

E-Comm Square Building Assessment

Structural, Electrical & HVAC

CHA Project Number: 16433

Prepared for:

Prepared by:

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E-Comm Square Building Assessment

STRUCTURAL REPORT

➤ BUILDING NO. 2

Building No. 2 is a four-story structure constructed of timber floor framing supported by interior timber girders and steel columns and exterior multi-wythe brick bearing walls. The structural inspection was visual only. No destructive investigation or testing was performed. The following was observed:

Basement

- ✦ The cast-in-place concrete exterior bearing walls and multi-wythe brick center bearing wall are in good condition with no structural deficiencies observed.
- ✦ The concrete slab-on-grade has some minor cracking, spalling and delamination. It appears that a concrete overlay was applied to the original concrete slab. The overlay is delaminating in some spots (Photo 1).
- ✦ Overall the basement is in good structural condition.

Recommendations:

It is recommended that the areas where the slab is delaminating be repaired with a cementitious patching mortar.

First Floor

- ✦ Finishes cover all of the structure on the first floor. No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

Second Floor

- ✦ Finishes cover all of the structure on the second floor. No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

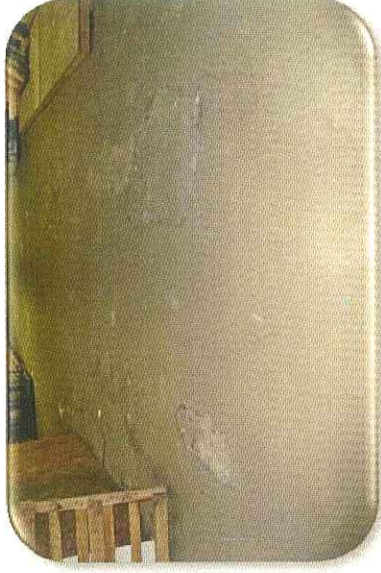


Photo 1

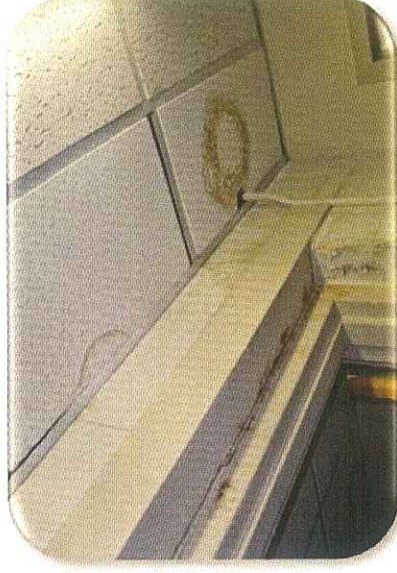


Photo 2

E-Comm Square Building Assessment

STRUCTURAL REPORT

Third Floor

- + Timber floor framing could be seen above the drop ceiling on this floor. The framing appeared to be in good condition.
- + No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

Fourth Floor

- + Water staining was observed in an electrical room and in the kitchen area adjacent to a skylight (Photos 2 & 3). These stains are likely from roof leaks.

Recommendations:

It is recommended that repairs be made to fix roof the leaks.

Roof

- + The roof consists of a built-up roofing material with a spray applied aluminum coating. The roofing is in overall poor condition (Photo 4).
- + The sheet metal coping on the north and east parapets is rusting and has loose and missing fasteners (Photo 5). A section of coping on the east parapet has come almost completely off (Photo 6).
- + The clay tile coping on the south and west parapets is in generally good condition but some deteriorated mortar joints and broken tiles were observed (Photo 7).

Recommendations:

The existing roofing appears to be beyond its useful life. It is recommended that the existing roofing system be replaced.

The existing sheet metal coping should be cleaned, primed and painted and all loose and missing fasteners should be replaced. The section of coping that is coming off on the east parapet should be reinstalled. All deteriorated joints in the clay tile coping should be repointed.



Photo 3

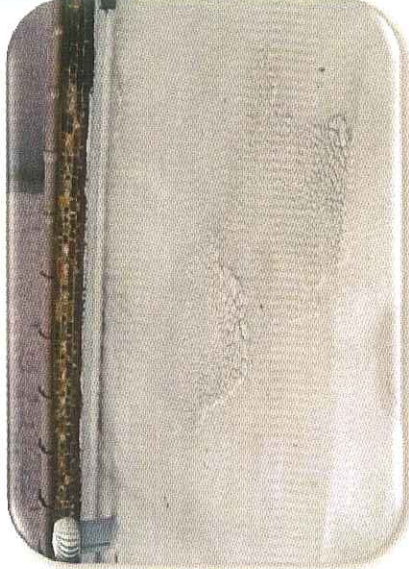


Photo 4

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STRUCTURAL REPORT

Facade

- + The facade is in fair condition. Some deteriorating mortar joints were observed and wood window frames have peeling and flaking paint (Photo 8).

Recommendations:

It is recommended that all deteriorating mortar joints be repointed and all window frames should be stripped of existing paint, primed and repainted.



Photo 5

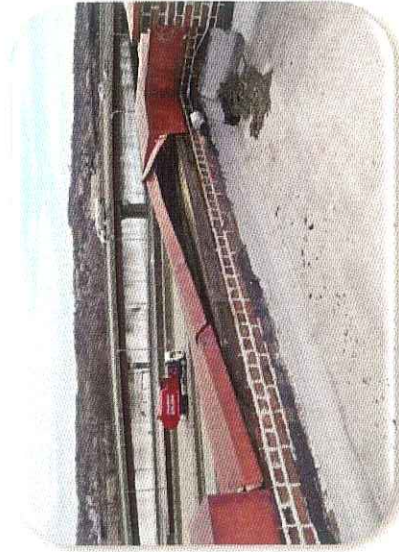


Photo 6

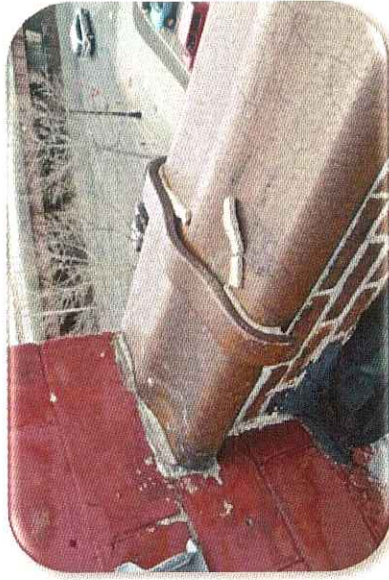


Photo 7



Photo 8

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STRUCTURAL REPORT

➤ BUILDING NO. 3

Building No. 3 is a four-story structure with a 5th floor penthouse constructed of timber floor framing supported by interior timber girders and columns and exterior multi-wythe brick bearing walls. The structural inspection was visual only. No destructive investigation or testing was performed. The following was observed:

Basement

- ✦ There is no accessible basement in Building No. 3. What appears to have been stairs that lead to a basement has been filled with stone and has a steel railing around it. Maintenance workers at the facility believe that there was a basement at one time and it was filled but they are not sure.

Recommendations:

First Floor

- ✦ Finishes cover all of the structure on the first floor. No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

Second Floor

- ✦ Open ceilings in the majority of this space allowed visual inspection of the underside of the third floor framing above. The framing consists of timber frame supported by timber columns. This framing appeared to be in very good condition.
- ✦ No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A



Photo 9

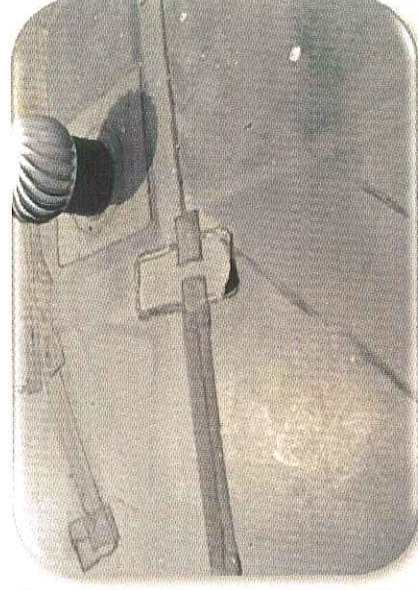


Photo 10

E-Comm Square Building Assessment

STRUCTURAL REPORT

Third Floor

- ✦ Finishes cover all of the structure on the third floor. No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

Fourth Floor

- ✦ Finishes cover all of the structure on the fourth floor however some minor water stains were observed throughout the fourth floor.
- ✦ No additional cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

It is recommended that the roof areas above the water stained locations be investigated to determine where the leaks are originating and the roof repaired at these locations.

