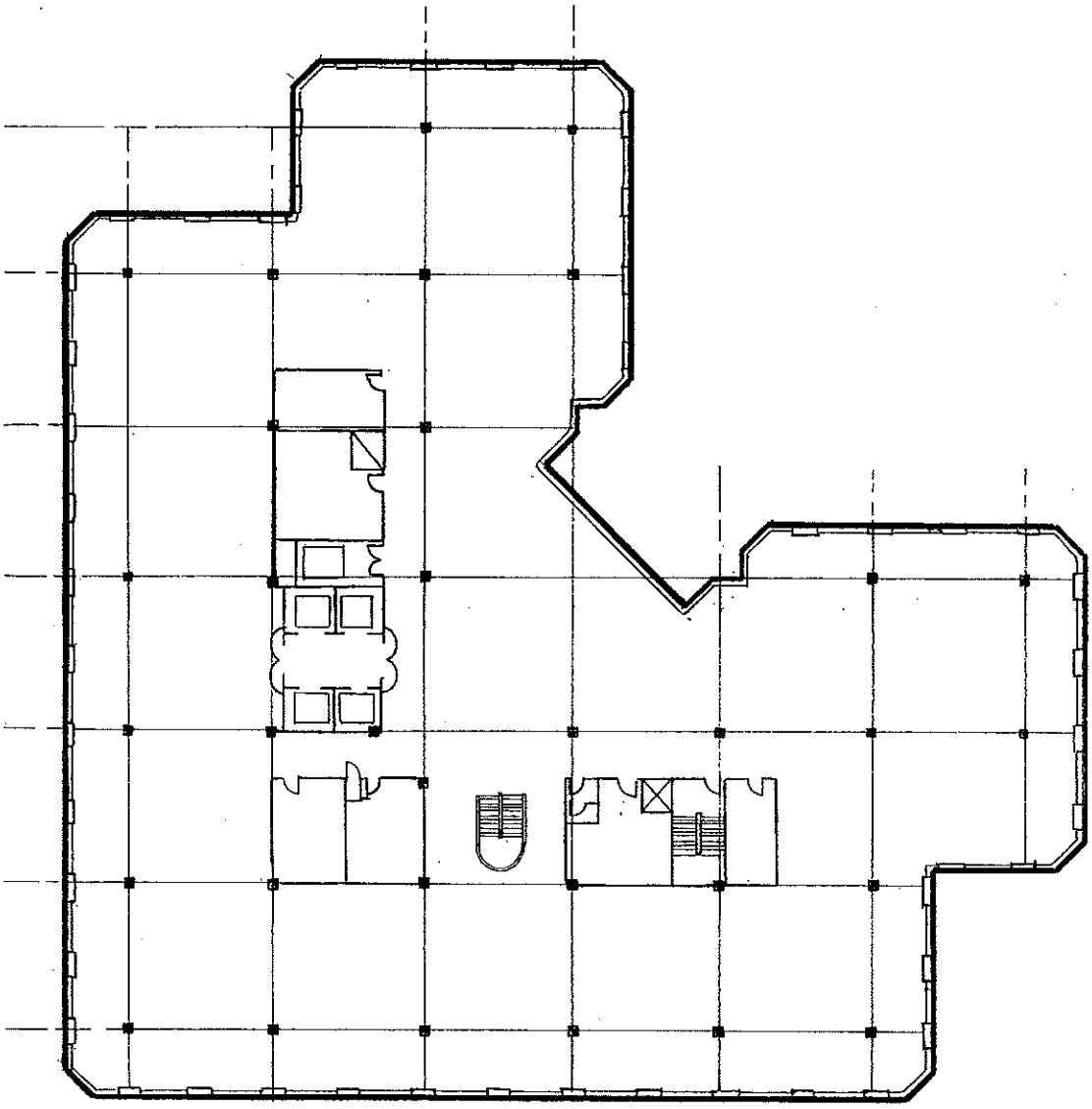
Hoffmann Architects

432 Washington Avenue
North Haven, Connecticut 06473
(203) 239-6660



19th Floor

SCALE: 1" = 40'

Building Condition Survey
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Hartford, Connecticut

4

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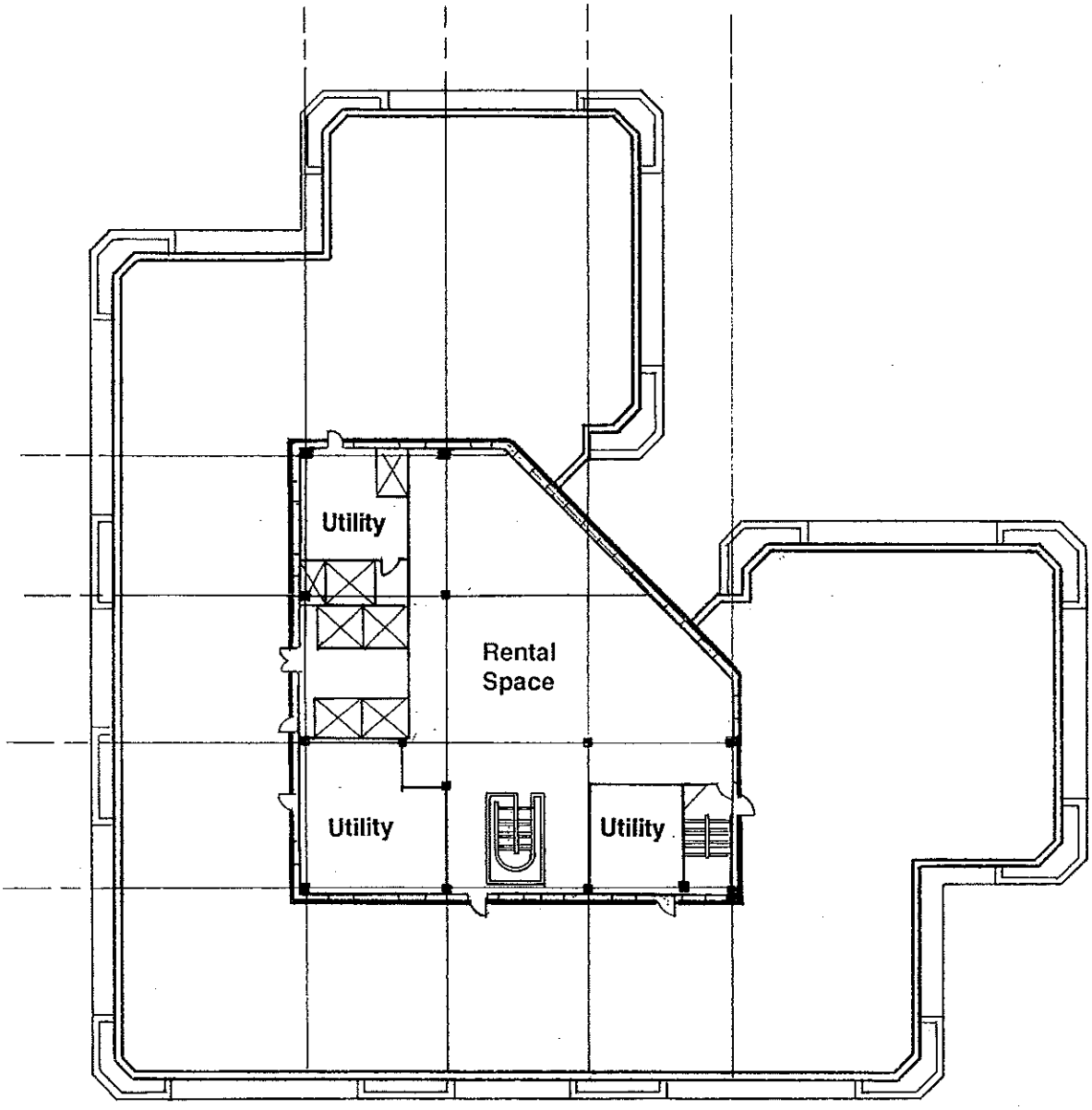
432 Washington Avenue
North Haven, Connecticut 06473
(203) 239-6660



