ARSEE ENGINEERS, INC.

CLIENT ORIENTED — BY DESIGN

IU Health Facility Assessment
Bloomington, Indiana

for

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Brian Crist
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RE: IU Health Facility Assessment
Bloomington, Indiana

Dear Brian:

EXECUTIVE SUMMARY

We have completed our assessment of portions of the Bloomington Hospital. This work has investigated the feasibility of keeping and maintaining the Kohr Building (1947) and the Parking Garage (1989) when the remainder of the facility is demolished.

Both of the structures can be saved and continue to serve the citizens of Bloomington for years to come. Not surprisingly, the Parking Garage is easier and less expensive in the short term. Intermediate expenses include changing it over to more energy efficient LED lighting and normal maintenance costs for a parking garage. The total projected cost to keep and maintain the existing garage serviceable over the next ten years is $1.3M. For comparison, to demolish it and construct a new garage of the same size would cost in the range $9M.

The Kohr Building can also be saved and repurposed into a number of usable functions. Virtually all M/E/P services are currently tied back into the main hospital. New power, domestic water, communications, fire services and fire alarm control panels should be installed prior to the demolition. Areas which directly abut the northwest corner of the Kohr Building should be removed "by hand" to separate the Kohr Building from what is to be demolished by more conventional means. Removal of the adjacent structure will expose one-third of the building façade to the weather. Reconstruction to restore this to match the original limestone veneer/window system throughout the rest of the building is projected to cost up to $500,000. The total anticipated cost to keep the Kohr Building, provide all new M/E/P systems, install a new roof and maintain the envelope could range as high as $1.1M. This can be compared with an anticipated cost of $6M to construct a new building of similar size and appearance.

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BACKGROUND

Bloomington Hospital was founded in 1909. Like many older hospital facilities, it has evolved over time with multiple additions and modifications made to it through the years. The Kohr Building is reported to have originally been constructed in 1947 and is the oldest remaining structure. Forming the southeast corner of the overall hospital complex a little over one half of its original façade remains exposed. Its mechanical/electrical/plumbing/fire suppression systems are all tied integrally back into the main hospital.

The Parking Garage is reported to have been constructed in 1989. Its M/E/P systems also tie back into the main hospital. With the exception of the pedestrian bridge extending off the southwest corner, it is virtually a standalone structure. It has been well maintained and can easily be modified and used for many more decades.

The purpose of this assessment has been to evaluate the feasibility of keeping one or both of these structures as the rest of the hospital complex is abandoned and demolished. ARSEE Engineers has evaluated the structural and exterior cladding/envelope of the two structures. The Engineering Collaborative (TEC) has evaluated the M/E/P and fire suppression aspects. Their report is included as an Appendix.

METHODOLOGY

The hospital staff researched their archives and found none of the original drawings for either the Kohr Building or the Parking Garage. Schematic floor plans showing room layouts of the Kohr Building were the best that were available.

Thus, our portion of the assessment of the Kohr Building has been solely of a visual nature. We have visited the site multiple times. We have walked the interior of the building, observed conditions from ground and roof levels and photographed typical conditions. No destructive testing or sampling techniques were employed.

Assessment of the parking garage was also generally of a visual nature. We walked each level noting visible differences and used binoculars to observe the façade spandrel panels and stair/elevator tower masonry. In addition, we used stainless steel chains to "drag" sections of the concrete slabs to look for "hidden" delaminations. No destructive testing or sampling techniques were employed.

The Engineering Collaborative (TEC) has assessed the M/E/P and fire suppression systems for the two buildings. Their methods are described in their report included as an Appendix.

Finally, we have asked various contractors who work in the Bloomington area to help develop cost opinions for the various repairs/work we have proposed. These have included masonry and concrete restoration, roofing and general contractors.

OBSERVATIONS

Kohr Building

The Kohr Building is a four story structure including a full basement level. The original building is T-shaped in plan view with stairwells on the north and south ends of the building. A more recent stairwell/elevator shaft was constructed adjacent to the west face of the building. This renovation included additional structure abutting the northwest portion of the building. See Photos 1 through 12 and Figures 1 and 2.

Building Envelope

The exterior façade of the Kohr Building is composed of limestone veneer backed with a combination of clay tile and common brick to which metal lath and plaster was applied. Portions of the original masonry façade are still visible within the extent of the adjacent addition. These can be seen in the basement and at the entrance at the north end of the building. See Photos 11 and 12.

The main roof of the Kohr Building is covered with a ballasted EPDM membrane. It is reported to be at least 30 years old, and therefore, is considerably past its anticipated service life. The membrane turns up and over the back side of the limestone coping and is secured with a stainless steel termination bar with drive pins. While hospital staff report there are no known active leaks, there is ample evidence that problems can be anticipated in the foreseeable future. See Photos 13 through 18. We recommend all of the existing flat roofs be removed down to the structural deck and a new adhered EPDM membrane installed in its place when the building is repurposed.

Each of the flat roofs is sloped to drain to a series of sheet metal gutters and downspouts as shown in Photos 19 through 22. Some of these elements have been replaced with cheaper residential style units. Original components are worn and showing their age. These should be replaced with new painted galvanized steel units to conform with the original design intent.

The exterior façade is composed of a mixture of random ashlar and cut limestone veneer. The stone itself is in very good condition for a building of this vintage. The mortar joints are also generally in very good condition as shown in Photos 23 and 24. That being said, there are some minor deficiencies which should be addressed if the building is to be saved and repurposed. Photos 25 through 32 show examples of these. They include cracked and/or eroded mortar, cracks and shards in limestone, loose patching material and organic deposits on portions of the masonry. All of these issues can be easily addressed if the building is to be salvaged.

The majority of the glazing are replacement double hung aluminum frame windows that are reported to be at least 30 years old. They are in reasonably good condition and with proper maintenance can be expected to perform in a reasonable manner for ten years or more. An example of one of the original wood frame windows is still in service in the elevator penthouse. Glass block are found in the north and south stairwells. See Photos 33 through 38.

The main entrance is on the east elevation of the building. A concrete walkway with steps extends down to South Rogers Street. The majority of this walkway will probably be redesigned so we have assumed that only the stairs, landings and limestone cheek walls shown in Photos 39 through 44 will remain part of the salvaged building. The limestone needs to be cleaned and repointed. Other repairs are minimal. The concrete steps are deteriorating due to freeze/thaw damage. We have included repairs to address cracking and spalling and installation of a traffic coating to protect the concrete from further deterioration. Finally, the handrails do not meet code and are generally in poor condition. We have included monies for new stainless steel handrails.

Staff did report evidence of water leaks into the basement along the east elevation of the building. Photos 45 through 48 show that the concrete basement wall was originally coated with a bitumen based waterproofing which has deteriorated badly. Planting beds extend up onto the face of the limestone masonry. As these absorb and retain moisture, they serve as reservoirs for water to migrate through cracks and joints into the building. Re-landscaping and lowering grade will help but may not solve all of the leaks. The most effective way to prevent further leaks is to excavate and expose the wall, install new waterproofing and perimeter drainage and re-landscape. However, without knowing the eventual use of the building/basement this cost may not be justified. We have included a separate line item on the cost estimate so this can be evaluated further.

<u>Structural Framing Systems</u>

Original drawings for the building are not available so all of our comments are based upon a visual examination of the structure to the extent it is visible AND accessible. The basement walls, columns and first floor level are constructed of reinforced concrete as typically shown in Photo 49. The floor structure appears to be a one way flat slab system which is, in turn, supported by conventional beams and girders. Reinforcement sizes and patterns are unknown. Visible deterioration of the concrete is minimal. Cracks and voids are present at some of the buried conduit and around floor penetrations as shown in Photos 50 through 52. Nothing is serious enough to merit repair.

The second and third floors and roof are supported by steel framing and open web bar joists. Looking above the drop ceiling, most of the glue-on ceiling tile and plaster ceilings remain in place. Columns are wrapped with clay tile and plaster for fireproofing. This severely limits the number of areas where the steel framing and floor systems can be observed as shown in Photos 53 through 58. In a few instances, a digital camera could be pushed through holes above the original ceiling and photographs taken. There was nothing unusual nor was any damage/deterioration observed in these areas. Walking through the interior, we saw no evidence of undo settlement or movement of the structure.

In essence, while very little of the structure can be seen – there is nothing to indicate there are any significant problems with it. It certainly should be evaluated further as the interior finishes are removed and the building is repurposed.

Demolition Considerations

In order to keep and repurpose the Kohr Building, one must consider the structure, the façade and the M/E/P systems after the demolition of the remainder of the facility is complete. The structure is the easiest. The original building structure and west stair/elevator shaft were built independently of the remaining facility. They can continue to remain and standalone without additional new structure or foundations being installed.

We are fairly confident that there are structural connections between the various additions and the original structure of the Kohr Building. None are visible without destructive removal of interior/exterior finishes. The important aspect is that prior to demolition, these connections would be exposed as materials adjacent to the original building are carefully removed by hand. The connections could then be "unfastened" and the structure be separated from the Kohr Building without further damage. Photos 11 and 12 show pilasters along the north wall of the Kohr stair tower. These do not appear to be part of the original construction and probably hide supports for the later addition. Similar supports are probably hidden in the interior walls separating the Kohr Building from the remainder of the hospital.

There is evidence of potions of the original limestone façade still being intact. Part of the stone is visible in the basement and along the north wall. Our assessment and recommendation assumes a worst case scenario where all of the original façade has to be reconstructed wherever the Kohr Building is "attached" to or comes in contact with the remainder of the hospital. Our assessment assumes the exterior walls will be reconstructed with new metal steel stud back up, insulation and limestone veneer and windows to match the remainder of the building.

Finally, there is a cost associated with having to remove/demolish the structure adjacent to the Kohr Building without damaging it that does not occur if the entire complex including the Kohr Building is razed. We estimate that "premium" could be as high as $150,000. That cost can be evaluated more accurately once the connections between the addition and Kohr are better understood and the eventual demolition contractor methods of demolition are known.

Parking Garage

Garage Structure

The parking garage is a post-tensioned cast-in-place concrete structure that was constructed in 1989. A combination of precast concrete spandrels and limestone veneer panels complete the façade of the garage. The garage consists of six levels of parking and a partial lower level used for facility storage of equipment and materials. The existing elevations of the garage are shown in Photos 59 through 62.

The overall concrete structure is in fairly good condition given its age. There were, however, some localized areas of the structure that warrant further mentioning. We observed cracks and grease stains at some of the post-tensioned beams as seen in Photos 63 through 68. The cracks in the face of the beams follow the usual parabolic shape of the post-tensioned tendon reinforcing steel that were cast into the beam. Furthermore, the grease stains that have leached from those cracks most likely has come from the grease that is wrapped around the steel reinforcing strand within the tendon sheathing. A post-tensioned tendon is composed of a 7-wire steel strand that is coated in grease and wrapped by a polyethylene sheathing. The sheathing and grease combine to offer corrosion protection for the steel strand. Since the sheathing is continuous across the length of the beam, any damage that has resulted would permit the grease to escape. Such damage can occur from water entering the strand. Subsequently, corrosion of the steel and/or expansion of that trapped water during winter months can result in damage to the sheathing. While there was not an apparent source where water has entered the beam through the concrete slab above, it is more likely that the water has entered the tendons through the end anchor connections at the exterior columns. Gaps between the columns and the façade precast spandrel panels allow water to freely run down the face of the exterior columns. At the time of construction, blockouts in the columns would have allowed the contractor to access the end anchor hardware as part of the stressing operation. If those blockouts were not grouted following stressing or if the existing grout has failed, the tendon hardware would be exposed to moisture infiltration. Since those blockouts are covered by the spandrel panels and unable to be accessed for repairs, we recommend that the gaps between the columns and the spandrels be fully caulked to minimize their exposure to water. If left untreated, continued deterioration of the tendons should be expected and can ultimately cause structural integrity concerns for the affected beams. No additional damage or signs of deterioration were noted in the beams or the columns.