Fifth Floor

- ✦ Finishes cover all of the structure on the fifth floor. No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

Roof, parapets and Penthouse

- ✦ The roofing consists of an adhered EPDM membrane roofing system. Many areas are not adhered and are pulling away from the parapets and mechanical equipment roof curbs (Photo 9). One failing seam was observed (Photo 10).
- ✦ Mortar joints in the brick façade of the penthouse are deteriorating (Photo 11).

Recommendations:

It is recommended that all failing roof seams be repaired and areas of the EPDM membrane that have lost adhesion be re-adhered.

All deteriorated mortar joints should be repointed.

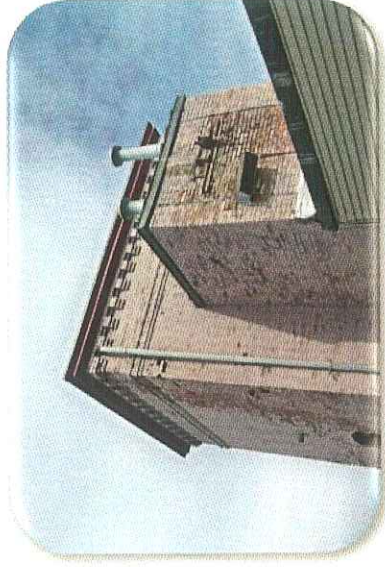


Photo 11

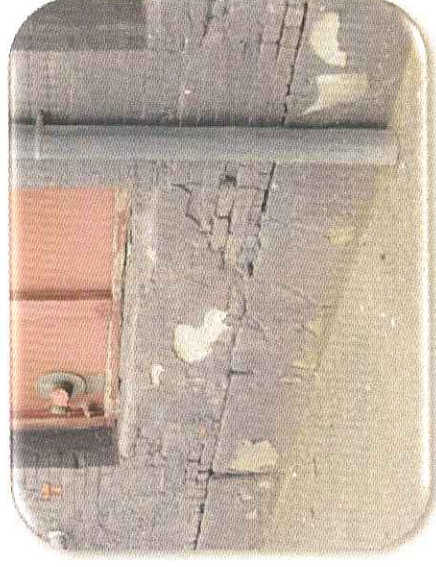


Photo 12

Facade

- ✦ In general mortar joints are deteriorating on all facades (Photo 12).
- ✦ In general all of the wood window sills show some signs of deterioration and many are severely rotted. All of the wood window frames have peeling and flaking paint (Photo 13). A few of the stone/concrete sills below the wood windows are cracked and spalling (Photo 14).
- ✦ A piece of stone veneer at the bottom of the south facade is coming off of the building (Photo 15).

Recommendations:

It is recommended that all deteriorated mortar joints be repointed and the stone veneer on the south facade be reattached to the building.

All rotted window sills should be replaced. All window frames should be stripped of existing paint, primed and repainted. Spalling and cracking stone/concrete sills should have all unsound material removed and repaired with a cementitious patching mortar.



Photo 13



Photo 14

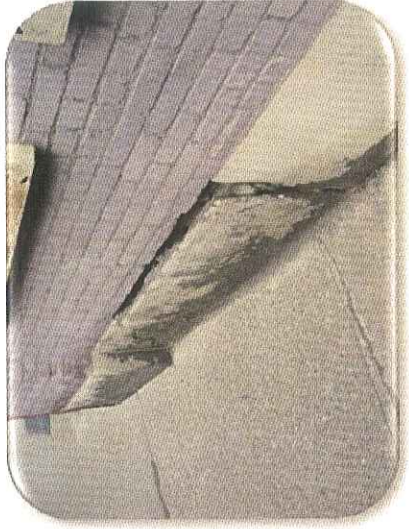


Photo 15

E-Comm Square Building Assessment

STRUCTURAL REPORT

➤ BUILDING NO. 4

Building No. 4 is a four-story structure constructed of timber floor framing supported by interior timber girders and steel columns and exterior multi-wythe brick bearing walls. The structural inspection was visual only. No destructive investigation or testing was performed. The following was observed:

Basement

- The fieldstone foundation and brick bearing walls are in overall good condition with some minor deterioration of the mortar joints (Photo 16). No major cracking or deterioration was observed.
- The concrete floor slab-on-grade is in overall good condition with some minor random cracking.
- The timber floor framing (first floor) is in good condition. No deficiencies were observed.

Recommendations:

It is recommended that all deteriorated mortar joints be repointed. The cracks in the slab-on-grade should be routed and sealed with a flexible sealant.

First Floor

- Finishes cover nearly all of the structure on the first floor. A hole was cut in the ceiling in the kitchen area and the timber flooring supporting the second floor in this area could be seen. The framing in this area appeared to be in good condition.
- No cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

N/A

Second Floor

- Finishes cover all of the structure on the second floor. A water stain on the ceiling in a back room outside the electrical closet indicates there is a leak in a pipe above the ceiling in this area.
- No additional cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

It is recommended that the ceiling near the electrical closet be removed to determine the cause of the leak and the leak be repaired to prevent further deterioration.

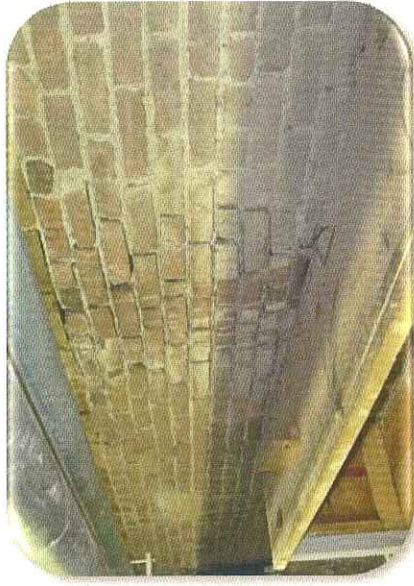


Photo 16



Photo 17

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STRUCTURAL REPORT

Third Floor

- + Finishes cover all of the structure on the third floor. Several minor water stains were observed on the ceiling.
- + No additional cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

It is recommended that the ceiling at the observed water stains be removed to determine the cause of the leaks and the leaks be repaired to prevent further deterioration.

Fourth Floor

- + Finishes cover all of the structure on the fourth floor. Several minor water stains were observed on the ceiling. However significant water damage was observed near the skylight. Paint was peeling and some of the sheetrock was beginning to come down at this location (Photo 17).
- + No additional cracks, leaks or other signs that would indicate a structural deficiency were observed on this floor.

Recommendations:

It is recommended that the ceiling at the observed water stains and water damage at the skylight be removed to determine the cause of the leaks and the leaks be repaired to prevent further deterioration. See roof observations for further explanation of possible causes.

Roof, Parapets and Penthouse

- + The roofing consists of an adhered EPDM membrane roofing system. There is a failure in the roof seam near the skylight where the water damage was observed on the fourth floor (Photo 18).
- + The EPDM roofing is coming up and pulling away from the parapet where the roof meets the parapet at several locations (Photo 19).
- + Two roof drains on the roof appear to be undersized and not properly flashed. The drains consist only of a pipe that comes up to the surface of the roof with no actual recessed drain grate cover assembly. The EPDM roofing is folded into and glued to the inside of the pipe (Photo 20).
- + The brick facade of the machine room, stairwell penthouse and the parapet at the roof step has minor mortar joint deterioration (Photo 21).

Recommendations:

It is recommended that all failing roof seams be repaired and areas of the EPDM membrane that have lost adhesion be re-adhered. The roof drain size should be checked for adequacy and proper recessed roof drains and grate covers should be installed. All deteriorated mortar joints should be repointed.