Penthouse Floor (20)

SCALE: 1" = 40'

Building Condition Survey
XEROX CENTRE
Hartford, Connecticut

5

30 SEPT 92

Hoffmann Architects

432 Washington Avenue
North Haven, Connecticut 06473
(203) 239-6660

COST SUMMARY

Restrip parking stalls	$ 3,600
Structural review of garage	5,000
Coat garage slabs	350,000
Repair Stair No. 1 enclosure	3,500
Seal parapet copings	50,000
Inspect and repair roof	15,000
Lobby floor repairs	1,500
Toilet room renovations	5,000
Carpet tile replacement (5%)	50,000
Construct areas of refuge	25,000
Stairway headroom protection	500
Repair door hardware, Stair No. 3	150
Modify lavatory aprons	10,000
Insulate lavatory piping	5,000
Replace accessible drinking fountains	12,000
Roof drain gravel stops	5,000
Fire service backflow preventer	10,000
TOTAL	$551,250

GENERAL INFORMATION

Construction Costs

Statements of opinion of probable construction costs given in this report do not include professional fees for consultations concerning repair procedures, preparation of construction documents, assistance with bidding, construction contract administration, or on-site observation of construction. Construction costs projected in this report represent our opinion as to what the probable costs, in today's dollars, might be to implement the recommendations. They are based on our experience, supplemented by published cost estimating sources. They reflect preliminary data and have not been derived from accurate quantities, drawings, details or specifications. Actual construction costs may therefore vary from the costs in this report.

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Construction Use Notice

This report is not intended for any purpose other than to report on conditions observed. Its language and recommendations are not sufficiently detailed or specific enough, nor have any drawings been provided, that could serve as a basis for securing proposals for or executing the recommended work. This survey does not represent that unseen problems may not exist. No representation is made or intended that implementation of our recommendations will place the property in a condition wholly free of all defects or hazards.

Asbestos Disclaimer

Hoffmann Architects does not have the expertise to provide advice concerning issues related to asbestos or to identify whether or not it may exist in a building. IF asbestos is present, it may materially affect anticipated work, and would likely effect construction costs thereof. We advise that this report be supplemented by engaging the services of a qualified asbestos consultant to ascertain whether or not the existing assemblies observed in our survey might contain asbestos.

END OF GENERAL INFORMATION

To: Suzanne Kempf

From: Steve Lechowicz

Date: May 6, 1996

Re: Emergency Generator/Life Safety System

The original base building design per BVH Engineers for the control of (non-life safety) loads calls for the EMS system to shut off motorized circuit breakers on floors 4-19, in the event of emergency generator operation. In addition, to motorized circuit breakers being turned off when the emergency generator runs all air handlers are to shut down (EMS control) unless there is a fire alarm, then four (4) air handlers will be permitted to run.

The existing system consists of a 3,000 amp three phase four wire 480 volt, FPE buss duct riser with various buss plugs feeding critical and non-critical loads, see attached critical loads list provided from BVH.

The current method for annunciating emergency generator operation is via a N.O. contact off an Agastat timer located in the automatic transfer switch. Contact closure indicates emergency generator operations to Facilitec EMS digital input point in cabinet #1 located in P-2 Mechanical Room.

Facilitec upon receiving emergency power input sends out signals to open motorized CB's on all floors.

It should also be noted that the Agastat timer in the auto transfer switch also provides the Simplex Fire System with emergency generator annunication via a second set up of N.O. contacts. The fire system initiates elevator recall to the mezzanine level and only allows one high rise and one low rise elevator to operate during generator runs. + FREIGHT ELEV

A simulated emergency generator run was conducted on April 27th by closing the digital input contacts connected to the Facilitec System. All motorized CB's functioned with the exception of the 19th and 5th floor units (bad motorized breakers).

The air handling units **did not** shut off as per original base building specifications. The motorized CB's took 2 minutes and 48 seconds to shut off.

On April 30th, I spoke with Jeffrey Luther of Facilitec Controls, he checked the program and indicated this was proper operation, the delay of up to three minutes was required by the system and no AHU shut down was ever programmed.

A full load test of the emergency generator was conducted on May 5th. In attendance were four representatives from Newington Electric, Inc., one Cummings Generator representative four Tunxis Management representatives and one Otis Elevator representative. Prior to full load

testing a no load test was done by Cummings which indicated starting batteries were marginal and need replacement.

The full load test was done at 9:23 am and the EMS system took approximately two minutes to load shed non-life safety loads. Elevator recall was proper with **three units** running one high rise, one low rise and the freight elevator. All building fans were running and didn't shut off during the testing.

The peak in rush current on the Generator was in excess of 800 amps which presented a concern to the Cummings Representative. The load was supplied for approximately 1/2 hour by the Generator and was approximately 410 amps per phase, continuous. We re-transferred to normal power at approximately 10:00 am.

A second full load test was run at 10:22 am where we opened the 4,000 amp main circuit breaker, the Generator came on line and assumed the load in less than thirty seconds but sustained heavy in rush starting current as in the first load test. Motorized circuit breakers took in excess of two minutes to activate again.

In conclusion after discussions with Rick Taskey, Newington Electric and Darrel Lizotte of Cummings it is apparent that there are issues which need to be addressed concerning the Life Safety System as currently installed.

Some points of concern for myself are as follows:

I. Reliance on a single Facilitec point to initiate global load shedding could prove to be disastrous in the event of a cabinet failure and subsequent power outage (overload tripping of Generator circuit breaker).

II. Time delay after transferring to emergency generator buss (up to three minutes) maximum Facilitec required time period, could under certain conditions overload and cause the generator to trip off line.

III. Obsolete Facilitec boards could prove to be a future problem should failures occur.

IV. Weekly generator NO Load Tests should be initiated ASAP and any problems corrected as they are found. (OK) ARE NOW BEING PERFORMED

V. ~~Monthly~~ Quarterly full load tests should be scheduled and then conducted to insure system reliability. ? ?

VI. A full review of the current system should be conduced by a regular engineering firm and results evaluated for further action.

As a result of these concerns I am very uncomfortable with the above Emergency Power System operation as currently installed, and think we need to act on our Load Test findings.

cc: Rick Taskey

QUINLAN, GIANNONI & LIVINGSTON, INC.

CONSULTING ENGINEERS

2074 PARK STREET
HARTFORD,
CONNECTICUT 06106
(860) 236-4288
FAX (860) 232-9841

XEROX CENTRE-PARK PLACE
EMERGENCY GENERATOR

The existing 500 KW Cummins standby emergency generator will support only the essential life safety electrical loads. The load breakdown is as follows:

Load	Designation	Description	Horsepower
1	SEF-1	Smoke Exhaust Fan	10
2	SPF-1	Smoke Pressurization	5
3	OASF-1	O.A. Supply Fan	30
4	AHU	Air Handler	15
4a	AHU	Air Handler	15
5a	AHU	Air Handler	15
6a	WEF-5	Wall Exhaust Fan	1/10
6b	WEF-6	Wall Exhaust Fan	1/10
6c	WEF-7	Wall Exhaust Fan	1/6
6d	SEF-2	Smoke Exhaust Fan	2
7	SEF-3	Smoke Exhaust Fan	3
8	SEF-4	Smoke Exhaust Fan	3
9	SEF-5	Smoke Exhaust Fan	1-1/2
10	SPF-2	Stair Pressurization	5
11	OASF-2	Outside Air Supply	30
5b	AHU	Air Handling Unit	15
12a	AHU	Air Handling Unit	15
12b	AHU	Air Handling Unit	15
13		Fire Pump	60 HP
14		Elevator (Freight)	37 HP
15		Elevator (Hi-rise)	32 HP
16		Elevator (Lo-rise)	40 HP
17		Emergency Lighting	62 KW

The gensize program used by Cummins takes into account that the loads will be connected to the generator in pre-determined steps to allow the generator to handle motor inrush. The electrical load sequencing is part of the attached Cummins Computer Analysis. The load number designation is the same used by Cummins for step/sequence purposes.