The concrete slab was constructed in two halves in the north-south direction with a pour strip across the middle of the garage. During construction, the contractor stressed the two halves of the slab at the pour strip location. Then the pour strip would have been placed with concrete to connect the two halves. Those pour strips are visible and contain sealant joints along the perimeter and at the control joints parallel to the width. The sealant in those joints is in fair condition as seen in Photo 69. The construction joint between ramps was located at the north turn lane and has been sealed as shown in Photo 70. Maintenance of those sealant joints is critical in minimizing water migration into the slab, which can result in corrosion of the reinforcing steel, including post-tensioned tendon end anchors that are located immediately adjacent to the pour strip joints. Perimeter sealant joints between the slab and the bumper walls on the roof level have generally failed and water has leaked through as evidenced by the staining below on the face of the spandrel panels. Those conditions are illustrated in Photos 71 and 72.

Diagonal cracks on the underside of the post-tensioned slab were visible at select locations as shown in Photo 73. The white staining along the cracks suggests that water has migrated through the slab. We recommend injecting the cracks with a hydrophobic resin that will minimize the water migration.

Few previous concrete slab repairs were observed in the garage. One example of a previous horizontal patch is shown in Photo 74. The patch was found to be unsound and should be replaced. As part of the assessment, we used a chain drag method to acoustically sound the slab in an effort to identify hidden delaminations in the concrete. Representative areas were assessed with this method and the concrete slab was found to have very few hidden delaminations. Scaling, however, was noted in some areas as shown in Photos 75 and 76. Small spalls were noted at the slab-on-grade joints as shown in Photo 77 and should be repaired before they become larger. Cracks in the lower level slab-on-grade should be routed and sealed to prevent water from infill. The trench drain at the garage entrance could only be partially viewed due to the steel road plate covering half of the drain as shown in Photo 78. The road plate was loose and should be temporarily re-anchored until the trench drain can be properly repaired.

The winged expansion joint installed at the transition between the slab-on-grade and the post-tensioned slab was in good condition. The sealant joints along the perimeter of the winged joint, however, have adhesively failed in multiple areas as shown in Photos 79 and 80. That sealant should be replaced to maintain a watertight perimeter along the winged joint. If left untreated, moisture can infiltrate the perimeter and damage the joint and adjacent concrete.

Other slab conditions that were noted include fading of the parking stall striping paint as shown in Photo 81. Also, loose and missing speed bump devices were documented on several of the levels. An example of one of the loose speed bumps is shown in Photo 82. Some of the missing speed bumps were found against the bumper walls behind the parking stalls.

Garage Façade

Limestone veneer panels were installed adjacent to the curtain wall system on the stair towers. Moisture has migrated through some of the panels leaving behind efflorescence staining as shown in Photo 83. The limestone panel directly over the grade level entrance to the northeast stair tower is cracked as shown in Photo 84. The sealant between limestone panels was generally in poor condition as shown in Photos 85 and 86. It has reached its service life and should be replaced.

Non-load bearing precast concrete spandrels were installed on much of the façade. For installation purposes, steel coil lift inserts were cast into the panels. Following installation, the voids remaining above those inserts were typically filled with a grout material. Several of the grout pockets have failed and the skyward facing steel inserts were exposed to water as shown in Photos 87 and 88. When left untreated, water can easily migrate into the precast panels through the open coil insert locations.

Sealant joints throughout the precast panel façade are in very poor condition as shown in Photos 89 through 92. Those joints serve an important purpose in helping manage the water that otherwise can infiltrate the precast steel connections as well as the adjacent post-tensioned garage structure. Premolded polyurethane covers have been installed in skyward facing joints and they too have started to lose adhesion in many locations. Similarly, the sealant around the curtain wall perimeter has failed in multiple locations. One example is shown in Photo 93. The gaskets in the curtain wall between the glazing and the aluminum have dried out and failed in many locations as shown in Photo 94. These should be replaced or removed and the joint wet sealed.

The joint between the connector bridge and the garage has also failed. However, with the proposed removal of the bridge structure, replacement of the joint will not be necessary. The remaining opening in the façade following the removal of the bridge will need to be reworked to create a Building Code compliant guardrail at the affected parking levels. This may be accomplished through several different options which may include installing a steel guardrail system, rework of the existing precast spandrel or replacement of that spandrel that matches the existing. Photos 95 and 96 illustrate the bridge condition at the garage south elevation.

Miscellaneous steel throughout the garage has been coated, but those coatings have started to break down and corrosion of the underlying steel substrate has commenced. Photos 97 and 98 show examples of the corrosion that has formed in areas where the existing coatings have failed.

Southwest Stair/Elevator Tower

Corrosion of steel elements and failed coatings was commonly observed in the southwest stair/elevator tower. Photos 99 and 100 illustrate the roof level enclosure, corrosion of door frames and floor coating condition. Water has been migrating into the stairwell through the gap below the roof level door as seen in Photos 101 and 102. As a result, corrosion of metal surfaces and failed interior wall coatings have occurred. Photos 103 and 104 show the corrosion damage observed on several of the hollow metal doors and frames. Corrosion of the metal stair pan risers and supporting elements was also noted as seen in Photos 105 and 106. A door sweep should be installed on each of the doors accessing the stairwell to minimize moisture infiltration.
The floor coating applied to the landings and treads has failed as seen in Photo 107. Similarly, water infiltration in the stairwell has caused the wall coatings to peel and bubble in multiple areas as shown in Photo 108. Garage stairwells that do not have controlled fan systems tend to have higher humidity conditions. An increase in air movement and better control of thermal conditions within the tower can help minimize the amount of ambient moisture present. A reduction in relative humidity would be beneficial for all the coated surfaces.

The red paint on the stair handrails and guardrails was generally in fair condition compared to the other coatings throughout the stairwell. Few areas where the coating has started to break down on the handrails were observed and is shown in Photo 109. We also noted door handles on the hollow metal man doors that were damaged and should be replaced.

The stair/elevator tower structure is isolated from the garage structure thereby creating an expansion joint. An expansion joint cover has been installed on the roof level and on lower levels only where pedestrians cross from the garage into the tower. All other locations remain open as shown in Photo 110. We suggest that an expansion joint be installed at all open locations to better manage the water on the slab by closing the open gap. The existing expansion joint covers that have failed in localized areas should also be replaced.

Northeast Stair Tower

Much like the southwest stair/elevator tower, similar conditions were observed in the northeast stair tower. The tower is a standalone structure with an expansion joint between it and garage structure. The existing expansion joints have failed in some locations and should be replaced. Corrosion of metal surfaces and failed coatings were numerous, including coating failure on the exterior of the tower as shown in Photo 111.

Water migration beneath the roof level door has led to failed coatings and corrosion of the metal pan stair structure below as shown in Photos 112 through 114. Damage associated with the water infiltration from the roof level extended down to Level 2 as shown in Photos 115 and 116. Below Level 2, the corrosion and coating damage lessened. The blue coating on the stair pans and handrails in those areas was generally in fair condition. Corrosion on the undersides of the handrails was observed as shown in Photo 117, which has likely resulted from improper surface preparation.

Corrosion of the door frame bases, much like the southwest tower, was observed. The grade level entrance frame as shown in Photo 118 has split as a result of frozen water. That frame should be replaced and the others throughout the stair should be cleaned and coated to protect from further corrosion damage.

RECOMMENDATIONS

Kohr Building

Recommended repairs are broken into two time periods. Immediate repairs must be made prior to or just after the remainder of the hospital is demolished. They are necessary to continue M/E/P services and to enclose the interior and prevent moisture from causing further deterioration of the building. Repairs in the two to three year range should be performed as the building is repurposed. These could logically be included in an overall GC contract to renovate the building.

<u>Immediate – $500,000 to $650,000 (See Note A below)</u>

- Reconstruct the façade in the northwest portion of the building where it abuts the various additions. Appearance to be limestone and window systems to match the remainder of the building.

  $500,000

- Note A – Potential premium to demolition contract to keep the Kohr Building.

  $150,000

<u>2-3 Years – $235,000 to $485,000 (See Note B below)</u>

- Remove existing roofing, flashings and insulation down to structural decking on all of the flat roofs. Install new insulation and adhered EPDM roofing and flashings.

  $120,000

- Remove and replace sheet metal collector heads, gutters and downspouts. Install new leaders and storm drainage on the northwest portion of the building.

  $20,000

- Spot repairs to the exposed limestone façade and general cleaning. Replacement of exterior sealant joints.

  $75,000

- Clean and repair limestone cheek walls. Repair concrete steps and landings and install traffic coating. Remove and replace handrails with new stainless steel handrails.

  $20,000

- Note B – Potentially excavate and expose the basement wall along the east elevation and install new waterproofing and perimeter drain tile to address water leaks into the basement.

  $250,000

Parking Garage

The recommended repairs have been broken down into three time periods. The proposed repairs identify the current needs and assumes the work will be completed as prioritized below. It is important to note that conditions will continue to worsen if work is postponed and costs can be expected to increase exponentially. The total anticipated construction cost in today's dollars is approximately $1.33M over 10 years. Soft costs and reasonable construction contingencies have not been included in the estimates below.

We find the importance of a routine maintenance program to be invaluable in protecting the parking garage structure from the effects of corrosion and other deteriorating conditions. Such a program can address current known issues and also incorporate regular preventative maintenance practices for the future. Those practices can minimize the extent of future repairs and deterioration of the garage structure.

Immediate – $55,000

- Façade/guardrail reconstruction on south elevation following hospital connector bridge removal
- Install sealant at the exterior column-to-spandrel joints to minimize water infiltration at post-tensioned tendon hardware blockouts
- Install door sweeps on all stair tower man doors with access to the garage to minimize moisture infiltration into stair towers

2-3 Years – $820,000

- Concrete repairs including patching, crack injection
- Remove and replace deck sealant joints
- Prepare and install 100% silane and corrosion reducing sealer on all deck surfaces to form a hydrophobic barrier against moisture and deicer penetration into the concrete (need to reapply ever 3-4 years)
- Repair/replace horizontal expansion joints
- Façade repairs
    - Sealant joint replacement
    - Wet seal curtain wall glazing
    - Repair damaged limestone panels
- Stair tower repairs
    - Prepare and paint doors and frames
    - Prepare and paint stair railings and metal structure
    - Prepare and paint interior/exterior stair walls
    - Replace failed floor coating in southwest tower
    - Replace broken door hardware
    - Remove and replace roof membrane system
- General repairs including painting miscellaneous steel elements inside the garage and re-striping the parking stalls/lane markings

5-10 Years – $450,000

- Concrete repairs including patching, crack injection
- Prepare and install 100% silane sealer on all deck surfaces
- Replace failed deck sealant joints
- Repair/replace horizontal expansion joints
- Spot prepare and paint stair railings, metal structure, doors and frames
- Replace failed sealant joints in façade

All of the above costs for the proposed work are in 2019 dollars. These are summarized in Figures 4 and 5 and are intended to be "order of magnitude" level estimates. More accurate estimates can be developed as the scope of work is more fully developed. Soft costs including A/E fees, CM fees, contingencies and bonds have not been included. These could be expected to total 20 to 25% of the projected repair/retrofit costs presented above.