Photo 18

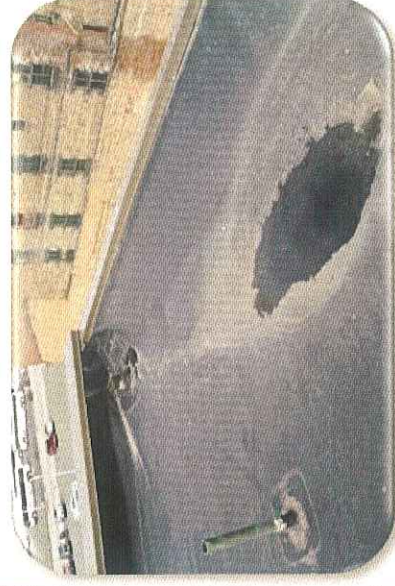


Photo 19

Facade

- + Step cracking and outward displacement of the brick facade was observed over the door on the south facade of the building (Photo 22).
- + The window heads and sills on the first row and third row of windows from the southeast corner of the building slope down towards the second row (Photo 23). It appears the building has settled at this location sometime in the past. It was observed that the head of one of the windows bears on a different course of brick than the other. This indicates that the settlement could have possibly occurred during construction of the building.
- + A vertical crack in the facade extends from the first to the third floors on the west facade (Photo 24).
- + A vertical crack extends from the first floor to the roof on the north face of the northwest corner of the building (Photo 25).
- + The facade bulges out slightly at the top of the wall on the north facade near the northwest corner of the building. A brick has come out of the wall at this location and a bird was observed flying out of the hole (Photo 26).
- + Concrete curbing at the bottom of the east facade is cracking and spalling (Photo 27).
- + In general mortar joints are deteriorating and brick faces are spalling off randomly on all facades of the building. The spalling brick faces indicates the brick is porous and is absorbing water. When the water freezes it causes the face of the brick to spall off.

Recommendations:

It appears that the possible settlement observed on the south facade occurred a significant time in the past and has not moved recently. It is recommended that the facade at this location be monitored for any additional movement and if the settlement is determined to be active, a thorough investigation should be performed to determine the cause and a method to stabilize the building.

The vertical cracks in the west and north facades should be routed out and filled with a flexible sealant.

Further investigation of the bulging facade at the top of the north facade near the northwest should be performed to determine the cause. A bulging facade indicates that the brick wythes could be delaminating inside the wall or the lateral connection of the wall to the floor or roof framing could be failing. This could potentially lead to a failure or collapse of the facade. At a minimum the mortar joints at this location should be repointed and the missing brick replaced to minimize further deterioration until the investigation can be performed and a permanent repair made.

The concrete curbing at the bottom of the east facade should have all unsound concrete sawcut and chipped out and repaired with a cementitious patching mortar.

It is also recommended that the existing paint be removed from the facade, all deteriorated mortar joints in the facade be repointed and a waterproofing silane sealer be applied to the entire facade.

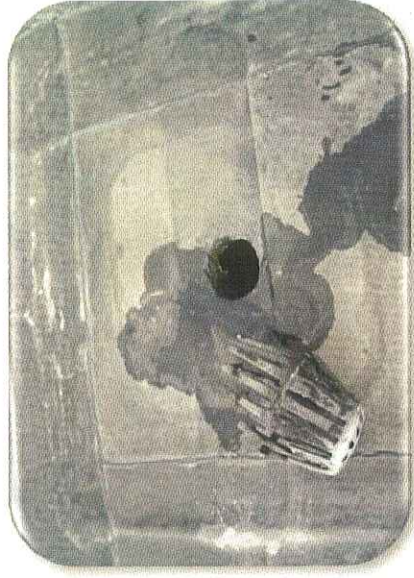


Photo 20



Photo 21

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STRUCTURAL REPORT



Photo 22

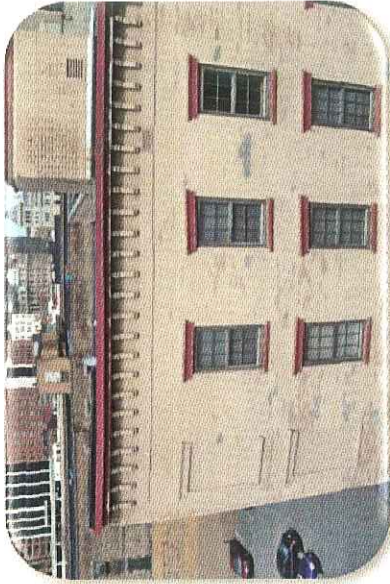


Photo 23

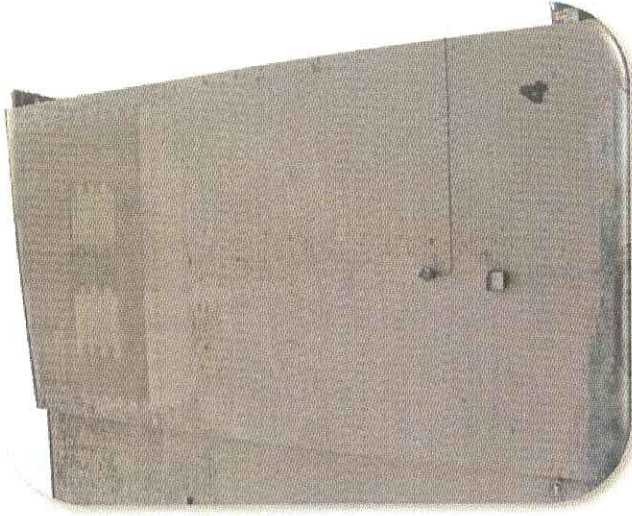


Photo 24

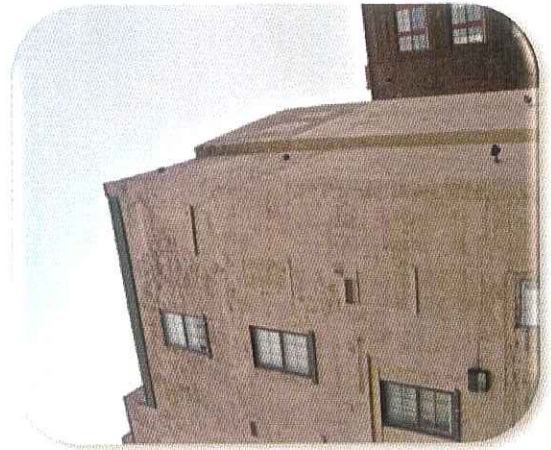


Photo 25



Photo 26

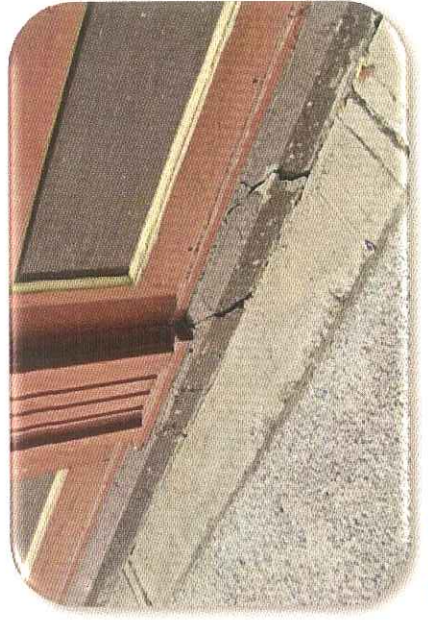


Photo 27

E-Comm Square Building Assessment

STRUCTURAL REPORT

➤ BUILDING NO. 6

Building No. 6 is a four-story structure constructed of timber floor framing supported by interior timber girders and columns and exterior multi-wythe brick bearing walls. The structural inspection was visual only. No destructive investigation or testing was performed. The following was observed:

Basement

- ✦ Mortar joints in the fieldstone foundation walls are deteriorated.
- ✦ A significant area of the underside of the first floor wood framing is covered in a thick layer of mold and/or fungus. This would indicate that this wood framing is wet and could be deteriorated (Photo 28). Due to very poor lighting and the risk of disturbing the mold/fungus it was difficult to determine the actual condition of the framing.

Recommendations:

All deteriorated mortar joints should be repointed.