As far as emergency lighting is concerned, we have totaled the lighting fixtures shown on the plan connect to panelboards supplied by the generator. The lighting shown on the base building plans only accounts for core lighting, stairs, garage, etc. and represents the basic minimal

lighting to satisfy life safety. The base building plans do not account for tenant space emergency lighting such as office areas.

The sum of the base building connected emergency lighting load is 62 KW (62,000 watts). Cummins suggests the generator should handle 80 KW (80,000 watts) along with the motor loads. Therefore, 18 KW could be allotted for office areas. Roughly eleven (11) 2ft x 4ft three (3) lamp fluorescent lighting troffers per floor could be supplied by the generator. This means 1,000 watts per each of the eighteen (18) floors would make up the tenant space emergency lighting component the generator could conservatively handle.

It appears that if eleven fixtures were properly located within tenant spaces, the minimum illumination level could be maintained to safely allow people to find a means of egress.

The existing generator is presently not provided with a protective regulator which, if installed, would isolate the generator excitation system from non-linear loads such as variable frequency drives (VFD). Variable frequency drives are installed now for all air handling units. The Cummins part number for the protective voltage regulator and SBO Module is Type SR8 and we recommend installation. Budget cost for the regulator is $3,500.00

MECHANICAL CONSIDERATIONS

We have reviewed the existing HVAC plans of the facility, and visited the site for the purpose of verifying existing conditions.

We have also reviewed the proposed Facility Management System specifications for adaptability to proposed solutions and recommendations made in this report.

The existing HVAC equipment is currently not supported by the emergency power system for normal occupied operations. Motorized breakers are disengaged by the existing control system to disconnect the power to lighting and power panels on each floor. In a fire condition, a smoke control sequence is initiated to control building pressurization and smoke exhaust.

The existing control system has been shown to be too slow in

response time for adequate switching to emergency power (refer to the electrical portion of the report).

All of the floor North Air Handling Units, the Smoke Exhaust Fans, Stair Pressurization Fans and control components are all required to be supported by the emergency power system for life safety requirements. Not all the HVAC loads are required to run simultaneously, however, due to the fact that the F.M.S. (Facility Management System) on a signal from the fire alarm system will start only AHUs on the floors two above and one below the fire floor. All of the Smoke Exhaust and Stair Pressurization fans will start during a fire and are directly controlled from the Fire Alarm System.

RECOMMENDATIONS:

As a minimum, during normal power interruption, the emergency power generator must be capable of supporting the HVAC loads described above. Under this scenario, the building will not be occupiable due to the fact that the environmental control systems AHUs pumps etc. will not be in operation.

A new high speed networked control system should be provided to replace the existing control system. } A

The replacement system proposed could accomplish the load shedding functions required to operate the generator safely by stopping all fans and opening the motorized breakers within a specified amount of time. Life safety interconnections and sequences need to be maintained and reviewed with local Fire Marshal during design of the system.

Upon a loss of power, the HVAC equipment shall be signaled off. After the generator is started, selected loads can be started to maintain environmental control of critical areas if power is available, via the existing building control system.

An alternate to replacement of the existing F.M.S. would be to install a dedicated control system that would only be used to override the existing control system on power failure. This system would require that the existing life safety sequences be incorporated into the new system. Control of the motorized breakers on each floor would also be incorporated into the new system.

Our opinion of the probable cost of installing a new dedicated control system is approximately ONE HUNDRED THOUSAND DOLLARS ($100,000.00). } B

SR 40R & REGULATOR

ONAN CORPORATION Gen[illegible]e 2 Version 5.0A F[illegible]e Name: UNTITLED SR8

Date printed: 12-04-1996 Time printed: 11:02:38

Project Name:
Project Parameters:

Duty:	Stationary Standby
Voltage:	277/480 WYE
Frequency:	60
Max. Temp. Rise:	125
Max. VDIP%:	35
Max. Altitude:	500
Altitude Scale:	Feet
Max. Amb. Temp:	77
Temperature Scale:	Fahrenheit
Cooling System:	Radiator
Fuel Type:	Diesel

Load Listing

Load Number: 1 Load Type: Motor HP Phase 3

Load Name: (smoke exhaust fan) Output HP 10
Comment:

Motor HP:10.00 Motor Shaft KW:7.5
[illegible]ng all default answers.
[illegible]tor is high inertia Motor RKW:8.7
Code Letter:H Motor RKVA:10.0

Start Power Factor:.53 Motor Start Method:Across the line
Motor Phase: 3
Motor LR-KVA:67.0
Motor SKVA:67.0 Load Factor: 100

Run Power Factor:.87

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
35.7	67.0	56.6	.53	8.7	10.0	5.0	.87

Load Number: 2 Load Type: Motor HP Phase 3

Load Name: (stair pres fan) Output HP 5
Comment:

Motor HP:5.00 Motor Shaft KW:3.7
Using all default answers.
Motor is high inertia Motor RKW:4.5
Code Letter:J Motor RKVA:5.3

[illegible]rt Power Factor:.61 Motor Start Method:Across the line
[illegible]tor Phase: 3

File Name: UNTITLED

Load #	Qty	SKW	SKVA	SKVAR	SPF	RKW	RKVA	RKVAR	RPF
6	1	79.1	190.2	173.0	.42	27.1	30.4	13.8	.89
16	1	93.7	237.8	218.6	.39	33.7	37.7	16.9	.89
Step Total:		172.8	428.0	391.6	.40	60.8	68.2	30.7	.89
Cumulative:		439.3	726.7			327.3	366.9	165.7	

Criteria Selection Results:
Model:400DFEB

	Required by Loads	Available from Model	Result
1. Running load requirements and engine/alternator capacity.	327 KW 367	400 594	Acceptable Acceptable
2. Running load requirements and alternator capacity at site conditions.	327 KW 367 KVA	400 594	Acceptable Acceptable
3. Max load surge KVA and Max set KVA capacity with minimum 90% sustained voltage.	727 KVA	1749	Acceptable
4. Max load Surge KW and Max set Surge KW capacity at site conditions with minimum 90% sustained voltage.	356 KW	414	Acceptable
5. Transient Voltage Dip: Allowable Transient Voltage Dip:	11 % 35 %		Acceptable
6. Total non-linear plus linear load KW and Alternator KW capacity.	452 KW	475	Acceptable

File Name: UNTITLED

tput Actual HP: 30

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
24.9	27.6	12.0	.90	24.9	27.6	12.0	.90

Load Number: 12 Load Type: Motor Control Phase 3

Load Name: (air handler units) Output HP 30
Comment:

Motor Drive Non Linear Load
Using all default answers.
Full Load Efficiency: 90

Phase: 3
Power Factor: 90

Output Actual HP: 30

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
24.9	27.6	12.0	.90	24.9	27.6	12.0	.90

Load Number: 13 Load Type: Motor HP Phase 3

d Name: (fire pump) Output HP 60
Comment:

Motor HP:60.00
Using all default answers.
Motor is high inertia
Code Letter:G
Motor Shaft KW:44.8
Motor RKW:50.2
Motor RKVA:55.9

Start Power Factor:.36
Motor Phase: 3
Motor LR-KVA:356.7
Motor SKVA:149.8
Motor Start Method:Auto Transformer
Load Factor: 100

Run Power Factor:.90

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
53.3	149.8	140.0	.36	50.2	55.9	24.6	.90

Load Number: 14 Load Type: Motor HP Phase 3

Load Name: (elevator) Output HP 37
Comment:

Motor HP:37.00
ng all default answers.
tor is high inertia
Code Letter:G
Motor Shaft KW:27.6
Motor RKW:31.3
Motor RKVA:35.0

Start Power Factor:.40
Motor Phase: 3
Motor Start Method:Across the line

File Name: UNTITLED

Run Power Factor:.82

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
16.8	25.5	19.2	.66	2.8	3.4	1.9	.82

Load Number: 9 Load Type: Motor HP Phase 3

Load Name: (smoke fan) Output HP 1.5
Comment:

Motor HP:1.50
Using all default answers.
Motor is high inertia
Code Letter:L

Motor Shaft KW:1.1

Motor RKW:1.5
Motor RKVA:1.9

Start Power Factor:.72
Motor Phase: 3
Motor LR-KVA:14.2
Motor SKVA:14.2

Motor Start Method:Across the line

Load Factor: 100

Run Power Factor:.75

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
10.3	14.2	9.8	.72	1.5	1.9	1.3	.75

---

ad Number: 10 Load Type: Motor HP Phase 3

Load Name: (stair pres fan) Output HP 5
Comment:

Motor HP:5.00
Using all default answers.
Motor is high inertia
Code Letter:J

Motor Shaft KW:3.7

Motor RKW:4.5
Motor RKVA:5.3

Start Power Factor:.61
Motor Phase: 3
Motor LR-KVA:37.7
Motor SKVA:37.7

Motor Start Method:Across the line

Load Factor: 100

Run Power Factor:.85

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
22.8	37.7	30.0	.60	4.5	5.3	2.8	.85

Load Number: 11 Load Type: Motor Control Phase 3

Load Name: (outside air supply) Output HP 30
pment:

Motor Drive Non Linear Load

Using all default answers.
Full Load Efficiency: 90

Phase: 3

Power Factor: 90

File Name: UNTITLED

Load Number: 6 Load Type: Motor HP Phase 3

Load Name: (wall exhaust fans) Output HP 2.5
Comment:

Motor HP:2.50
Using all default answers.
Motor is high inertia
Code Letter:K

Motor Shaft KW:1.9

Motor RKW:2.3
Motor RKVA:2.9

Start Power Factor:.68
Motor Phase: 3
Motor LR-KVA:21.2
Motor SKVA:21.2

Motor Start Method:Across the line

Load Factor: 100

Run Power Factor:.80

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
14.3	21.2	15.7	.67	2.3	2.9	1.7	.80

Load Number: 7 Load Type: Motor HP Phase 3

Load Name: (smoke fan) Output HP 3
Comment:

Motor HP:3.00
Using all default answers.
Motor is high inertia
Code Letter:K

Motor Shaft KW:2.2

Motor RKW:2.8
Motor RKVA:3.4

Start Power Factor:.66
Motor Phase: 3
Motor LR-KVA:25.5
Motor SKVA:25.5

Motor Start Method:Across the line

Load Factor: 100

Run Power Factor:.82

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
16.8	25.5	19.2	.66	2.8	3.4	1.9	.82

Load Number: 8 Load Type: Motor HP Phase 3

Load Name: (smoke fan) Output HP 3
Comment:

Motor HP:3.00
Using all default answers.
Motor is high inertia
Code Letter:K

Motor Shaft KW:2.2

Motor RKW:2.8
Motor RKVA:3.4

Start Power Factor:.66
Motor Phase: 3
Motor LR-KVA:25.5
Motor SKVA:25.5

Motor Start Method:Across the line

Load Factor: 100

File Name: UNTITLED

Motor LR-KVA:37.7
Motor SKVA:37.7
Load Factor: 100

Run Power Factor:.85

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
22.8	37.7	30.0	.60	4.5	5.3	2.8	.85

Load Number: 3 Load Type: Motor Control Phase 3

Load Name: (o.asupply fan) Output HP 30
Comment:

Motor Drive Non Linear Load
Using all default answers.
Full Load Efficiency: 90

Phase: 3
Power Factor: 90

Output Actual HP: 30

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
24.9	27.6	12.0	.90	24.9	27.6	12.0	.90

Load Number: 4 Load Type: Motor Control Phase 3

Load Name: (air handler) Output HP 30
Comment:

Motor Drive Non Linear Load
Using all default answers.
Full Load Efficiency: 90

Phase: 3
Power Factor: 90

Output Actual HP: 30

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
24.9	27.6	12.0	.90	24.9	27.6	12.0	.90

Load Number: 5 Load Type: Motor Control Phase 3

Load Name: (air handler) Output HP 30
Comment:

Motor Drive Non Linear Load
Using all default answers.
Full Load Efficiency: 90

Phase: 3
Power Factor: 90

Output Actual HP: 30

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
24.9	27.6	12.0	.90	24.9	27.6	12.0	.90

ONAN CORPORATION GenSize 2 Version 5.0A File Name: UNTITLED

R U N N I N G------			-----M A X----S U R G E--At Specified Voltage---			
KW	KVA	PF	KW	Occurs in Step	KVA	Occurs in Step
327	367	.89	356	4	727	4

========== Maximum surge exceeds 90% of GenSet capacity.==========

Recommended GenSet GenSet Voltage: 480
Model: 400DFEB

Nominal KW	Duty	Specified Voltage	Freq.	Specified Alternator	Recommended Alternator
400	Standby	277/480 WYE	60	125	125

When operated at 500 Feet Altitude
and 77 degrees Fahrenheit Ambient the
operating performance is:

* GenSet selected with one GenSet. *

Maximum KW	Voltage Dip	Freq. Dip	Excitation
400	11%	2%	PMG

Onan Corporation has developed this GenSize 2 computer program to help you, the engineer, with a generator set selection. The recommendations are based upon your input of the genset requirements and typical performance data published by NEMA and other agencies.

Due to changing load and site conditions beyond our control, we cannot be certain the selection of a genset based upon the recommendation of this computer program will meet the site requirements. Therefore, nothing in this program may be construed as a warranty. You must decide for yourself or consult with your local Cummins/Onan distributor that the generator set selected is sufficient for your intended purpose. Each Onan generator set is covered by an express written warranty which is in lieu of all other warranties, expressed or implied.

Please consult with your Cummins/Onan distributor representative in your area for further information.