Yours truly,

Frederick A. Herget
Professional Engineer

Daniel M. Calabrese
Professional Engineer

KOHR BUILDING PHOTOGRAPHS

Photo 1 The main elevation faces east.

Photo 2 A stairwell extends off the south elevation.

Photo 3

View from the southwest. The transition from the original Kohr Building to the newer section is shown.

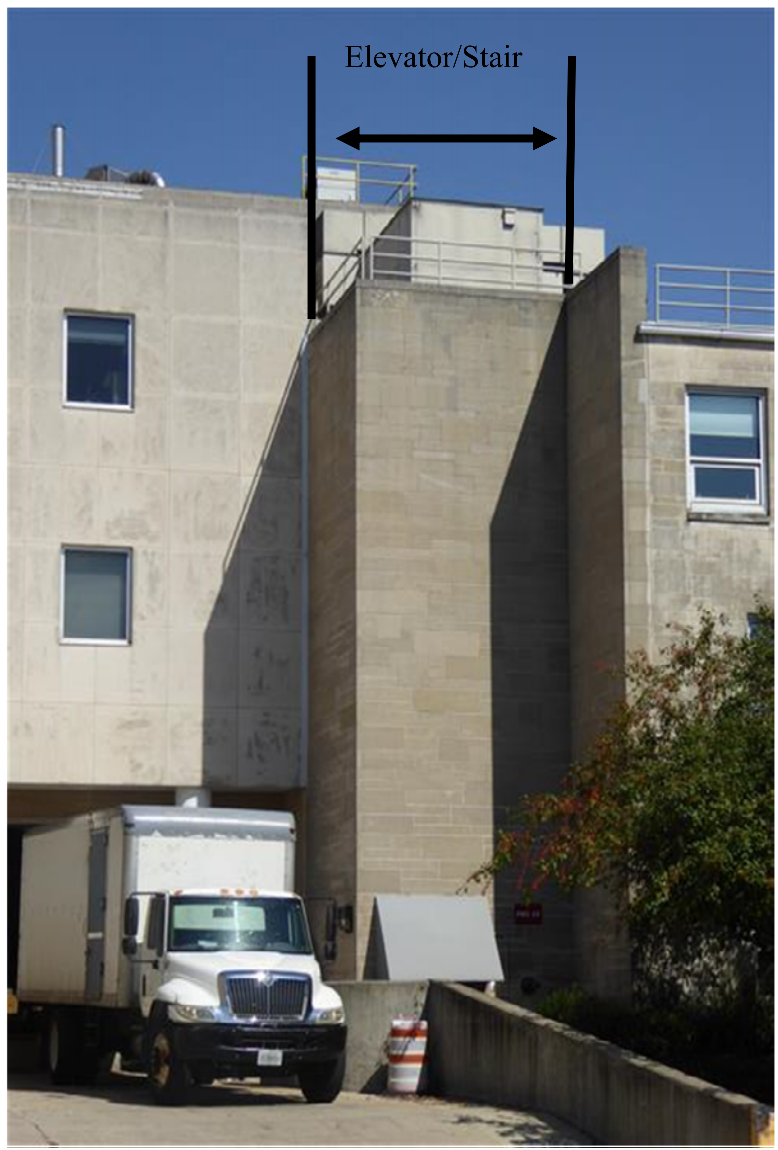

Photo 4

Closer view of the transition to the addition.

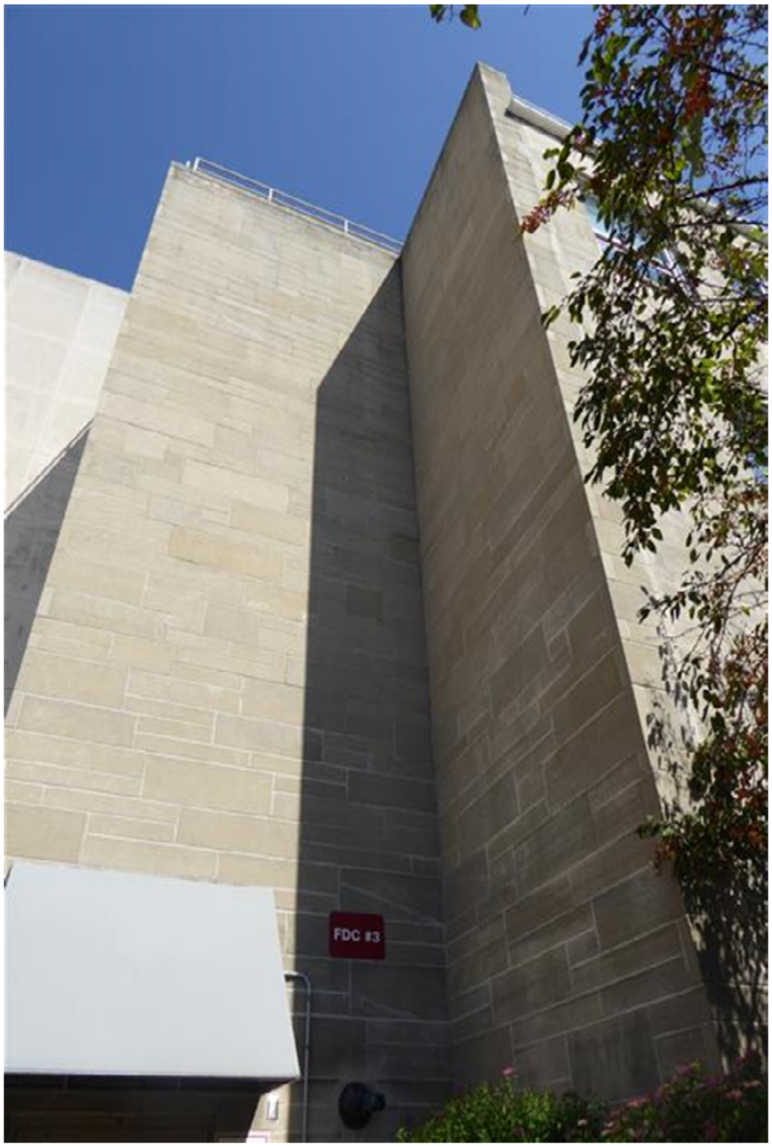

Photo 5

The west stairwell and elevator should be kept in the transition process.

Photo 6

There is a caulk joint between the original building façade and the addition wall.

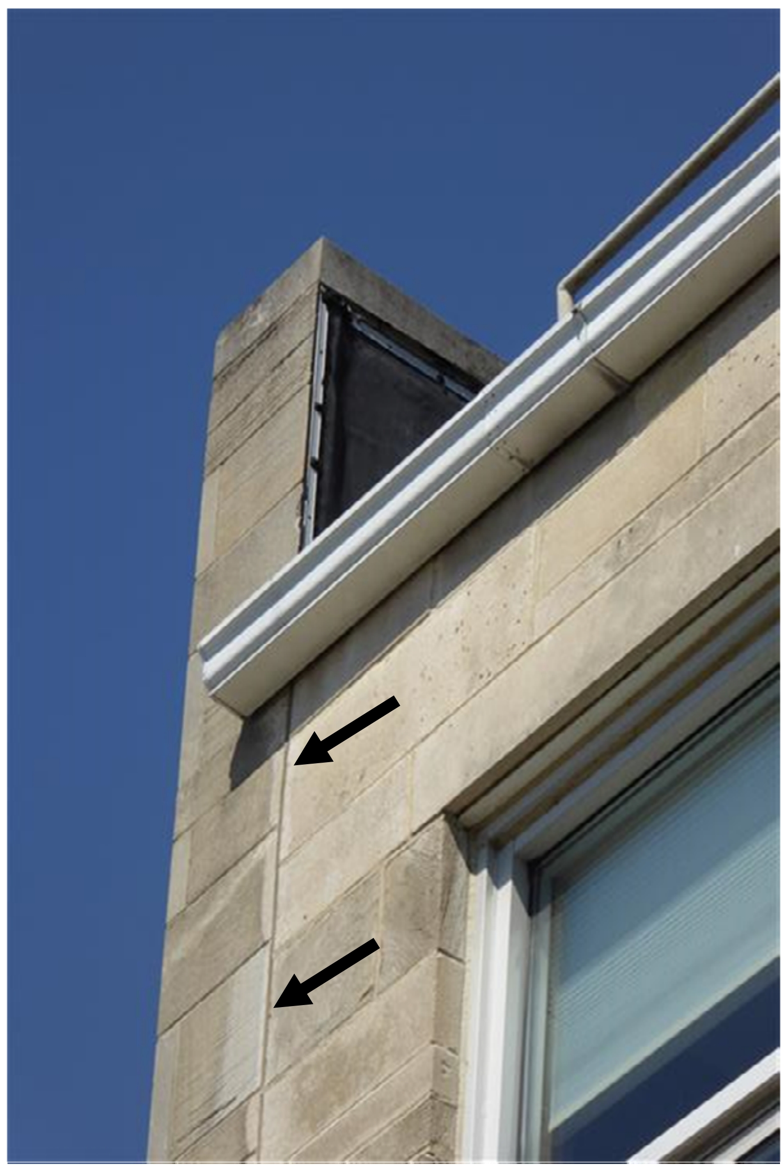

Photo 7 Looking south at the original west wing of the Kohr Building and the top of the stairwell/elevator tower.

Photo 8 North face of the west wing of the Kohr Building. A lower addition extends up onto the 2nd floor windows.

Photo 9

Looking southeast at the infill addition and the original Kohr façades.

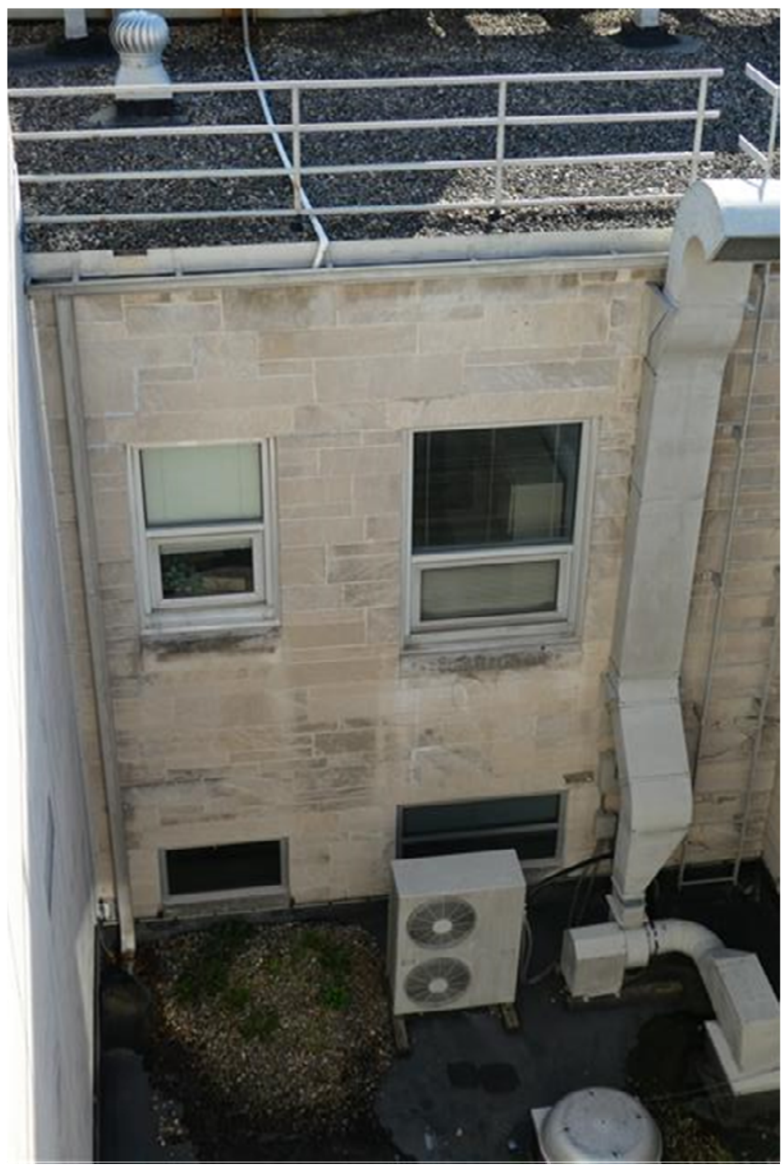

Photo 10

West elevation of the Kohr Building.