The mold and fungus should be cleaned from all wood framing and a thorough investigation of the framing be performed. Based on the condition of the upper floors, it is likely that the framing will require shoring or replacement.

First Floor

- ✦ Extensive water damage was observed in the front half (east end) of the building. Ceiling tiles were falling, sheetrock walls were damaged and the entire floor area was saturated with water. Significant mold growth was observed in this area (Photos 29 & 30). Based on the conditions observed on the floors above, the water infiltration appears to be occurring at the roof and working its way down through the building.

Recommendations:

It is recommended to repair the roof to halt the infiltration of water into the building. All of the interior finishes should be removed to inhibit the growth of mold and expose the structure for a thorough structural inspection.



Photo 28



Photo 29

E-Comm Square Building Assessment

STRUCTURAL REPORT

Second Floor

- ✦ Extensive water damage was observed. Floor boards are buckling and extensive water staining was observed on the underside of the third floor framing (Photos 31 & 32). Based on the conditions observed on the floors above, the water infiltration appears to be occurring at the roof and working its way down through the building.
- ✦ There are two holes, approximately three feet in diameter, in the roof over a room on the south side of the building (Photos 33 & 34).

Recommendations:

It is recommended to repair the roof to halt the infiltration of water into the building. The wood flooring should be removed in its entirety to expose the structural wood planking underneath. The wood planking should be inspected and tested to determine its structural integrity. The wood framing supporting the third floor should be tested to determine if its structural integrity has been compromised by the water infiltration.

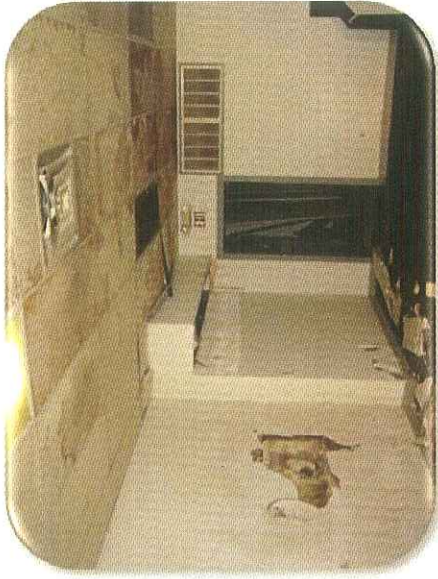


Photo 30

Third Floor

- ✦ Extensive water damage was observed. Floor boards are buckling and extensive water staining was observed on the underside of the fourth floor framing (Photos 35 & 36). Based on the conditions observed on the floors above, the water infiltration appears to be occurring at the roof and working its way down through the building.

Recommendations:

It is recommended to repair the roof to halt the infiltration of water into the building. The wood flooring should be removed in its entirety to expose the structural wood planking underneath. The wood planking should be inspected and tested to determine its structural integrity. The wood framing supporting the fourth floor should be tested to determine if its structural integrity has been compromised by the water infiltration.

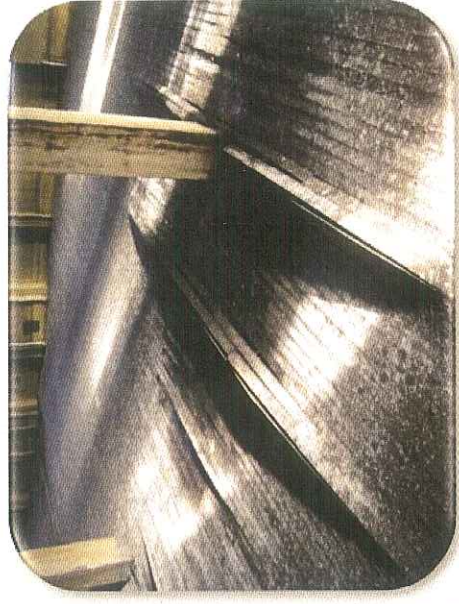


Photo 31

Fourth Floor

- ✦ Extensive water damage was observed (Photo 37). The floor is constructed of a concrete slab supported by timber framing. It was difficult to assess the presence of cracks due to a heavy layer of fallen ceiling material and pigeon droppings, however the severe water damage on the floors below and the staining observed on the fourth floor framing from below would indicate that there are cracks in the slab.
- ✦ The ceilings are heavily water damaged and large areas are falling down. The exposed timber roof framing and decking is heavily stained and is likely beginning to rot (Photo 38).

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Recommendations:

It is recommended to repair the roof to halt the infiltration of water into the building. The wood planking should be inspected and tested to determine its structural integrity. All of the ceiling finishes should be removed to inhibit the growth of mold and expose the structure for a thorough structural inspection. The wood framing supporting the roof should be tested to determine if its structural integrity has been compromised by the water infiltration.

Roof

- + The roof consists of built-up roofing. It is in very poor condition and has completely failed (Photo 39).
- + A roof drain on the south side of the roof is plugged preventing water to drain from the roof. At the time of the inspection there was standing water and ice at the drain (Photo 40).
- + Mortar is missing in many of the clay tile parapet coping joints (Photo 41).

Recommendations:

The existing roof should be removed and replaced with a new roofing system and the plugged roof drain should be repaired immediately to prevent further deterioration of the building.

Deteriorated mortar joints in the clay tile parapet coping should be repointed.

Facade

- + Serious water damage was observed on the south façade of the building extending from the roof to the first floor. This damage coincides with the location of the plugged roof drain. It appears that water is running down the face as well as inside the wall. The façade also bows out at this location (Photos 42 & 43).
- + The mortar joints on the south façade are irregular where a building abutted Building No. 6 in the past (Photo 44).
- + Concrete curbing at the bottom of the façade on the west side of the building is spalling and cracking.
- + Water staining was observed near the top of the façade on the north side of the building. This staining is likely due to a roofing failure.
- + Some minor brick spalling and deteriorating mortar joints were observed on the north façade (Photo 45).
- + Parge coating below the second floor windows is failing on the north façade (Photo 46).
- + Numerous broken windows were observed on all facades and many of the window casings appear to be severely rotted.



Photo 32



Photo 33

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STRUCTURAL REPORT

Recommendations:

As discussed above the roof needs to be replaced and the plugged roof drain needs to be repaired to prevent further deterioration of the building.

Further investigation of the bowing façade on the south side of the building should be performed to determine the extent and cause of the deficiency and to design a means to stabilize it. A bowing façade indicates that the brick wythes could be delaminating inside the wall or the lateral connection of the wall to the floor or roof framing could be failing. This could potentially lead to a failure or collapse of the façade.

The irregular mortar joints on the south façade should be struck off and repointed. The spalled bricks and deteriorated mortar joints on the north façade should be repaired and repointed.

The failing parge coating on the north façade should be removed and re-parged.

Due to the poor condition of the majority of the windows in the building it is recommended that the existing windows be removed and replaced with new windows. If this is financially not feasible at this time it is recommended that the most severely deteriorated windows and those with broken glass be boarded up.