File Name: UNTITLED

Load #	Qty	SKW	SKVA	SKVAR	SPF	RKW	RKVA	RKVAR	RPF
	1	35.7	67.0	56.6	.53	8.7	10.0	5.0	.87
2	1	22.8	37.7	30.0	.60	4.5	5.3	2.8	.85
3	1	24.9	27.6	12.0	.90	24.9	27.6	12.0	.90
4	1	24.9	27.6	12.0	.90	24.9	27.6	12.0	.90
6	1	14.3	21.2	15.7	.67	2.3	2.9	1.7	.80
16	1	93.7	237.8	218.6	.39	33.7	37.7	16.9	.89
Step Total:		216.3	419.0	345.0	.52	99.0	111.2	50.5	.89
Cumulative:		216.3	407.2			99.0	111.1	50.5	

Step Number: 2 Surge KW: 240 Surge SKVA: 293

Step Name:
Comment:

Load #	Qty	SKW	SKVA	SKVAR	SPF	RKW	RKVA	RKVAR	RPF
5	1	24.9	27.6	12.0	.90	24.9	27.6	12.0	.90
7	1	16.8	25.5	19.2	.66	2.8	3.4	1.9	.82
8	1	16.8	25.5	19.2	.66	2.8	3.4	1.9	.82
9	1	10.3	14.2	9.8	.72	1.5	1.9	1.3	.75
10	1	22.8	37.7	30.0	.60	4.5	5.3	2.8	.85
	1	24.9	27.6	12.0	.90	24.9	27.6	12.0	.90
12	1	24.9	27.6	12.0	.90	24.9	27.6	12.0	.90
Step Total:		141.3	185.8	114.4	.76	86.1	96.9	44.1	.89
Cumulative:		240.3	292.9			185.1	207.9	94.7	

Step Number: 3 Surge KW: 327 Surge SKVA: 578

Step Name:
Comment:

Load #	Qty	SKW	SKVA	SKVAR	SPF	RKW	RKVA	RKVAR	RPF
13	1	53.3	149.8	140.0	.36	50.2	55.9	24.6	.90
14	1	88.3	220.0	201.5	.40	31.3	35.0	15.8	.89
Step Total:		141.7	369.8	341.5	.38	81.4	90.9	40.3	.90
Cumulative:		326.7	577.5			266.5	298.7	135.0	

Step Number: 4 Surge KW: 356 Surge SKVA: 727
Maximum surge exceeds 90% of GenSet capacity.

Step Name:
Comment:

File Name: UNTITLED

Motor LR-KVA:220.0
Motor SKVA:220.0

Load Factor: 100

Run Power Factor:.89

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
88.3	220.0	201.5	.40	31.3	35.0	15.8	.89

Load Number: 15 Load Type: Motor HP Phase 3

Load Name: (elevator) Output HP 32
Comment:

Motor HP:32.00
Using all default answers.
Motor is high inertia
Code Letter:G

Motor Shaft KW:23.9

Motor RKW:27.1
Motor RKVA:30.4

Start Power Factor:.42
Motor Phase: 3
Motor LR-KVA:190.2
Motor SKVA:190.2

Motor Start Method:Across the line

Load Factor: 100

Run Power Factor:.89

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
79.1	190.2	173.0	.42	27.1	30.4	13.8	.89

Load Number: 16 Load Type: Motor HP Phase 3

Load Name: (elevator) Output HP 40
Comment:

Motor HP:40.00
Using all default answers.
Motor is high inertia
Code Letter:G

Motor Shaft KW:29.8

Motor RKW:33.7
Motor RKVA:37.7

Start Power Factor:.39
Motor Phase: 3
Motor LR-KVA:237.8
Motor SKVA:237.8

Motor Start Method:Across the line

Load Factor: 100

Run Power Factor:.89

SKW:	SKVA:	SKVAR:	SPF:	RKW:	RKVA:	RKVAR:	RPF:
93.7	237.8	218.6	.39	33.7	37.7	16.9	.89

Step Sequence/Load

Step Number: 1 Surge KW: 216 Surge SKVA: 407

Step Name:
Comment:

CONFERENCE MEMORANDUM

☐ Office
☐ Telephone
☐ Clients Office
☐ Other

Date:
Job:
Comm. No:
Originator:
Pg.....of.....

Present Xerox Centre

Emergency Generator Loads

✓	1. Fire Pump	60 HP	64 Kwl
✓	2. Smoke EF-1	10 HP	12 Kwl
✓	3. Smoke EF-2	2 HP	3 Kwl
✓	4. Smoke EF-3	3 HP	4 Kwl
✓	5. Smoke EF-4	3 HP	4 Kwl
✓	6. Smoke EF-5	1½ HP	2 Kwl
✓	7. Stair Press Fan-1	5 HP	6 Kwl
✓	8. Stair Press Fan-2	5 HP	6 Kwl
(*)	9. Stair Press Fan-3	1½ HP	2 Kwl
	10. IEF-1, Garage Ex	5 HP	6 Kwl
	11. IEF-2, Garage Ex	3 HP	4 Kwl

Copy To:

Form CM—Rev. 1—Std. Ptg. Co.

HOUTEN ENGINEERS, INC.
BURTON AND

CONFERENCE MEMORANDUM

☐ Office
☐ Telephone
☐ Clients Office
☐ Other

Date:
Job:
Comm. No:
Originator:
Pg.....of.....

Present

12.	IEF-3, Garage Ex	1½HP	2Kwl
13.	O.A. Supply Fan-1	30HP	33Kwl
14.	O.A Supply Fan-2	30HP	33Kwl
15.	Pump P-3, Hot Water Pump P-4, Hot Water	20HP	22Kwl
16.	AHU-__N	15HP	17Kwl
17.	AHU-__S	15HP	17Kwl
18.	AHU-__N	15HP	17Kwl
19.	AHU-__S	15HP	17Kwl
20.	AHU-__N	15HP	17Kwl
21.	AHU-__S	15HP	17Kwl
22.	Service Elev	35HP	43Kwl

Copy To:

Form CM—Rev. 1—Std. Ptg. Co.

BURTON AND VAN HOUTEN ENGINEERS, INC.

CONFERENCE MEMORANDUM

☐ Office
☐ Telephone
☐ Clients Office
☐ Other

Date:
Job:
Comm. No:
Originator:
Pg.....of.....

Present

23. Panels E-1 through E-16 — 100 Kw

24. Panel MH-1

25. Panels PE-1 & PE-3 — 27 Kw

26. Panel EL-1 — 5 Kw

27. Panel EE-1 → FEEDS EL-1
Lo Rise Elevators

28. Panel EE-2 FEEDS EL-2
Hi Rise Elevators

29. MISC. — 20 Kw

500 Kw

Copy To:

Form CM—Rev. 1—Std. Ptg. Co.

BURTON AND VAN HOUTEN ENGINEERS, INC.

~~State~~ of Connecticut
Department of Public Safety
Division of State Police
SP-927-C (Rev. 4/83)

Hartford

REQUEST FOR MODIFICATION/RELIEF OF THE REQUIREMENT OF THE CONNECTICUT FIRE SAFETY CODE

1. Applicant's Name Ronald R. Lysak Associates, Inc. Telephone 527-0024

   Address 10 Vredendale Avenue, Hartford, CT 06106

2. Name and Location of Building Xerox Center

   25 Sigourney Street, Hartford, CT

3. Date of Occupancy for Present Use Under Construction

4. Type of Occupancy (check one):

[ ] Place of Assembly	[ ] Industrial	[ ] Apartment House
[ ] Mercantile	[ ] Storage	[ ] Rooming House
[X] Business	[ ] Educational	[ ] Dormitory
[ ] Health Care or Penal	[ ] Hotel	[ ] Other

FEB 16 1987

5. Approximate Size of Structure 33,000 sf/fl. Number of Stories (above grade) 15

6. Approved Systems Presently Provided:

   [X] Detection & Alarm [X] Sprinklers

   [X] Smoke Evacuation [X] Other Voice Communication, smoke control, stair pressurization, standpipes and firefighters phone.

7. I, the above named applicant, request a modified/relief of the cited violation of the Connecticut Fire Safety Code because: 29-292-6-3.4.5 for relief from the requirement of total evacuation under an alarm condition. Total evacuation of a high-rise business occupancy is not practical and may subject the occupants to injury due to unnecessary evacuation.