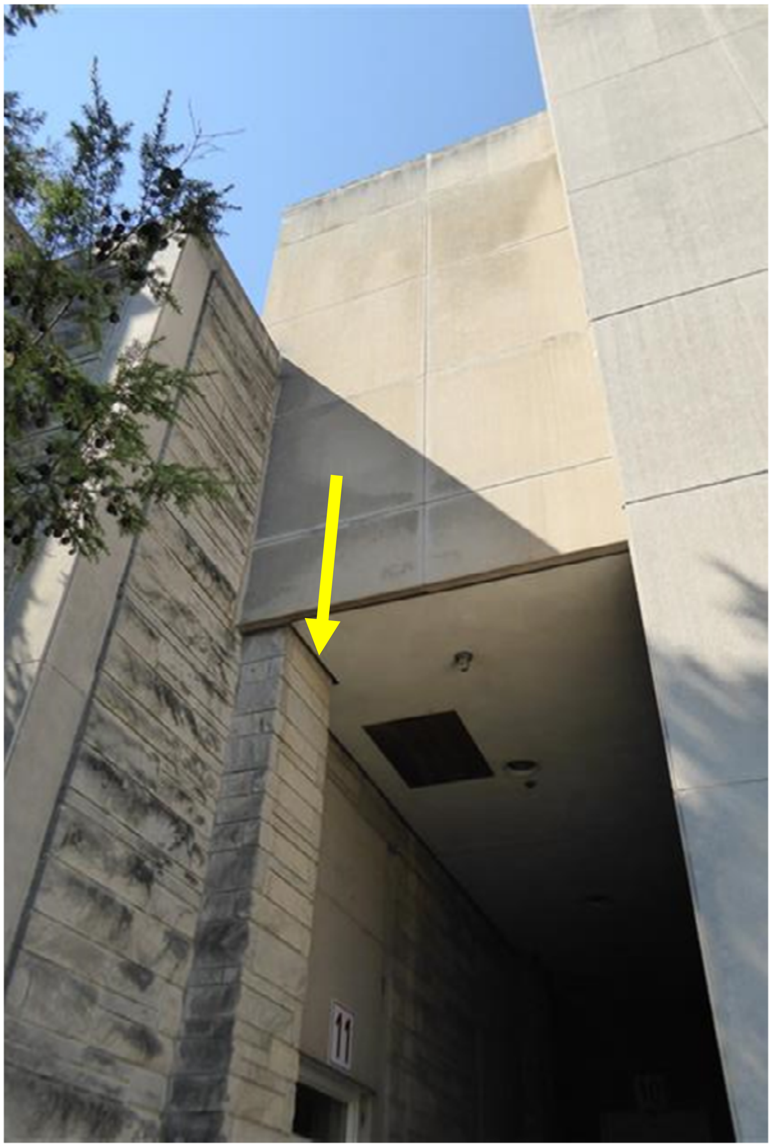

Photo 11

The addition which extends out to the north appears to be supported by something behind this limestone pilaster.

Photo 12

The original limestone is still visible in this north entry as is a second "new" limestone pilaster.

Photo 13 The roof is covered with a ballasted EPDM. The roof is reported to be at least 30 years old.

Photo 14 The membrane turns up over the back and top of the limestone coping and is secured with a termination bar.

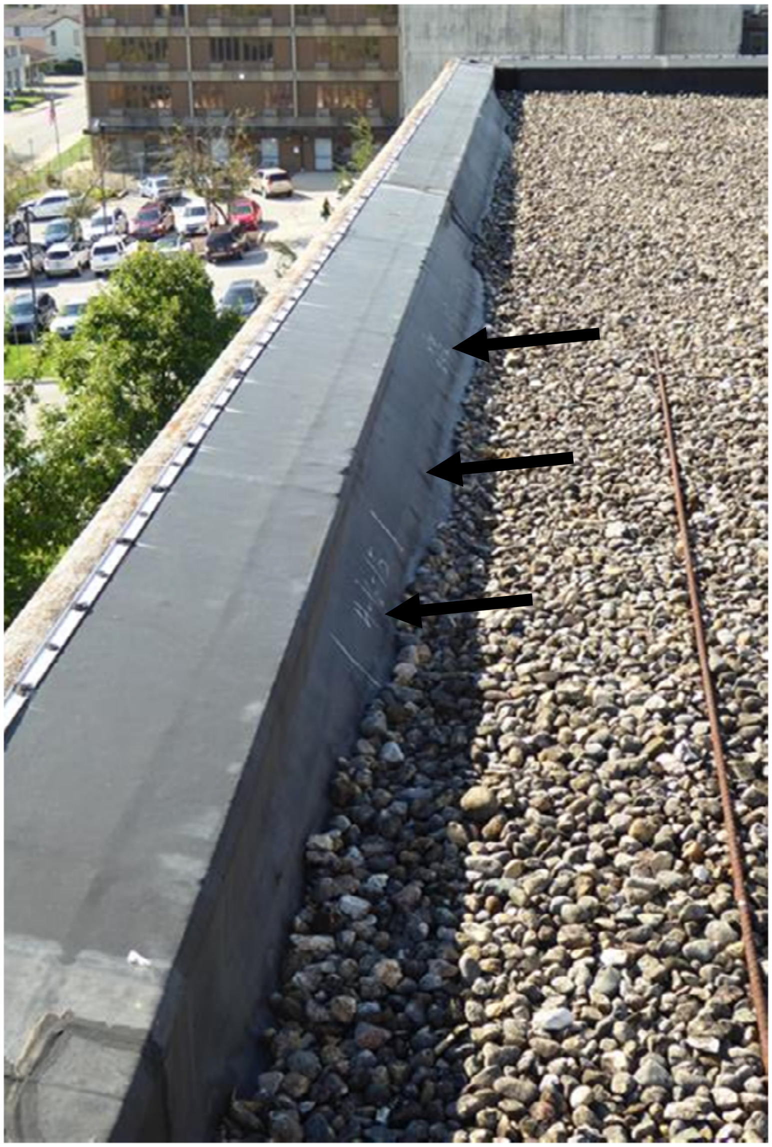

Photo 15

The membrane shrinks and pulls away from the coping. This is referred to as “tenting”.

Photo 16

Tensile stresses in the membrane will eventually lead to tears in the membrane or adhesion failures with the flashings.

Photo 17

Typical flashing around an exhaust vent.

Photo 18

The membrane was turned up and glued to the limestone on the elevator penthouse. A termination bar holds it in place.

Photo 19

The roof drains to the west, north and south through a series of gutters and downspouts.

Photo 20

An original collector head is visible off the roof of the south stairwell.

Photo 21

Downspouts feed into cast iron leaders.

Photo 22

One of the original downspout connections. The downspouts have been replaced with residential style units.

Photo 23

The façade is a combination of random ashlar and cut limestone. The stone itself is holding up well.

Photo 24

Mortar joints are tooled to a concave profile and are generally in good condition.

Photo 25 A few of the joints were struck flush and are more prone to moisture infiltration.

Photo 26 More recent tuckpointing has been thin and tends to crack and fall back out of the joint.

Photo 27

Joints near the top of the wall are wet most often. These need to be repointed.

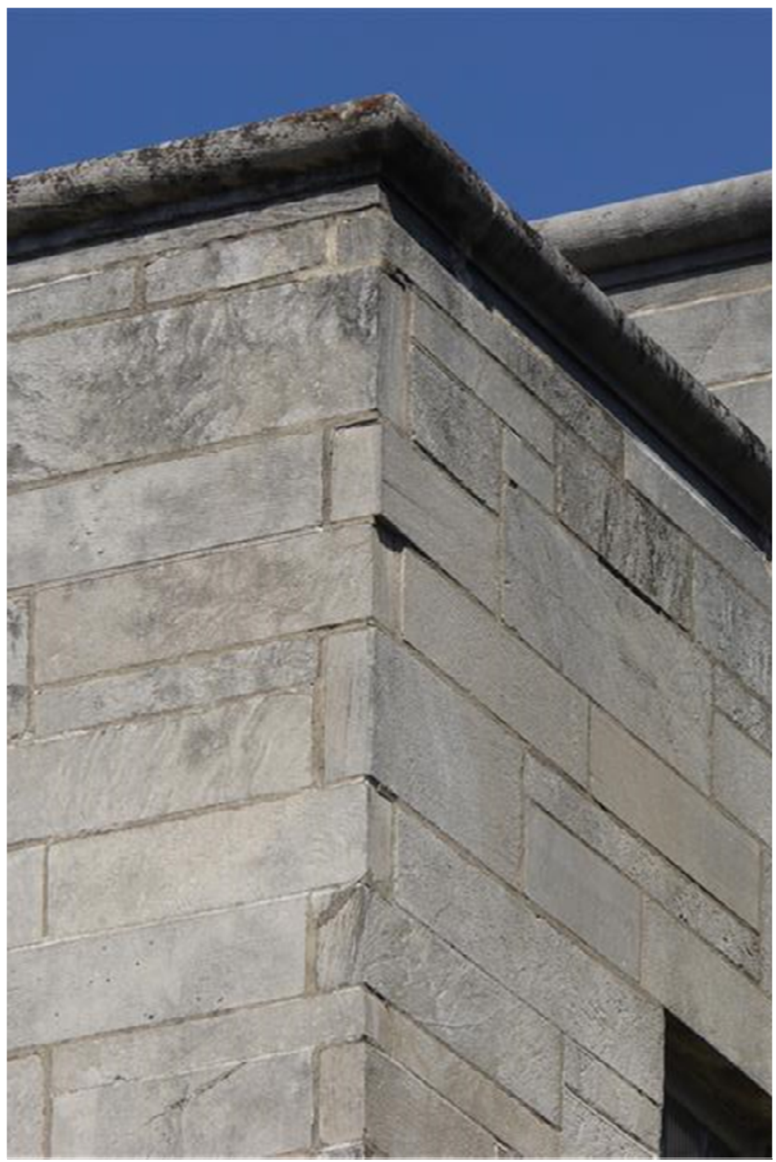

Photo 28

Similar condition on top of the south stairwell.

Photo 29

Cracking and spalling occur where tuckpointing mortar was too hard.

Photo 30

Closer view of cracking at the end of a window lintel.