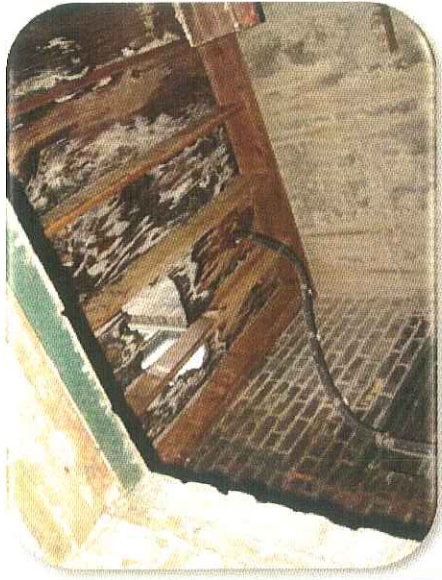


Photo 34

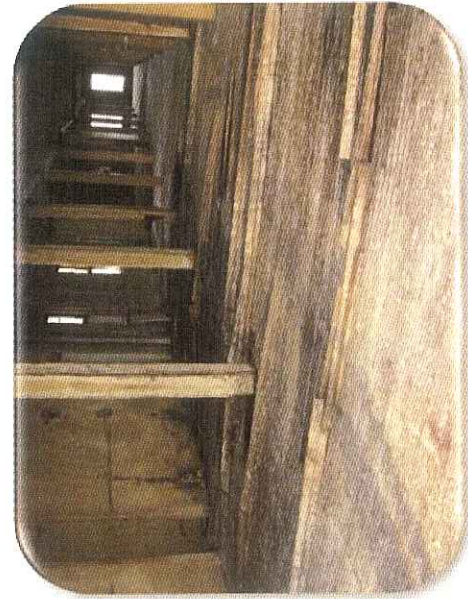


Photo 35



Photo 36

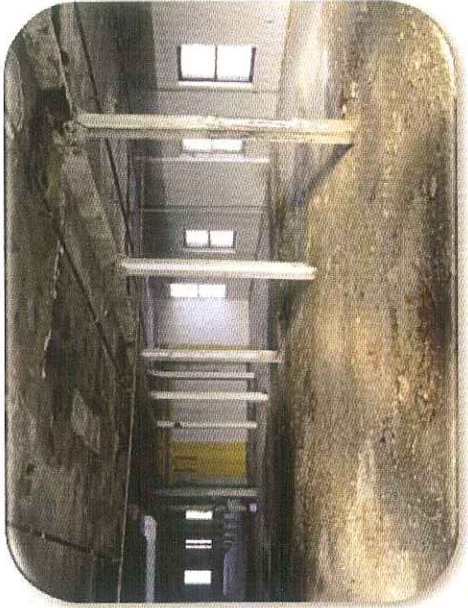


Photo 37

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STRUCTURAL REPORT



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42

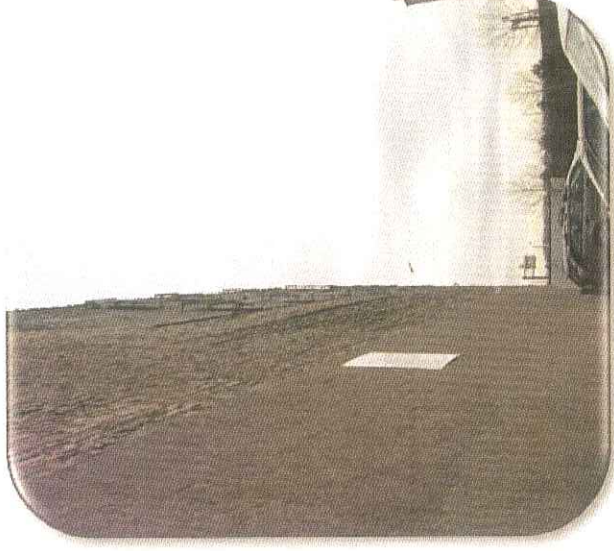


Photo 43

E-Comm Square Building Assessment

STRUCTURAL REPORT

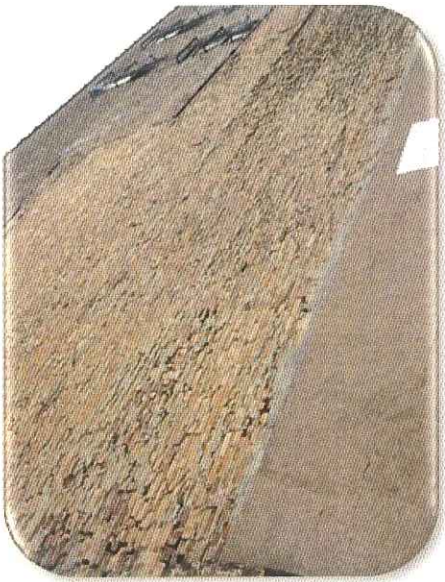


Photo 44



Photo 45

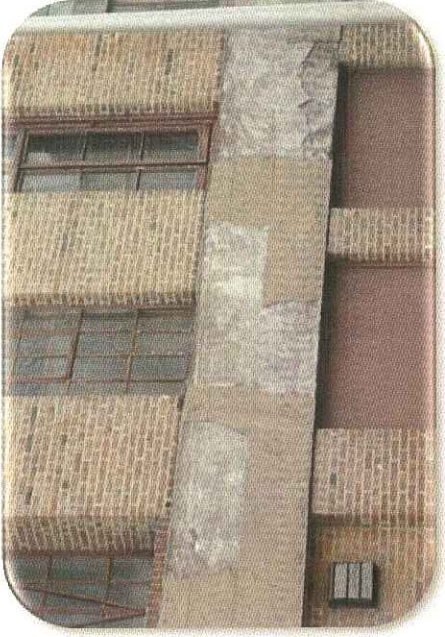


Photo 46

E-Comm Square Building Assessment

ELECTRICAL REPORT

➤ BUILDING NO. 2

This was a visual review only. No load calculations or equipment testing was undertaken.

Electrical Distribution System

The electrical service to the building is underground. The building is equipped with a 1200 amp, 120/208 volt, three-phase, four-wire Westinghouse, switch/fuse type service rated switchboard in the basement of the building (See Photograph 1). The capacity was determined by the rating of the main disconnect switch of the switchboard. The main service switchboard in the basement, though somewhat dated (1985) it appears to be in good working condition. The interior of the switchboard was not observed due to exposure to potentially dangerous arc flash hazards. The existing electrical power infrastructure appears adequate to meet the building's existing power needs. We recommend when replacement parts become scarce, the older distribution components be replaced with modern equipment for ease of repair or modification. Due to the installation of a control system panel, the main service disconnect switch of the switchboard does not have the code required working clearance.

The Westinghouse panelboards in the individual tenant space electrical closets appears to be in reasonably good condition. The majority of branch circuit panelboards are rated 225 amps with between 30 to 42 single pole, 20 amp circuit breakers serving lighting, general receptacles and small miscellaneous mechanical loads. Each tenant space is separately metered (See Photograph 2). Common area loads are served from house panels which are metered separately. Large mechanical equipment is served at 208 volt, 3 phase, while others are served at 208 volts, single phase. Power is distributed using metal clad wiring method. All wiring conductors are copper with thermoplastic insulation. Conduits that were visible were either galvanized rigid steel or galvanized electrical metallic tubes (EMT) (See Photograph 3). Most branch circuits, throughout the building, are installed concealed and through surface mounted raceway. Access to panelboards on the 4th floor closet, in code violation, are blocked by control equipment (See Photograph 4). The entire power distribution system, which includes the panelboards, disconnect switches, enclosed circuit breakers, and feeders is approximately 25 years old.

There was no visible evidence of damage from short circuits or overloads in the electrical distribution system. The reliability of the system is however dependent on good maintenance. There is no evidence that any kind of preventive maintenance program was in place for this building.

Lack of panic hardware in the basement on the doors to the room with the service switchboard was observed.



Photo 1 Access to Switchboard's Main Disconnect Switch, in violation of N.E.C. code, is blocked by a control cabinet.

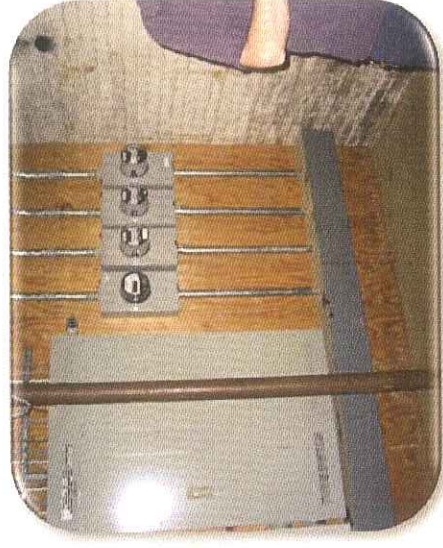


Photo 2 Housekeeping Panelboards and Tenant/Housekeeping Meters

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ELECTRICAL REPORT

Electrical Devices

For the most part, electrical devices (receptacles and switches) appear to be in good shape. In few tenant spaces, receptacles within 6 feet of water are not GFI protected. All inspected devices were of the grounding type and current code compliant.