8. I intend to provide the following additional safeguards: In lieu of total evacuation we propose, for approval, the concept of limited evacuation in the amount of four floors (the fire floor, two floors above and one floor below). The building is equipped with 1.) an automatic sprinkler system, 2.) Standpipes, 3.) Manual fire alarm system, sprinkler flow activation, heat and smokedetection, 4.) Smoke control and pressurization on each floor. 5.) Stair pressurization.

Ronald R. Lysak (AGENT) 2-13-87
Signed Date

8/2 - 1811

Local Fire Marshal (Attach copy of Abatement Order)

I recommend that the above modification/relief be

[ ]Denied [*]Approved For the following reasons:

Because total evacuation of a high rise building is not feasible it is the opinion of the undersigned that this concept provides a reasonable degree of life safety.

Carl G. Baker Jr. 2-17-87
Signed Date
FIRE MARSHAL
W.A.

State Fire Marshal

In accordance with Section 29-296 of the Connecticut General Statutes the request is

[X]Approved [ ]Denied [ ]Being Returned For: M87-218

Comments: With consideration given to the alternative safeguards noted in item #8, F. M. Bookers comments and contingent upon all employees being given training with respect to this concept that is acceptable to the Hartford Fire Marshals office.

MS

Reviewed By Lt. John Power 2/27/87 Approved By Capt. Fahy

cc: Local Authority

REQUEST FOR MODIFICATION/RELIEF OF THE REQUIREMENT
OF THE CONNECTICUT FIRE SAFETY CODE

No. 8 (continued)

8. 6.) Firefighters telephone and voice communication.

The controls and over-rides for the above systems are installed in the Fire Command Center which location was approved by the local Fire Marshal.

When an alarm is activated by any of the initiating devices, the audible signal would sound and the fire floor, two above and the floor below would begin immediate evacuation. These would be the only floors where the signal would sound. Smoke control, pressurization and the other life safety systems would start automatically in a control by event sequence which has been approved by the local Fire Marshal. The Fire Department is notified immediately by alarm directly tied to a H.F.D. Master Box. The Chief Fire Officer at the scene has complete control of all systems and total or selective tone and or voice capabilities with all other floors remaining occupied.

M89-218

HKM
f.16 Site Assess

hrp associates inc.

engineering & geology

July 10, 1987

PRB FILE # 93-282

Attorney Sandy Campbell
Cummings & Lockwood
10 Stamford Forum
P.O. Box 120
Stamford, CT 06904

RE: SITE ASSESSMENT REPORT - XEROX CENTRE, HARTFORD, CT
(HRP #SA-CUM-E)

25 SIGOURNEY ST.

Dear Attorney Campbell:

Attached for your use are two (2) copies of the Site Assessment Report prepared by HRP Associates, Inc. for the above-captioned property.

HRP's Conclusions and Recommendations are summarized in Sections J and K of the report. The additional property (parking lot and garage) is discussed in the addendum to this report.

If you have any questions, please do not hesitate to contact me.

Thank you.

Sincerely yours,

HRP ASSOCIATES, INC.

Mark C. Possidento (mm)

Mark C. Possidento, P.E.
Manager, Engineering Services

MCP/jb

DRW-PR paid from Bill Turner who paid from Union who rec'd from SPRB 6/1/05

SITE ASSESSMENT REPORT

HRP ASSOCIATES, INC.

HRP #SA-CUM-E

SITE NAME: XEROX CENTRE AT PARK PLACE
25 SIGOURNEY STREET
HARTFORD, CONNECTICUT 06106

PREPARED FOR: ATTORNEY SANDY CAMPBELL
CUMMINGS & LOCKWOOD
STAMFORD, CONNECTICUT

Issued On:

JULY 10, 1987

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LIST OF FIGURES

1987

I. BACKGROUND RESEARCH AND VISUAL SITE INSPECTION

A. Site Ownership and Location

1. Site Owner:
   Name XEROX HARTFORD ASSOCIATES
   Address 2 Wethersfield Avenue
   Hartford, Connecticut
   Telephone (203) 727-0403
   Date of Ownership 1985

2. Site Location:
   Address 25 Sigourney St/200 Park Place
   Hartford, Connecticut
   County Hartford
   USGS Quadrangle Hartford North
   (See Locus Plan from USGS map, attached Figure 1.)

B. Site Description

1. Visual Site Inspection (see site plan Figure 2).

   The site inspection was performed on July 7, 1987 and the additional property (parking lot and garage) were inspected on July 9, 1987.

   Included as an Addendum to this report are the conclusions and recommendations for the additional property.

a. total acreage -

   The total site acreage is 2.39 acres according to the site contact, Nick Carbone.

- adjoining roads -

   The Xerox Centre property is bordered by three roads: Capitol Avenue to the north, Sigourney Street to the east, and Woodbine Street to the west.

b. topography -

   The site lies at an elevation of approximately 40 feet above sea level and is essentially flat with a slight southerly slope.

IV. IDENTIFICATION OF PARTICIPANTS AND REFERENCES USED IN PARTS I AND II

A. Participants

1. Personnel involved in the Site Inspection and Investigation:

NAME	AFFILIATION	QUALIFICATIONS
Monique Sanson	HRP Associates, Inc.	Engineer Intern
Nina Northrup	HRP Associates, Inc.	Project Engineer
Walter J. Gancarz	HRP Associates, Inc.	Project Manager

2. Persons Contacted In Regard To The Site:

Nick Carbone	Xerox Realty Corporation
Wallace Jordan	Xerox Realty Corporation
Gale Johansen	Building Manager of Xerox Centre
Lindsay Huff	Chief Mechanic for Xerox Centre

B. References

Reports, Plans and Other Documents Reviewed

Department of Environmental Protection File Search:

A) Water Compliance Unit
B) Hazardous Waste Management Unit
C) Superfund - CERCLA Unit
D) Oil and Chemical Spills Unit
E) PCB/Toxics Unit
F) Underground Tanks Unit
G) Solid Waste Unit

Department of Environmental Protection, Natural Resource Center, Air Photographs.

Connecticut State Library and Historical Archives, Historical Air Photographs.

27

1987

1987

i. capacitors -

There are numerous capacitors located within the Xerox Centre building. These capacitors are assumed to be non-PCB type.

j. fencing -

A metal chain link fence borders the eastern and southern property boundaries.

k. asbestos -

There was no asbestos insulation observed or reported on the site.

C. Site History and Use

1. Current Site Utilization

The Xerox Centre building is utilized as executive offices. Aetna Insurance and Xerox Corporation occupy 60% of the building. The remaining 7 floors are under final construction and are unoccupied.

2. Surrounding Land Uses

Residential apartment buildings exist south and north of the Xerox Centre. The remaining surrounding land is utilized for commercial purposes.

3. Former Site Utilization

From 1928 to 1970, a typewriter manufacturing company was located on the site. The Underwood Fischer Company was established in 1928 and was purchased by the Olivetti Underwood Corporation in 1965.

In 1970 the building was demolished, the land was left vacant. From 1980 to 1985, the site was leased to Aetna for parking purposes. Cars were parked on a gravel surface. Construction of the Xerox Centre building began in 1985.

4. Aerial Photograph Reconnaissance

Date of Photography	Scale	Description of Features
1934	1" = 1166'	There is one large building present on site. Vegetation is not apparent.
1951	1" = 1666'	The site did not change from 1934.
1965	1" = 1500'	There is no change from 1934.
1970	1" = 1000'	Two northern sections of the building were demolished. Scattered debris is present in the area of the demolished buildings.
1975	1" = 1000'	The entire building has been demolished. The site appears to have been back-filled.
1980	1" = 1000'	Vegetation is present on the site.
1986	1" = 1000'	The Xerox Centre building is under construction. Construction equipment exists throughout the site.