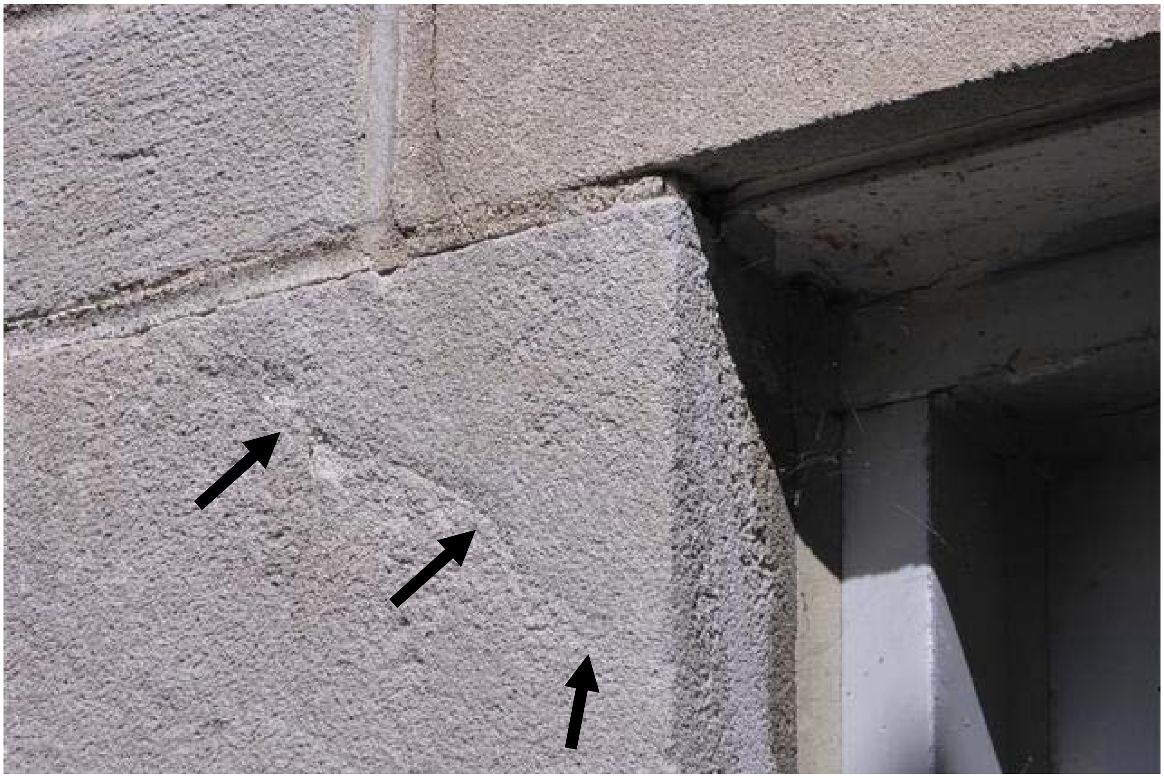

Photo 31   A cementitious patch was installed at a previous spall.

Photo 32   Organic material grows on the face of the protrusion over the east entrance.

Photo 33

Glass black was used in the stairwells. Punched windows make up the bulk of the fenestrations.

Photo 34

The glass block are generally in good condition and the mortar joints appear to be solid.

Photo 35

Side view of the replacement windows.

Photo 36

These double hung windows with aluminum frames are over 30 years old.

Photo 37

One of the original wood windows in the elevator penthouse.

Photo 38

Closer view of the wooden frame.

Photo 39 Steps up to the main entrance are flanked with limestone cheekwalls.

Photo 40 As are the steps into the main entrance.

Photo 41

The concrete steps are beginning to deteriorate.

Photo 42

Previous cementitious patches in some of the steps and failed caulking.

Photo 43

The hand railings do not meet current code requirements...

Photo 44

...and are severely corroded at the base of the posts.

Photo 45 The perimeter basement walls are made of poured concrete.

Photo 46 The original bitumen based waterproofing has deteriorated badly.

Photo 47   Plantings and landscaping beds...

Photo 48   ...typically extend well up onto the face of the limestone.

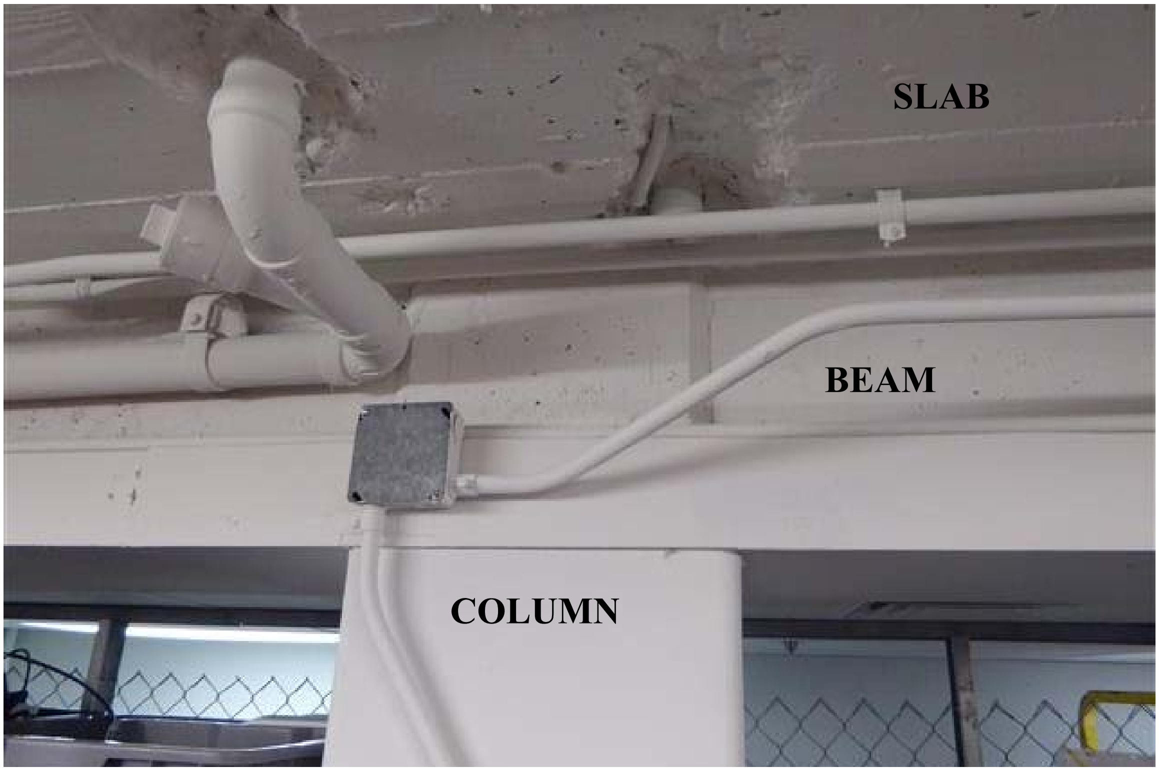

Photo 49

The first floor level is composed of a reinforced concrete slab which is supported by conventional beams and columns.

Photo 50

There was virtually no sign of destress in the concrete. This crack occurs where an aluminum conduit was run through the slab.

Photo 51
Close up view of the conduit.

Photo 52

Steel “chairs” were used to hold the deformed pieces of rebar in place.

Photo 53 Typical view above the drop ceiling. The original glue on ceiling tile and plaster ceilings are still in place.

Photo 54 Steel framing supports the second floor, third floor and roof levels. The steel columns are wrapped with clay tile and plaster for fire protection.

Photo 55

This steel column extends out above the clay tile to support the roof structure.

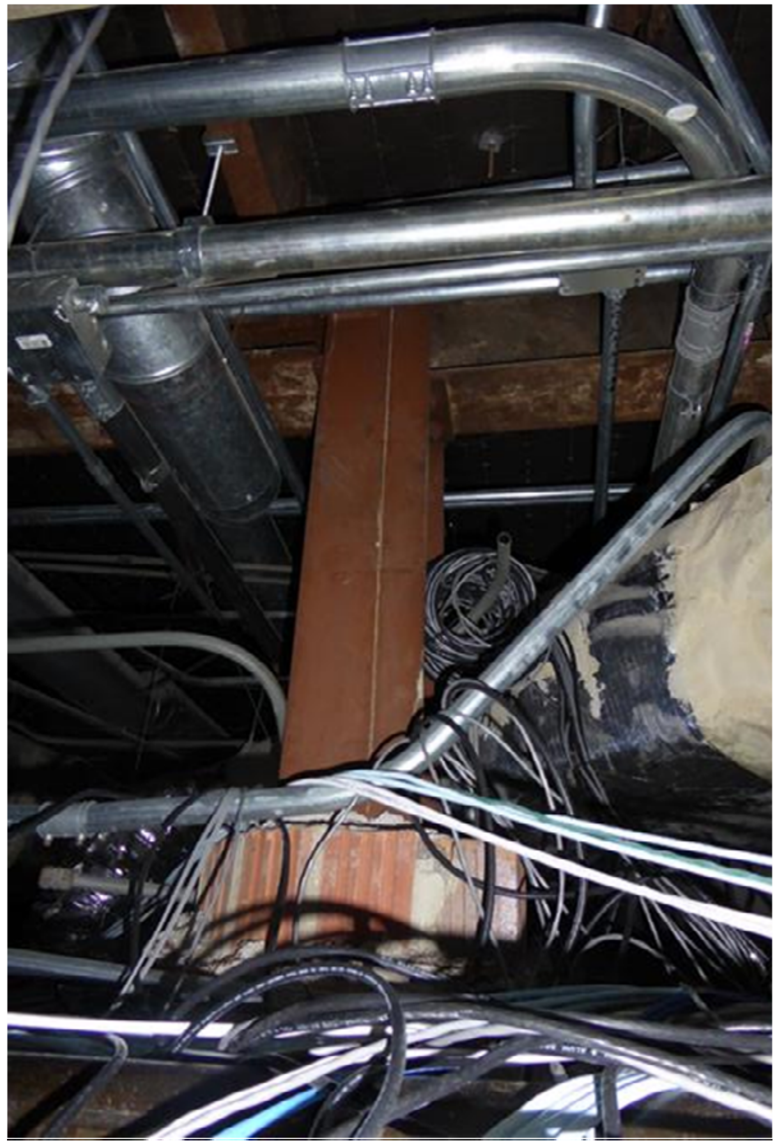

Photo 56

Steel bar joists support the roof slab. The roof slab is concrete which was supported in place with wire reinforced kraft paper.

Photo 57

Similar construction was found supporting the second floor slab.