Fire Alarm System

The fire alarm system is approximately 20 years old and appears to have met the code requirements at the time when it was installed. A Silent Knight Fire System's Model 5207 & Fire alarm annunciator panel model 5230 are located on the front entrance of the building provides supervision of the building's sprinkler system, automatic smoke detection, and manual initiation of alarm conditions from pull stations located at exist doors & stair level locations. The fire alarm system, is interfaced with the elevator for the required elevator recall functions. Manual and automatic alarm conditions and trouble conditions are automatically reported to the City Fire Department. The following deficiency's were observed on the existing fire alarm system:

- + The installation of visual alarm notification appliances (strobe lights) is very limited and not in compliance with the current requirements of NFPA 72 and ADA. For example, the visual alarms located 80" above the floor to the bottom of the lens are required in all corridors, common use spaces and in
- + rooms with more than one occupant. There should be a should be multiple appliances in large rooms and an appliance in all bathrooms, conference rooms, etc.
- + Smoke detectors were not observed in front of the fire alarm and annunciator panels.
- + Heat detector in the elevator machine room were not observed.
- + Duct-mounted smoke detectors in the return ducts of all air handling systems having air flow greater than 2000 cubic feet per minute were not observed.
- + Various tenant occupied areas did not have notification appliances installed.

Recommendations:

This equipment is approaching the end of its normal life expectancy. For a major building renovation project, it is recommended that the fire alarm system be replaced with an addressable intelligent fire alarm system, including alarm initiation devices, and notification appliances to meet current codes. Until a new system can be installed, we recommend that the existing system be tested, including all initiating devices, notification appliances, etc. to verify proper operation and in particular test the notification appliances to insure that the system is audible throughout the building.



Photo 3. Mostly two panelboards were observed in each tenant closet. Closets are, however being used as a storage in violation of National Electrical Code.

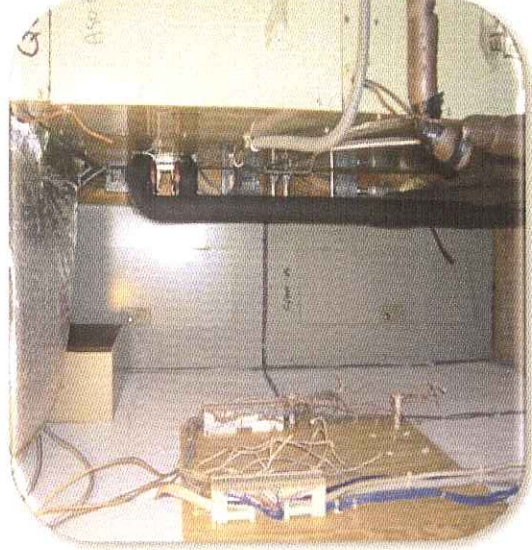


Photo 4. Electrical/Mechanical Equipment on 4th Floor -- HVAC equipment, in code violation, is blocking access to the panelboard.

Lighting System

The majority of the building lighting is comprised of various fluorescent fixtures with mixed used use of T-12 and T-8 lamps.

Exit Lighting

The majority of exit light fixtures are self-contained units that are powered from normal power circuits. Each fixture has an integral battery backup unit to illuminate the fixture when normal power is lost. Although most of the fixtures observed were operational, many of the exit light fixtures appear to be at least 20/25 years old and are showing normal signs of age. There are fixtures illuminated with compact fluorescent lamps and few others with more energy efficient, light emitting diodes (LED). Exit light fixtures are installed at corridors, stairways and tenant exit door locations. Coverage is good although some areas have been renovated, and as a result, areas have been created that either obstruct the view of exit signs or do not have exit signs installed.

Recommendation:

Remove and replace and/or upgrade the exit lighting system to suit present and future occupant needs. Provide additional code compliant fixtures to identify all paths of egress. Upgrade the branch circuitry as required to insure that all exit light fixtures are powered by circuits that are dedicated to only exit light fixtures.

Lighting Controls

Control operation of the general lighting in most areas of the building, including corridors, lobbies, offices, staff areas, Basement, is controlled through manually operated toggle switches. Other areas, such as toilets, are automatically controlled via occupancy sensors. Current energy code calls for occupancy sensors to reduce the electrical load during non occupied periods.

Emergency Lighting

Emergency egress light fixtures are installed on walls at various locations throughout the building. These battery backup units are installed to provide the required emergency illumination when normal power is lost. Although most of the fixtures observed are operational, many of the emergency light fixtures appear to be at least 20 years old and showing normal signs of age and a small number of units failed during testing.

Recommendation:

Upgrade the emergency lighting fixtures to suit present and future occupant needs. Provide additional code compliant fixtures to provide emergency lighting along all paths of egress.

Wiring Methods

The majority of the electrical feeders are original and are approximately 25 years old. Depending of the load profile and life span of cables, as the cable jackets and insulation materials age they become brittle and may crack. Therefore, conducting insulation resistance test of all cables in the building is essential part of effective preventive maintenance. The branch circuit wiring method appears to be metal clad (MC) cables acceptable for this kind of structure.

Grounding Systems

The grounding system in the building appeared to be in good condition. General purpose receptacles were the grounding type. All inspected equipment had an equipment grounding conductor. The building's electrical service grounded conductor was concealed and was not inspected.

Firestopping

Pathways for the power and data wiring, in the electrical closets on each floor, do not have fire stop seals.

E-Comm Square Building Assessment

ELECTRICAL REPORT

➤ BUILDING NO. 3

This was a visual review only. No load calculations or equipment testing was undertaken.

Electrical Distribution System

The electrical service to the building is underground. The building is equipped with a 1600 amp, 120/208 volt, three-phase, four-wire switch/fuse type Siemens service rated switchboard in the basement of the building (See Photograph 1). The capacity was determined by the rating of the main disconnect switch of the switchboard. The main service switchboard in the basement appears to be in good working condition. The interior of the switchboard was not observed due to exposure to potentially dangerous arc flash hazards. The existing electrical power infrastructure appears to be adequate to meet the building's existing power needs.

The Siemens panelboards in electrical closets in the individual tenant spaces are in reasonably good condition.

Typically, branch circuit panelboards are located on each floor. The majority of all the branch circuit panelboards are rated 225 amps with between 36 & 24 single pole, 20 amp circuit breakers serving lighting, general receptacles and small miscellaneous mechanical loads (See Photograph 2). Large mechanical equipment are served at 208 volt, 3 phase, while others are served at 208 volts, single phase. Power is distributed using metal clad wiring method. All wiring conductors are copper with thermoplastic insulation. Conduits that were visible were either galvanized rigid steel or galvanized electrical metallic tubes (EMT). Most branch circuits, throughout the building, are installed concealed and through surface mounted raceway. The entire power distribution system, which includes the panelboards, disconnect switches, enclosed circuit breakers, feeders are approximately 25 years old. Each floor and/or tenant space is separately metered. Building common services are on separate house panelboards and metering.

There was no visible evidence of damage from short circuits or overloads in the electrical distribution system. The reliability of the system is however dependent on good maintenance. There is no evidence that any kind of preventive maintenance program was in place for this building.

Lack of panic hardware in the basement on the doors to the room with the service switchboard was observed.

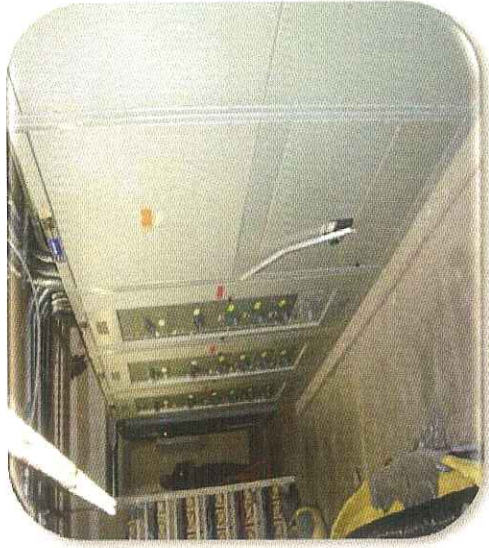


Photo 1 Main 1600A, 208/120V Switchboard Distributes Load to 16 Tenants. Electrical Room Have no panic hardware



Photo 2 Double Tub Electric Panelboards Provided in the Electrical Closet in Each Tenant Space. However, in Violation N.E.C code, Closets are Also Being Used as Storage Space.