D. Site Waste and Wastewater Generation Information

1. Domestic/Sanitary Wastes

a. Septic tanks/cesspools

There are no septic tanks or cesspools located on the site.

BI-2B-033 I
Study for Drainage Plane
25 Sigourney Street
Hartford, Connecticut
July 21, 2006

EVALUATIONS

GENERAL

In its 20-year life, 25 Sigourney Street has been plagued with water infiltration problems. Listed on the DPW website, there are no less than 65 reports, inspections, evaluations, assessments, letters, etc., related to the matter; and the listing is limited to the past 7 years. Earlier documentation is not posted. There also have been three major construction projects since 1999. These projects included terrace reroofing; roof coping and masonry repairs; exterior repairs (including windows); roof replacement (penthouse and main); and limited entry plaza repairs. As of May 12, 2006, there are only three reported leaks. Kelly Enterprises is on site as this report is being written, tending to sealant repairs on the building's exterior. Having zero leaks, regardless of the possible extremes of weather and the resulting adverse conditions, is an unrealistic expectation for any building of this size.

In the 1970's, the cost of energy was cheap. Office buildings were built with lighting for an entire floor regulated by a "single" switch. Then came the oil embargo 1973-1974, the cost of energy rose, and the term "energy efficiency" became the new buzz word.

25 Sigourney was built a decade later using typical construction methods and budding energy efficiency techniques of that era. There wasn't redundancy in the exterior rain-penetration control detailing - no "belt-and-suspenders" approach should the first line of defense fail. At present, an on-going in-depth examination of the exterior on a regular basis is required to attempt to keep the building watertight. To date, this kind of scrutiny hasn't totally prevented leaks simply due to the original inherent construction methodology of a single line of defense.

Some of the current building problems can be found described in the Property Inspection Report for Aetna Life and Casualty, dated March 16, 1987. At that date, the building wasn't quite complete, and already concerns were arising. As noted in the report, "*Items that may be significant problems over the life of the building or result in substantial limitations include: .....the exterior caulking joints are much wider in many places than is indicated on the plans. This could result in decreased caulking life, and in increased costs to maintain and repair over the life of the building.*" Also in the report, "*.... balconies are so narrow as to be of little use.....because they are over occupied space, provide an increased opportunity for leakage into the spaces below.*"

The one item not listed in the report as a cause of concern, in relationship to water intrusion, was the masonry brick veneer. It was accepted as being constructed to the standards and methodology of the time.

Today, there is an improved comprehensive view resulting from extensive research and development concerning integrating materials and methods of construction, building systems, energy efficiency, health environments, etc. The construction industry is more technical and scientific; and the consumer is wiser and more health conscious today.

The "new" vocabulary words of the construction industry today are: drainage plane, rainscreen, vapor barrier, and air barrier.

A drainage plane is a surface, and therefore a path, which water follows by means of gravity. In order for the water to free flow, there needs to be airspace in front of the plane. If surfaces are touching, then the potential for capillary action takes place, which can over ride gravity; and moisture can travel in all directions.

The primary drainage planes of the building would be the exterior surfaces of the brick, glass, and roof. The secondary drainage plane, in the case of 25 Sigourney, would be the backside of the brick, or possibly the face of the rigid insulation which is adhered to the face of the inner CMU wall. (See

BI-2B-033 I
Study for Drainage Plane
25 Sigourney Street
Hartford, Connecticut
July 21, 2006

OBSERVATIONS

01 GENERAL

Original construction drawings indicate the building is approximately 20 years old and was originally named the Xerox Centre. The State of Connecticut assumed control of the building in the early 1990's. The structure is 20 stories high (15 stories + penthouse + 4 parking), with a total roof elevation of approximately 200 feet above the main entrance level. The penthouse (20th floor) contains mechanical rooms as well as office space.

The building is predominantly used for offices, with a total floor area of approximately 410,000 net square feet (of office space). There is a semi-detached multilevel concrete parking structure with its own emergency stairwell. Both parking garage and stairwell are excluded from this report. There are two terraces located on the mezzanine (5th floor), 12 terraces on the 17th floor, and 13 terraces on the 19th floor, for a total of 27 terraces.

The building is constructed of a reinforced concrete infrastructure with a masonry cavity wall veneer. A portion of the parking garage concrete slabs are post tensioned. Glass and aluminum curtain wall system is located at the corners of the office building and over the front entrance/greenhouse.

The upper floor terraces are narrow in depth (less than 4 feet) surrounded by a brick parapet topped with a precast coping. A painted metal railing is attached to the parapet. Centered on the narrow depth of the terrace are safety line tie-back anchors mounted into the concrete deck. The balconies, at least on the upper floors, do not appear to be used except to open the sliding doors for occasional supplemental ventilation.

The building management company reported there are 48 interior areas which have the finishes removed, based on areas of potential water infiltration as noted in the Infrared Investigation Report by MIT for Turner Building Science, LLC. Finishes will be installed after exterior sealant repairs have been completed by Kelly Enterprises, Inc., who has recently been performing repairs to defective sealant joints (photos # 9, 10, and 11). Their rig is on site, and they have been going over the side of the building to accomplish the work.

The building no longer uses roof top window washing rigs. The rooftop concrete pad used by the rig was removed during the 2003 reroofing project, and safety line tie back anchors were installed as part of that project.

03 CONCRETE

Structural framing members are cast-in-place, reinforced concrete beams and columns.

04 MASONRY

The building facade is typically constructed of a masonry cavity wall comprised of a standard sized, non-glazed, iron spot, low absorption, cored brick (Belden Brick #470-479) on the exterior with a 2- to 2½-inch air space cavity behind. Within the cavity is 1-inch rigid insulation board adhered to a 6-inch CMU (concrete masonry unit) inner wall.

The penthouse (20th floor/ main roof) parapet walls are constructed of a CMU interior with an exterior brick veneer on both sides. Dennis Stevenson, building maintenance engineer, reported the entire wythe of brick on the interior of the parapets was replaced, and select sections of brick replaced on the exterior of the parapet during the roof coping and masonry repairs project completed in January 2000. This is opposite of what is shown on the parapet repair details (1998). The penthouse and terrace parapets are solid masonry with no air space cavity.

CHERICHETTI INCORPORATED
28 SCHOOL STREET - P.O. BOX 501
EAST GRANBY, CONNECTICUT 06026

TELEPHONE (203) 653-7433

XEROX CENTRE

25 Sigourney Street

Hartford, Connecticut

PROPERTY INSPECTION REPORT

for

AETNA LIFE AND CASUALTY

Hartford, Connecticut

March 16, 1987

Lawrence P. Della Vecchia, P. E.

Charles A. Warren, Jr., P. E.

Charles A. Warren, Jr., P.E., FUNKS

cc: WARD PONTICELLI
DAVID WLODKOWSKI
DPW GEN'L GOVT.

1

w - 10/1/05 recd from Bill Turner who succeeded from Union, who recd from SORB

XEROX CENTRE

SUMMARY

How is balance of building reinforced?

The purpose of this study is to review and comment on base building and tenant finish plans, and to inspect and report on the physical condition of the property, with potential future problems identified and evaluated.

The property consists of one multi-story office building of approximately 470,000 square feet of gross area with an integral parking garage containing nearly 900 parking spaces. The building is of cast-in-place reinforced concrete construction. A portion of the parking garage concrete reinforcement is provided by unbonded posttensioned tendons. The building exterior is a combination of brick veneer with vertical bands of glass and aluminum curtain wall.

The property is new and construction is not yet complete. Incomplete items include tenant finishes and a number of base building items, such as curtain wall and windows, exterior caulking, and various mechanical and electrical systems.