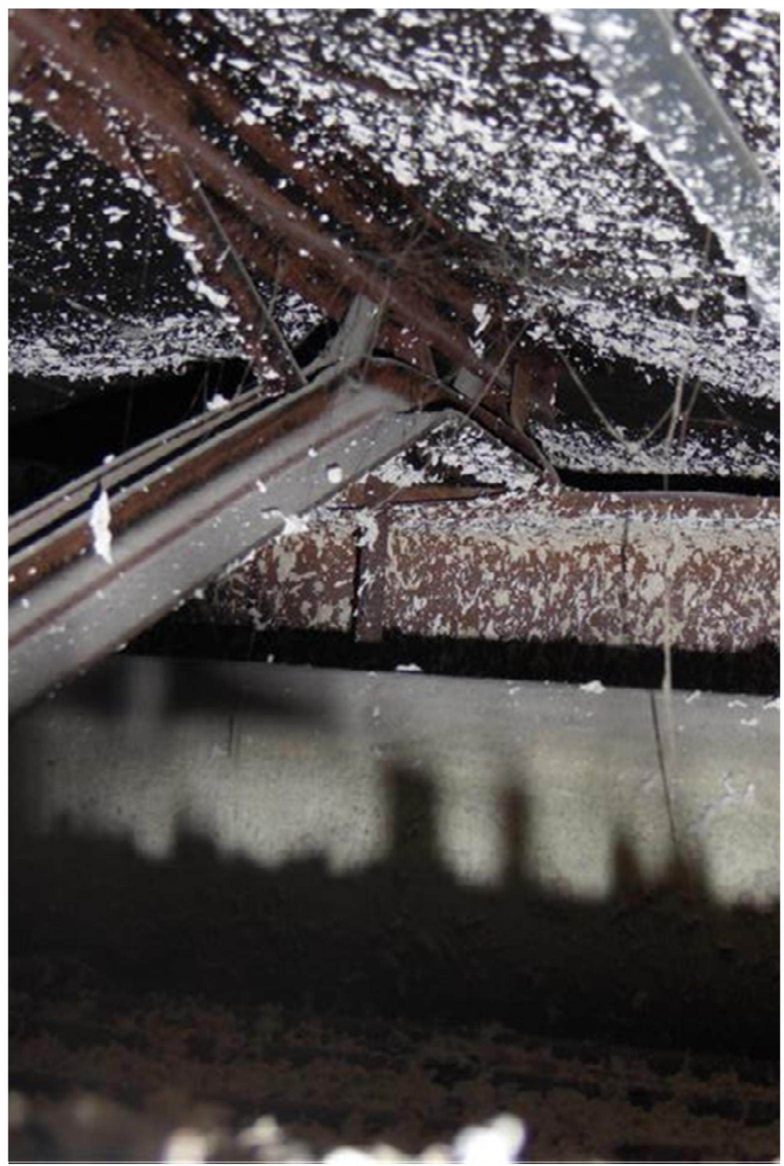

Photo 58

End of one of the bar joists resting on a beam which supports the second floor.

PARKING GARAGE PHOTOGRAPHS

Photo 59   East elevation.


Photo 60   South elevation with connector bridge to hospital.

Photo 61 West elevation.

Photo 62 North elevation.

Photo 63 Post-tensioned beam along the north elevation at the roof deck has a crack that appears to follow the drape of the post-tensioning tendons. Grease is leaching from the crack near midspan, meaning that the sheathing has failed possibly due to moisture entering the unbonded tendons.

Photo 64 Close-up view of Photo 5.

Photo 65 Level 3 beam seen from standing on Level 2 where grease from the tendons has leached out of the crack in the face of the beam.

Photo 66 Close-up view of Photo 7. Note the crack seen through the grease staining.

Photo 67

Examples of two additional beam locations where grease staining...

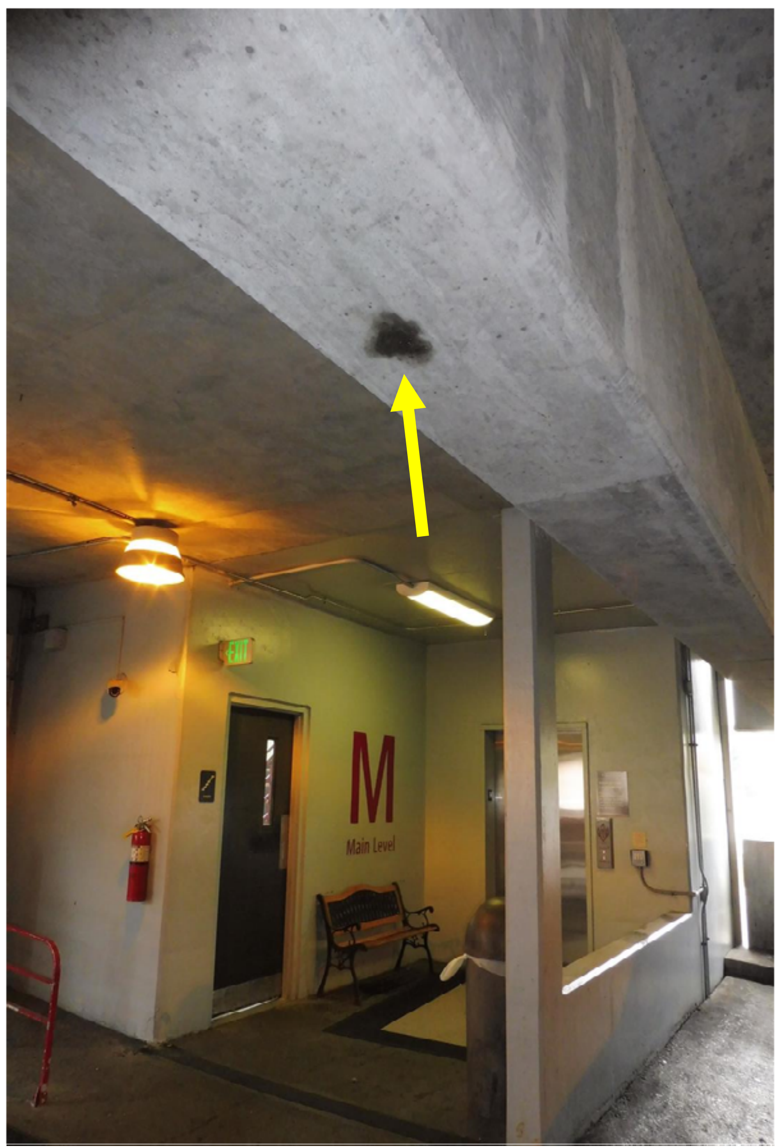

Photo 68

...was observed during the assessment.

Photo 69

Horizontal sealant joints in the garage are limited to the floor slab pour strip as seen here and...

Photo 70

...the construction joints located at the vehicle turn at the north end of the garage. Generally these sealant joints were found to be in fairly good condition.

Photo 71 The perimeter sealant joints, however, are in fair to poor condition as many have failed such as the joint seen here on the roof level.

Photo 72 Staining on the back face of the edge spandrel is the result of water migration through the failed perimeter sealant joint above on the roof level.

Photo 73 Cracks on the underside of the post-tensioned floor slabs existed in localized areas. The white staining seen along the crack is the result of calcium deposits on the surface from water migration through the crack.

Photo 74 The floor slabs are in good condition while few existing patches were observed. The existing patch seen here was unsound and should be repaired.

Photo 75 Slab scaling of the top surface was noted at some locations, generally on the lower levels where the volume of vehicles is typically higher.

Photo 76 Another example of surface scaling that was observed.

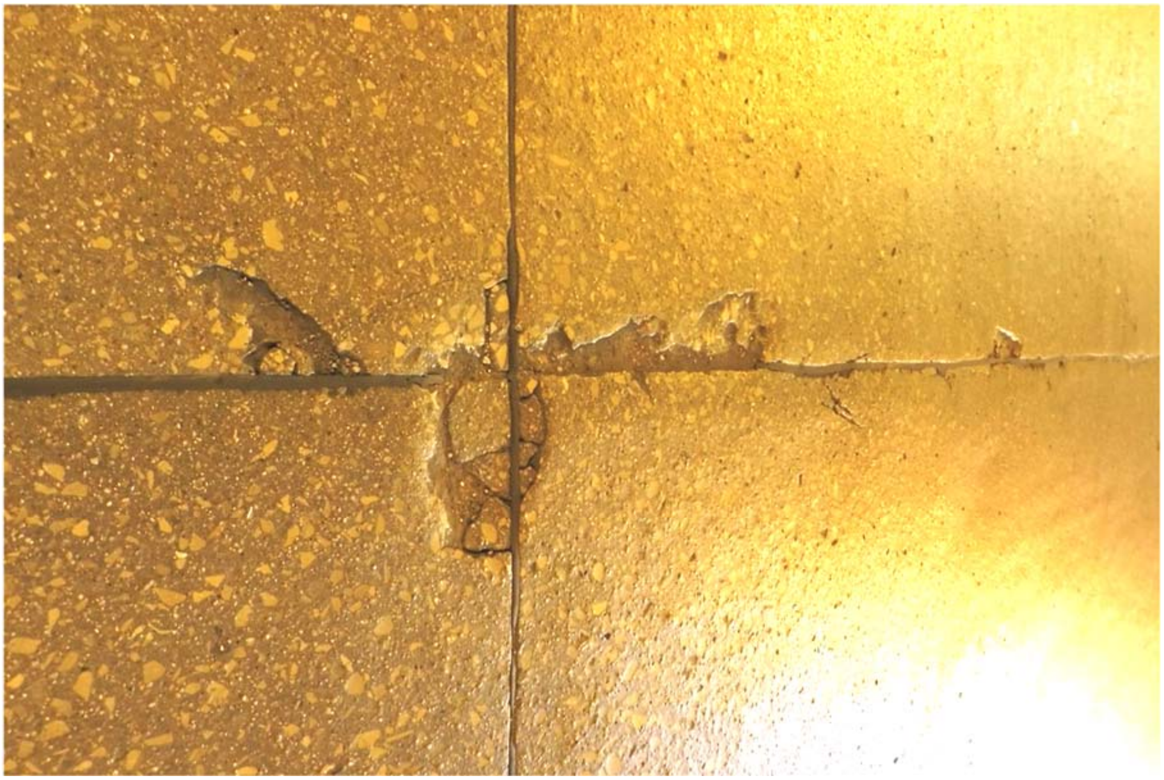

Photo 77 Small spalls in the slab-on-grade at the sawcut control joints should be patched to keep from enlarging with time.

Photo 78 Steel road plate installed over the trench drain at the main entrance. The plate was loose and needs to be re-anchored. The condition of the trench drain below the road plate was not visible.

Photo 79

The only expansion joint in the garage exists at the transition between the post-tensioned deck and the slab-on-grade.

Photo 80

The joint is in fairly good condition, but the perimeter sealant has failed in multiple locations and should be replaced.

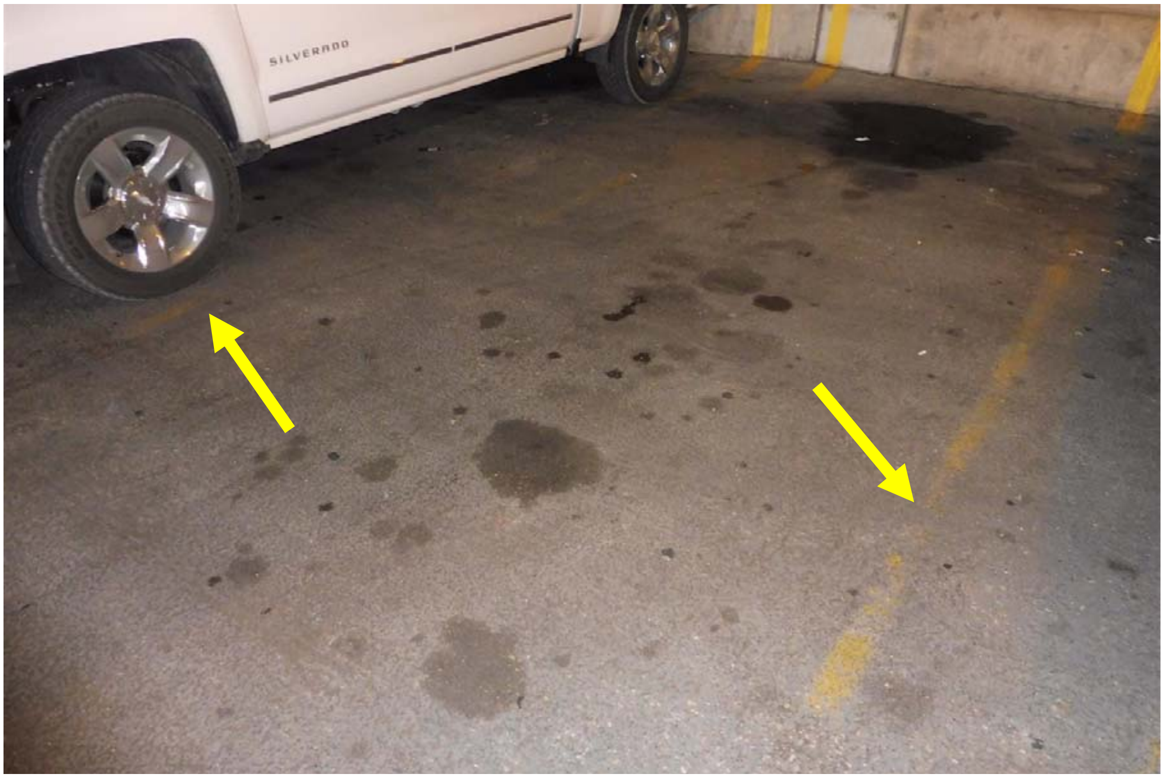

Photo 81 The striping paint throughout the garage should be reinstalled as many of the parking stall lines have faded/worn away.