E-Comm Square Building Assessment

ELECTRICAL REPORT

Electrical Devices

For the most part, electrical wiring devices (receptacles and switches) appear to be in good condition. In most of the locations receptacles within 6 feet of water had GFI protection. All inspected devices were of the grounding type.

Fire Alarm System

The fire alarm system is approximately 20 years old and appears to have met the code requirements at the time when it was installed. A 8 zone, fire alarm control panel (FACP) in the main lobby (Fire Lite Alarm Inc. SENSISCAN 1000), provides supervision of the building's sprinkler system, automatic smoke detection, and manual initiation of alarm conditions from pull stations located at exist doors at stair level locations (See Photograph 3). The fire alarm system, is interfaced with the elevator for the required elevator recall functions. Manual and automatic alarm conditions and trouble conditions are automatically reported to the City Fire Department. The following deficiency's were observed on the existing fire alarm system:

- + The installation of visual alarm notification appliances (strobe lights) is very limited and not in compliance with the current requirements of NFPA 72 and ADA. For example, the visual alarms located 80" above the floor to the bottom of the lens are required in all corridors, common use spaces and in rooms more with than one occupant. There should be a should be multiple appliances in large rooms and an appliance in all bathrooms, conference rooms, etc.
- + Smoke detectors were not observed in front of the fire alarm and annunciator panels.
- + Heat detector in the elevator machine room were not observed.
- + Duct-mounted smoke detectors in the return ducts of all air handling systems having air flow greater than 2000 cubic feet per minute were not observed.
- + Various tenant occupied areas did not have notification appliances installed.

Recommendations:

This equipment is approaching the end of its normal life expectancy. For a major building renovation project, it is recommended that the fire alarm system be replaced with an addressable intelligent fire alarm system, including alarm initiation devices and notification appliances to meet current codes. Until a new system can be installed, we recommend that the existing system be tested, including all initiating devices, notification appliances, etc. to verify proper operation and in particular test the notification appliance to insure that the system is audible throughout the building.

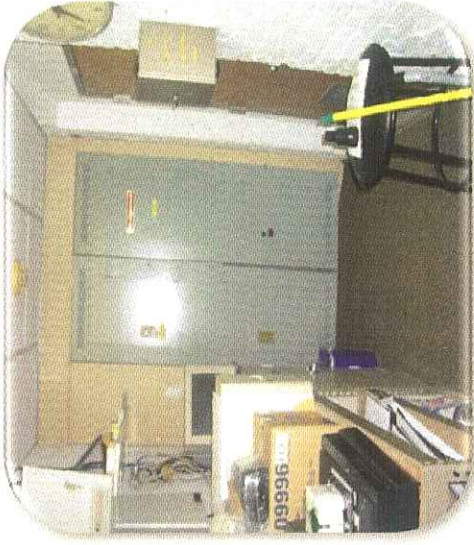


Photo 3 Sprinklers and Smoke Detectors Observed in many Parts of Tenant Spaces with no update on approved fire alarm system per city's fire department requirements.



Photo 4 Main 8-Zone Fire Alarm Panel Located in the Main Lobby at Ground Floor.

Lighting System

The majority of the building lighting is comprised of various fluorescent fixtures with mixed used use of T-12 and T-8 lamps.

Exit Lighting

The majority of exit light fixtures are self-contained units that are powered from normal power circuits. Each fixture has an integral battery backup unit to illuminate the fixture when normal power is lost. Although most of the fixtures observed were operational, many of the exit light fixtures appear to be at least 20 years old and showing normal signs of age. There are fixtures illuminated with compact fluorescent lamps and other fixtures that are illuminated with more energy efficient, light emitting diodes (LED). Exit light fixtures are installed at corridors, stairways and tenant exit door locations. Coverage is adequate although some areas have been renovated, and as a result, areas have been created that either obstruct the view of exit signs or do not have exit signs installed.

Recommendation:

Upgrade the exit lighting system to suit present and future occupant needs. Provide additional code compliant fixtures to identify all paths of egress.

Lighting Controls

Control operation of the general lighting in most areas of the building, including corridors, lobbies, offices, staff areas, Basement, is controlled through manually operated toggle switches. Other areas, such as toilets, are automatically controlled via occupancy sensors. Current energy code calls for occupancy sensors to reduce the electrical load during non occupied periods.

Emergency Lighting

Emergency egress light fixtures are installed on walls at various locations throughout the building. These battery backup units are installed to provide the required emergency illumination when normal power is lost. Although most of the fixtures observed are operational, many of the emergency light fixtures appear to be at least 20 years old and showing normal signs of age and a small number of units failed during testing.

Recommendation:

Upgrade the emergency lighting fixtures to suit present and future occupant needs. Provide additional code compliant fixtures to provide emergency lighting along all paths of egress.

E-Comm Square Building Assessment

ELECTRICAL REPORT

Wiring Methods

The majority of the electrical feeders are original and are approximately 25 years old. Depending of the load profile and life span of cables, as the cable jackets and insulation materials age they become brittle and may crack. Therefore, conducting insulation resistance test of all cables in the building is essential part of effective preventive maintenance. The branch circuit wiring method appears to be metal clad (MC) cables acceptable for this kind of structure.

Grounding Systems

The grounding system in the building appeared to be in good condition. General purpose receptacles were the grounding type. All inspected equipment had an equipment grounding conductor. The building's electrical service grounded conductor was concealed and was not inspected.

Firestopping

Pathways for the power and data wiring, in the electrical closets on each floor, do not have fire stops

E-Comm Square Building Assessment

ELECTRICAL REPORT

➤ BUILDING NO. 4

This was a visual review only. No load calculations or equipment testing was undertaken.

Electrical Distribution System

The electrical service to the building is underground. The building is equipped with a 1200 amp, 120/208 volt, three-phase, four-wire switch/fuse type Federal Pacific service rated switchboard which is located in the basement of the building (See Photograph 1). The capacity of the switchboard was determined by the rating of the main disconnect switch. Main service switchboard in the basement, though somewhat dated appears to be in good working condition except slight rusting at the base of the switchboard was observed. The interior of the switchboard was not observed due to exposure to potentially dangerous arc flash hazards. The existing electrical power infrastructure appears adequate to meet the building's existing power needs. We recommend when replacement parts become scarce, the older distribution components be replaced with modern equipment for ease of repair or modification.

The electrical systems in the individual tenant spaces are in reasonably good condition. Typically, branch circuit panelboards are located on each floor and metered separately from the basement (See Photograph 2).

The majority of all the branch circuit panelboards are rated 225 amps with between 30 to 42 single pole, 20 amp circuit breakers serving lighting, general receptacles and small miscellaneous mechanical loads (See Photograph 3). Common area loads are distributed thru 400 amp house panels and metered separately. Large mechanical equipment is served at 208 volt, 3 phase, while others are served at 208 volts, single phase. Power is distributed using metal clad wiring method. All wiring conductors are copper with thermoplastic insulation. Conduits that were visible were either galvanized rigid steel or galvanized electrical metallic tubes (EMT). Most branch circuits, throughout the building, are installed concealed and through surface mounted raceways.

The entire power distribution system, which includes the panelboards, disconnect switches, enclosed circuit breakers, & feeders is approximately 25 years old.

There was no visible evidence of damage from short circuits or overloads in the electrical distribution system. The reliability of the system is however dependent on good maintenance. There is no evidence that any kind of preventive maintenance program was in place for this building.

Lack of panic hardware in the basement on the doors to the room with the service switchboard was observed.

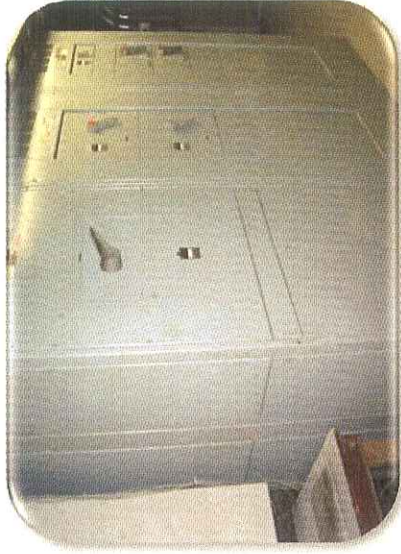


Photo 1 Federal Pacific Main 1200A, 208/120V Service Switchboard in Basement.