Design and construction are generally ordinary to adequate. There are a number of items which may affect the utility of the building, ranging from minor nuisances to significant problems. Items that may be significant problems over the life of the building or result in substantial limitations in use of the facilities include:

1. The parking garage may be subject to unusually high maintenance costs and/or major repairs or replacements of the structure over a twenty year period. This is due to the combination of reinforced concrete design and the detrimental environmental conditions found in this locality. The garage design also includes relatively tight traffic patterns that impose some limitations on the effective utilization of the space.

2. Extensive leveling of the tower floor slabs has been required, and the available live load capacity of a significant portion of the building has been reduced as a result. It would be reasonable to consider the effective live load capacity of the typical floor to have been reduced from the design value of 100 pounds per square foot to approximately 80 pounds per square foot. This is significant as it affects the ability of the building to serve the needs of tenants with high load capacity requirements, as might be found in libraries or file storage space.

INTRODUCTION

ARCHITECT RETAINED

In response to a call from Mr. Robert McNulty of the Department of Public Works, State of Connecticut, a meeting was arranged to discuss the scope of a building condition survey for the building known as Xerox Centre at Park Place, located at 25 Sigourney Street in Hartford, Connecticut. On 8 September 1992 Messrs. Brian Schafer and Harwood Loomis of Hoffmann Architects visited to site of the building and then met with Mr. McNulty to discuss the scope of a proposed survey. Hoffmann Architects submitted a verbal proposal for services to perform the proposed survey on 8 September, and Mr. McNulty issued a verbal authorization to proceed. Hoffmann Architects submitted a written proposal as confirmation on 8 September 1992, and received written notice to proceed on 28 September 1992.

PURPOSE OF SURVEY

This survey was requested by the State of Connecticut as part of a feasibility study for possible acquisition of the property by the State. The report is intended to provide an overview of the condition of major Architectural, Mechanical, Electrical and Fire Protection systems in the building at the time of the report, along with recommendations for remedial work to items felt to be in need of maintenance, repair or replacement. The survey is also intended to provide a professional opinion of the projected construction costs to effect the recommended maintenance, repairs and/or replacements.

This report does not address possible changes a new owner might make in building interior finishes, layouts, partitions, or telecommunications systems; nor does it address every possible modification or alteration which might subsequently be required to fully comply with access requirements of the Americans with Disabilities Act (ADA), some of which requirements have yet to be clarified and interpreted by the United States Department of Justice and the court system.

METHODS OF INVESTIGATION

Review of the property consisted of visual observations conducted at the site on 16 September 1992 by Harwood W. Loomis, AIA, of Hoffmann Architects, North Haven, Connecticut; and Dean M. Azzam, P.E., George V. Keithan, and Christian B. Hagen, all engineers with Melchiori and Associates of Wallingford, Connecticut. Construction drawings of the building were not available to the inspection team. A set of drawings labeled variously as "preliminary," "for review," and "not for construction" was made available for inspection by the review team at the site. These were generally dated in April of 1985 and were noticeably incomplete with respect to details, detail cross-referencing, and other information beyond general design intent. It appeared that these drawings are the best information available to the building manager, as they are maintained in the maintenance office for purposes of managing the facility. The site

Sept. 30, 1992

visit provided an opportunity to observe how closely the physical construction conformed to the information presented in the design drawings, and to observe the general condition of the building and the level of workmanship and quality of materials used in the construction.

Access to the building was provided by Mr. John Scobie, a principal of Sterling Realty Group, Incorporated, and Ms. Gale Johansen, Property Manager with Xerox Hartford Associates. The Building Engineer, Mr. Kenneth Garreau, accompanied the engineers on the review team through most of their observations. Mr. Garreau and Ms. Johansen were both familiar with the operation of the building and were very helpful in responding to questions regarding equipment and maintenance and operating practices and history.

At the time of the inspection, tenant floors six through 16 were vacant. This entire block of floors had been occupied by components of the Aetna Insurance Company and were only recently released. The availability of a large number of vacant spaces greatly facilitated observation of finishes and equipment by the review team. However, it also hampered some observations due to equipment shut-downs. For example, only half of the elevators were in operation.

This survey did not include determination of the presence or absence of asbestos or other hazardous and toxic materials. We recommend that independent consultants specializing in environmental hazards be engaged to evaluate the property for the possible presence of toxic or hazardous materials.

BUILDING DESCRIPTION

The building is a free-standing structure located on the west side of Sigourney Street in Hartford, immediately adjacent to the Sigourney Street interchange with Interstate 84. The building comprises a total of 18 stories, plus a penthouse level which is considerably smaller than other floors and roughly half devoted to mechanical equipment spaces. Of the 19 stories, the first three are devoted to parking and are below the level of Sigourney Street. (Floor numbering follows the convention of omitting a 13th floor.) The main entrance (to both the building lobby and to the parking garage) occurs on level 4, and the security/concierge station and elevator lobbies are located on the fifth level. In addition to parking spaces beneath and within the office tower "footprint," there is also a five level ramped parking structure located behind and connected to the tower. There is a secondary access to the parking structure from the west, from what is now known as Park Place (formerly Woodbine Street).

Total occupiable floor area is approximately 450,000 square feet, exclusive of parking, lobby and mechanical spaces. The typical tenant floor (representing floors 6 through 19) is approximately 32,500 square feet and is conceived as all open space surrounding an L-shaped central core. Marketing literature indicates that 1200 parking spaces are available. The building and attached parking garage actually contain only 900 spaces, of which a substantial number are narrow spaces (7'- 6" wide) marked as "compact car only." The additional 300 spaces are located in a surface lot across Park Place and not part of this property. The building

manager reported that these spaces have been released back to their owner but would still be available for lease by a new owner of the building.

Architectural design of the building was by Welton-Becket Associates (New York office), with associated architects Brennan-Beer-Gorman, also of New York. The structural engineer was Lev Zetlin Associates, of New York; the mechanical/electrical engineer was Burton and van Houten of West Hartford, Connecticut; and the landscape consultant was CR3 Incorporated, of Simsbury, Connecticut.

The drawings available for inspection did not include any of the code-related (and required) information describing the building use group and construction type classification. The entire building appears to be of reinforced, cast-in-place concrete construction. The tower portion of the building uses convention reinforced concrete slabs 9 inches thick with 5 inch drop shear heads at column locations. The attached parking structure uses post-tensioned concrete slabs on cast-in-place beams and columns. The building is enclosed with a brick veneer, with glass curtain walls at prominent corners and above the front entrance, which is a 3 story high atrium.

At the time this building was designed and constructed (late 1985 through 1987), Connecticut was using the State of Connecticut Basic Building Code/1978, which became effective September 1, 1981, and remained in effect until April 15, 1987. Under this code, the occupancy classification for the tower would have been Use Group B (Business), and Use Group S-2 (Low-hazard Storage) for the attached open parking structure. (This is reflected in the Certificate of Occupancy, which we reviewed in the Building Manager's office. The classification of construction type would have been dependent upon the fire resistance ratings of structural elements such as beams, columns, and floor slabs. Because this information was not provided in the drawings we reviewed, we cannot report on class (type) of construction with any certainty. Based on the method of construction and the use of the building, we believe the construction would probably have been considered to be Type 1 (Fireproof) or Type 2 (Non-combustible protected) under the Building Code in effect at the time of construction.) Without more specific information than what was available to us, we cannot classify the construction type any more accurately than this. The entire building is protected with an automatic sprinkler system, as well as standpipes in the central core.

The allowable tabular area per floor varies under the Code, depending upon the class of construction. Although we do not have sufficient information to calculate the allowable tabular area, we feel that the Hartford Building Department probably reviewed this closely at the time they issued the building permit, and that the design probably complied with Code requirements.