Photo 82 Speed bump devices have been installed. Several were missing and others were loose as seen here.

Photo 83

Moisture has migrated through the limestone panel on the stair tower, leaving behind deposits of white staining called efflorescence.

Photo 84

Cracked limestone panel over the northeast stair grade level entrance.


Photo 85   Sealant joints within the limestone panels on the garage...


Photo 86   ...have reached their useful service life and should be replaced.

Photo 87 Missing grout pockets at the lift insert holes on the skyward face of the façade panels...

Photo 88 ...should be cleaned and filled with non-shrink grout to keep the metal insert embedment from corroding.

Photo 89

Existing sealant joints between the façade spandrels and the garage structure have failed in many locations. The premold type membrane installed over the connections were also failed at some locations.

Photo 90

Another example of failed sealant between the façade spandrels and the garage structure. These joints are important to help keep water from migrating into precast connections and post-tensioned tendon anchor blockouts in the beams and columns.

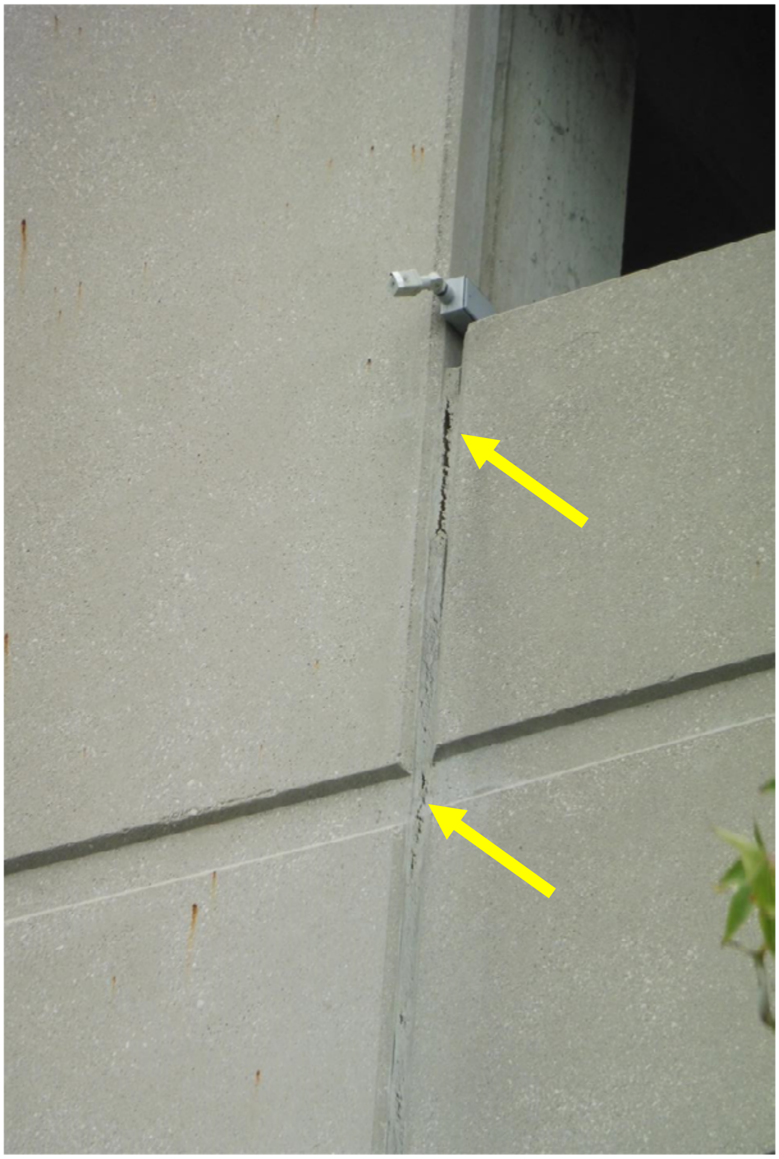

Photo 91

The sealant joints throughout the precast façade...

Photo 92

...have failed in most locations and need to be replaced.

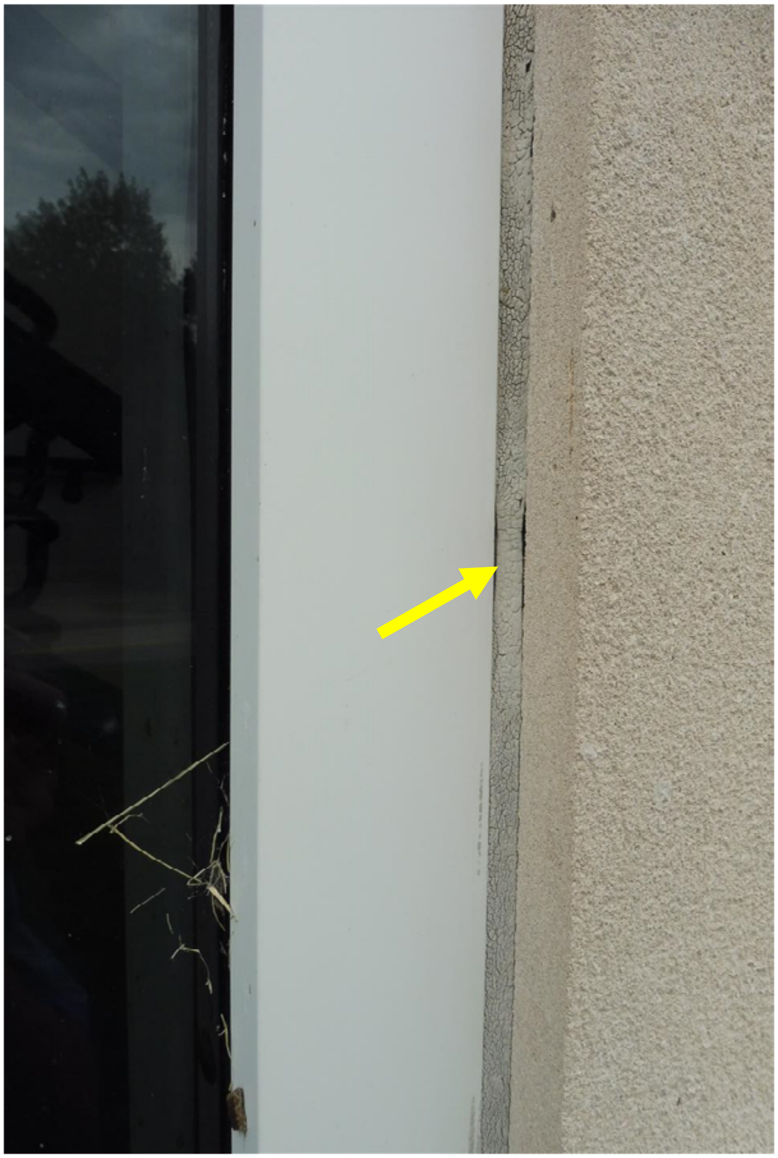

Photo 93

Sealant joints between the limestone and curtain wall system have failed in multiple areas.

Photo 94

Gaskets in the curtain wall system have shrunk and many have failed. They should be removed and either replaced with new gasket material or wet sealed with liquid sealant.

Photo 95

With the proposed demolition of the hospital connector bridge...

Photo 96

...rework of the existing precast spandrel will be necessary to create a Code compliant guardrail.

Photo 97

Miscellaneous steel throughout the garage has rusted...

Photo 98

...and needs to be cleaned and coated with a durable coating system.

Photo 99 The southwest stair and elevator tower at the roof level.

Photo 100 The existing floor coating throughout the stair/elevator tower has failed. Corrosion of the door frames both to the stair and the elevator were observed on each level.

Photo 101

Water infiltration has caused corrosion of the steel stair structure and failure of the coating on the concrete walls inside the stair.

Photo 102

With no evidence of water infiltration from the roof above, it appears the water is entering the stair through the gap below the roof level door. We suggest a door sweep be installed to help minimize the water travel underneath the door.

Photo 103 Corrosion at the bottom of the door frames...

Photo 104 ...as well as the hollow metal doors was observed on each level of the southwest stair. Regular maintenance of the coatings on the doors and frames will help minimize the corrosion levels.

Photo 105

Moisture in the stair tower has also led to corrosion of some of the metal risers in the metal pan stairs...

Photo 106

...as well as localized areas of the metal pan stair structure itself.

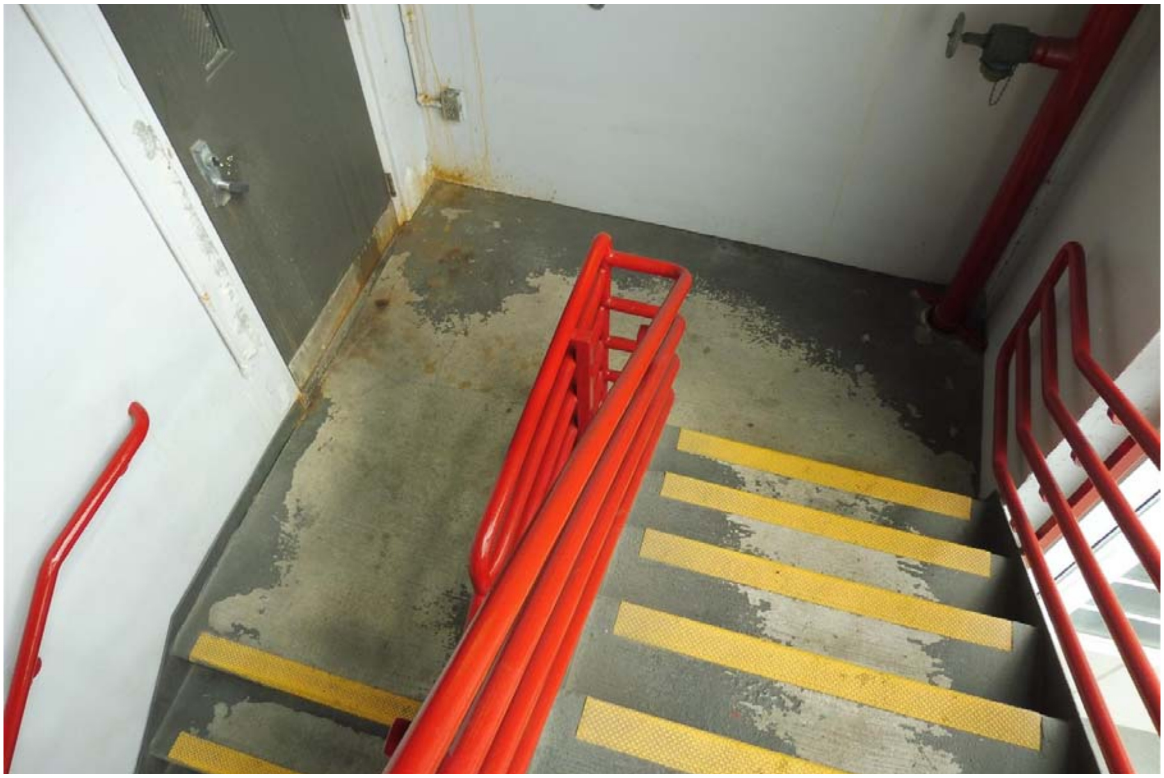

Photo 107 View of the failed floor coating that was previously applied to the treads and landings. We suggest replacement of the coating system to increase the protection of the metal pan stair structure below the concrete landings and treads.