Photo 2 Housekeeping Panelboards and Tenant/Housekeeping Meters Located in the Basement.

E-Comm Square Building Assessment

ELECTRICAL REPORT

Electrical Devices

For the most part, electrical wiring/devices (receptacles and switches) appear to be in good condition. In most of the locations receptacles within 6 feet of water had GFI protection. All inspected devices were of the grounding type.

Fire Alarm System

The fire alarm system is approximately 20 years old and appears to have met the code requirements at the time when it was installed (See Photograph 4). A 6 zone, fire alarm control panel (FACP) in the main lobby (System 3 Universal Alarm Control by Sanders Fire & Safety), provides supervision of the building's sprinkler system, automatic smoke detection, and manual initiation of alarm conditions from pull stations located at exist doors at stair level locations. The fire alarm system, is interfaced with the elevator for the required elevator recall functions. Manual and automatic alarm conditions and trouble conditions are automatically reported to the City Fire Department thru ADEMCO 5110 XM 5Zone DACT. The following deficiency's were observed on the existing fire alarm system:

- + The installation of visual alarm notification appliances (strobe lights) is very limited and not in compliance with the current requirements of NFPA 72 and ADA. For example, the visual alarms located 80" above the floor to the bottom of the lens are required in all corridors, common use spaces and in rooms with more than one occupant. There should be a should be multiple appliances in large rooms and an appliance in all bathrooms, conference rooms, etc.
- + Smoke detectors were not observed in front of the fire alarm and annunciator panels.
- + Heat detector in the elevator machine room were not observed.
- + Duct-mounted smoke detectors in the return ducts of all air handling systems having air flow greater than 2000 cubic feet per minute were not observed.
- + Various tenant occupied areas did not have notification appliances installed.

Recommendations:

This equipment is approaching the end of its normal life expectancy. For a major building renovation project, it is recommended that the fire alarm system be replaced with a new addressable intelligent fire alarm system, including alarm initiation devices and notification appliances to meet current codes. Until a new system can be installed, we recommend that the existing system be tested, including all initiating devices, notification appliances, etc. to verify proper operation and in particular test the notification appliances to insure that the system is audible throughout the building.

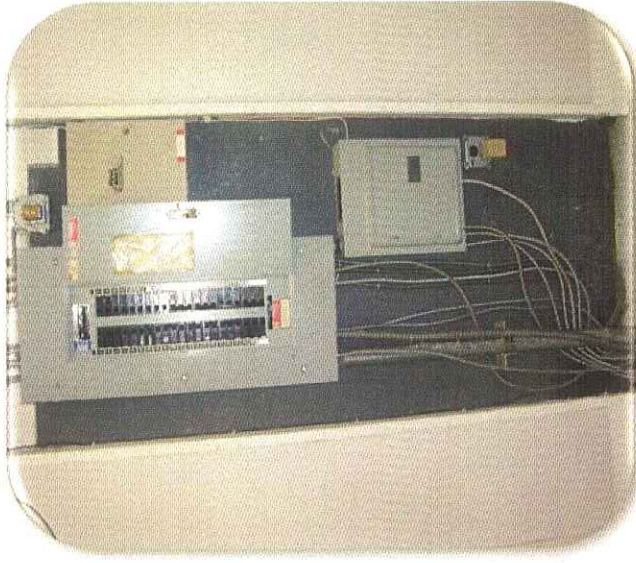


Photo 3. Electrical Closet with two Panel-boards on Each Floor

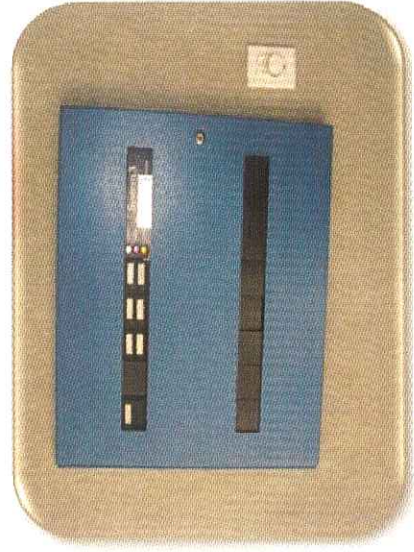


Photo 4 6-Zone Fire Alarm Panel Located in the Main Lobby of building.

Fire Alarm System

The majority of the building lighting is comprised of various fluorescent fixtures with mixed use of T-12 and T-8 lamps.

Exit Lighting

The majority of exit light fixtures are self-contained units that are powered from normal power circuits. Each fixture has an integral battery backup unit to illuminate the fixture when normal power is lost. Although most of the fixtures observed were operational, many of the exit light fixtures appear to be at least 20 years old, and are showing normal signs of age. There are fixtures illuminated with compact fluorescent lamps and other fixtures that are illuminated with more energy efficient, light emitting diodes (LED). Exit light fixtures are installed at corridors, stairways and tenant exit door locations. Coverage is good although some areas have been renovated, and as a result, areas have been created that either obstruct the view of exit signs or do not have exit signs installed.

Recommendation:

Upgrade the exit lighting system to suit present and future occupant needs. Provide additional code compliant fixtures to identify all paths of egress.

Lighting Controls

Control operation of the general lighting in most areas of the building, including corridors, lobbies, offices, staff areas, Basement, is controlled through manually operated toggle switches. Other areas, such as toilets, are automatically controlled via occupancy sensors. Current energy code calls for occupancy sensors to reduce the electrical load during non occupied periods.

Emergency Lighting

Emergency egress light fixtures are installed on walls at various locations throughout the building. These battery backup units are installed to provide the required emergency illumination when normal power is lost. Although most of the fixtures observed are operational, many of the emergency light fixtures appear to be at least 20 years old and showing normal signs of age, as small number of units failed during testing.

Recommendation:

Upgrade the emergency lighting fixtures to suit present and future occupant needs. Provide additional code compliant fixtures to provide emergency lighting along all paths of egress. Where required, modify existing circuitry to insure that the local lighting circuits power emergency light fixtures.

E-Comm Square Building Assessment

ELECTRICAL REPORT

Wiring Methods

The majority of the feeders are original and approximately 25 years old. Depending of the load profile and life span of cables, as the cable jackets and insulation materials age they become brittle and may crack. Therefore, conducting insulation resistance test of all cables in the building is essential part of effective preventive maintenance. The branch circuit wiring method appears to be metal clad (MC) cables acceptable for this kind of structure.

Grounding Systems

The grounding system in the building appeared to be in good condition. General purpose receptacles were the grounding type. All inspected equipment had an equipment grounding conductor. The building's electrical service ground conductor was concealed and was not inspected.

Firestopping

Pathways for the power and data wiring, in the electrical closets on each floor, do not have fire stop seals.

➤ BUILDING NO. 2

Code Deficiencies

- + No code issues with the HVAC system.
- + HVAC system consists of Air handling units in closets and ceilings in various locations with heat pumps on the roof. The windows in the building are operable. The heating is supplemented by electric baseboard heating in some locations. Each air handler is a zone and is controlled by a programmable thermostat somewhere in that zone. There is no central control system in the building for HVAC.

➤ BUILDING NO. 3

Code Deficiencies

- + On the third and fourth floors, there is a gas fired air handler and domestic water heater in a mechanical closet. There are no carbon monoxide detectors in the closets
- + HVAC system consists of Air handling units in closets and ceilings in various locations with heat pumps on the roof. The windows in the building are operable. The heating is supplemented by electric baseboard heating in some locations. Each air handler is a zone and is controlled by a programmable thermostat somewhere in that zone. There is no central control system in the building for HVAC.

➤ BUILDING NO. 4

Code Deficiencies

- + No code issues with the HVAC system in this building.
- + HVAC system consists of Air handling units in closets and ceilings in various locations with heat pumps on the roof. The windows in the building are operable. The heating is supplemented by electric baseboard heating in some locations. Each air handler is a zone and is controlled by a programmable thermostat somewhere in that zone. There is no central control system in the building for HVAC.