Photo 108 Example of the peeling and failed coating on the concrete walls within the southwest stair.

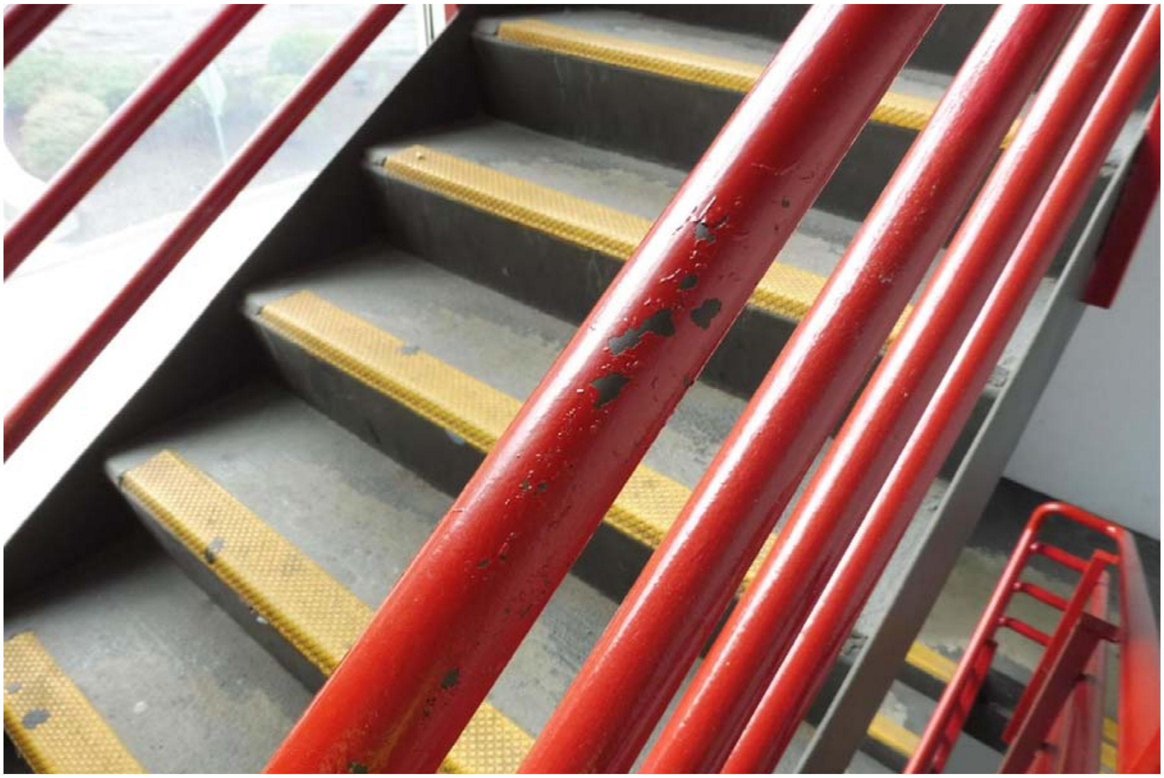

Photo 109 The paint system on the handrails was generally in good condition with few areas as seen here where the coating is starting to fail.

Photo 110 The expansion joint between the southwest stair/elevator tower and the garage floor slab is open at Levels 2 and 3. We would suggest an expansion joint be installed to seal the gap.

Photo 111 Northeast stair tower at the roof level. The coating on the concrete walls has failed in multiple areas on the outside of the stair tower.

Photo 112 Similar to the southwest stair, moisture has been infiltrating the northeast tower via the gap below the roof level door. Damage caused by the water can be seen in the following photos.

Photo 113

View below the roof level door where significant rust streaks down the wall and failed wall coatings are the result of the water infiltration below the door above.

Photo 114

Corrosion of the roof level landing metal pan. The perimeter channel is also corroded as a result of the water infiltration.

Photo 115

Corrosion of the metal pan stair structure and failure of the wall coatings continued below Level 2.

Photo 116

Close-up view of Photo 57.

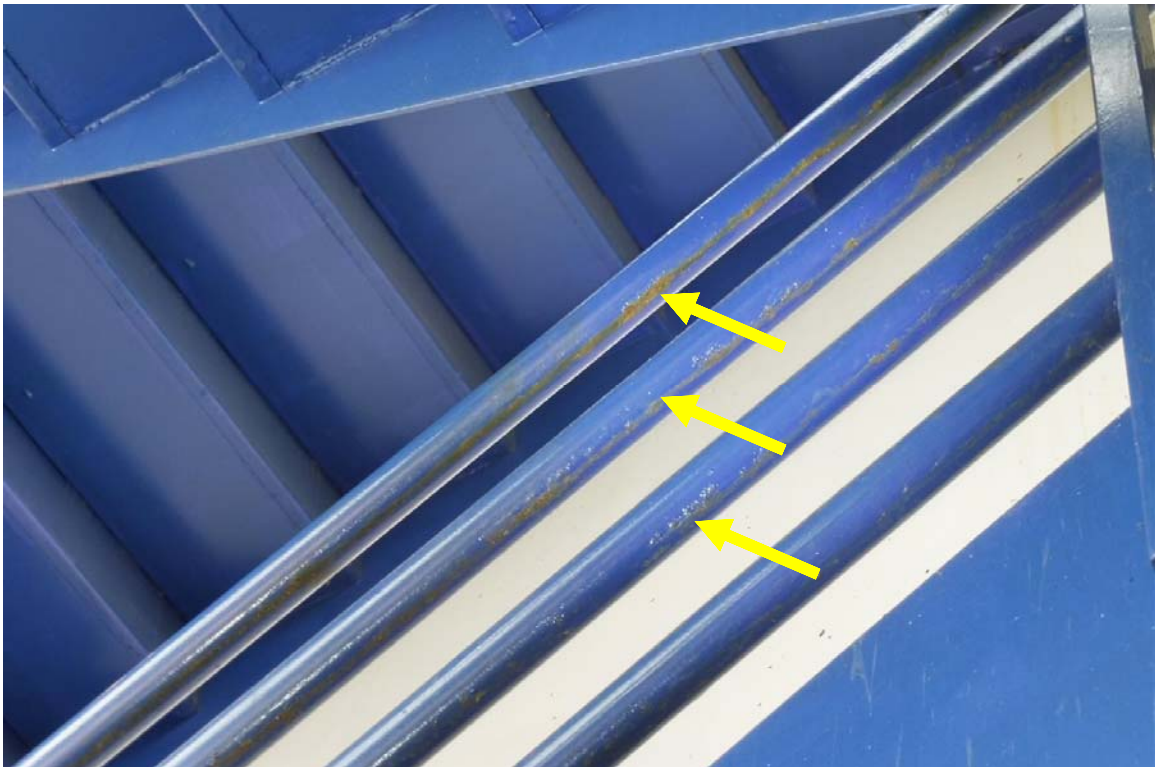

Photo 117

The paint on the handrails and stair structure below Level 2 was in better condition, but rust was observed on the undersides of some of the handrails as seen here.

Photo 118

Moisture has entered and froze within the grade level door frame on the northeast stair, causing the steel frame to split.

FIGURES

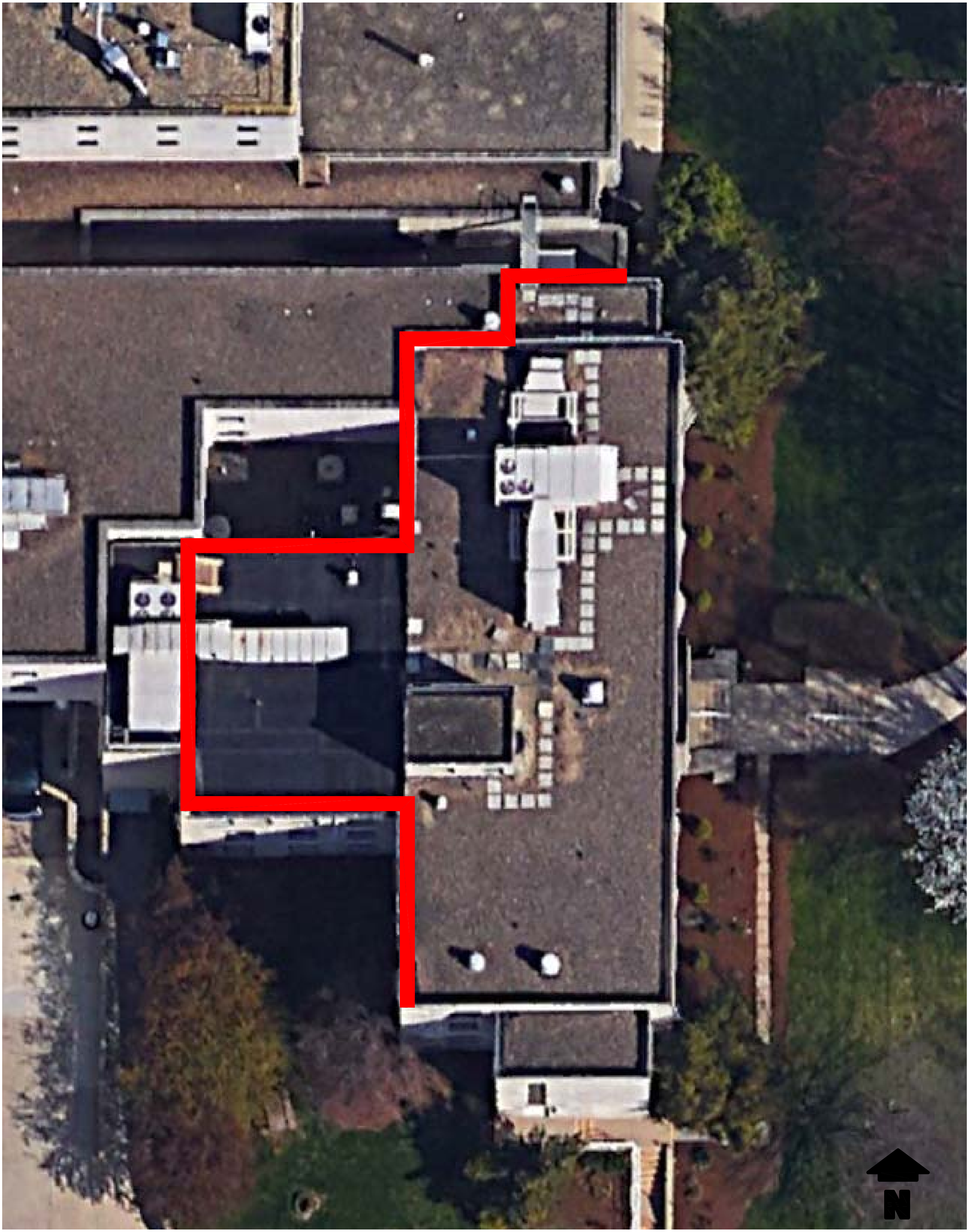

FIGURE 1

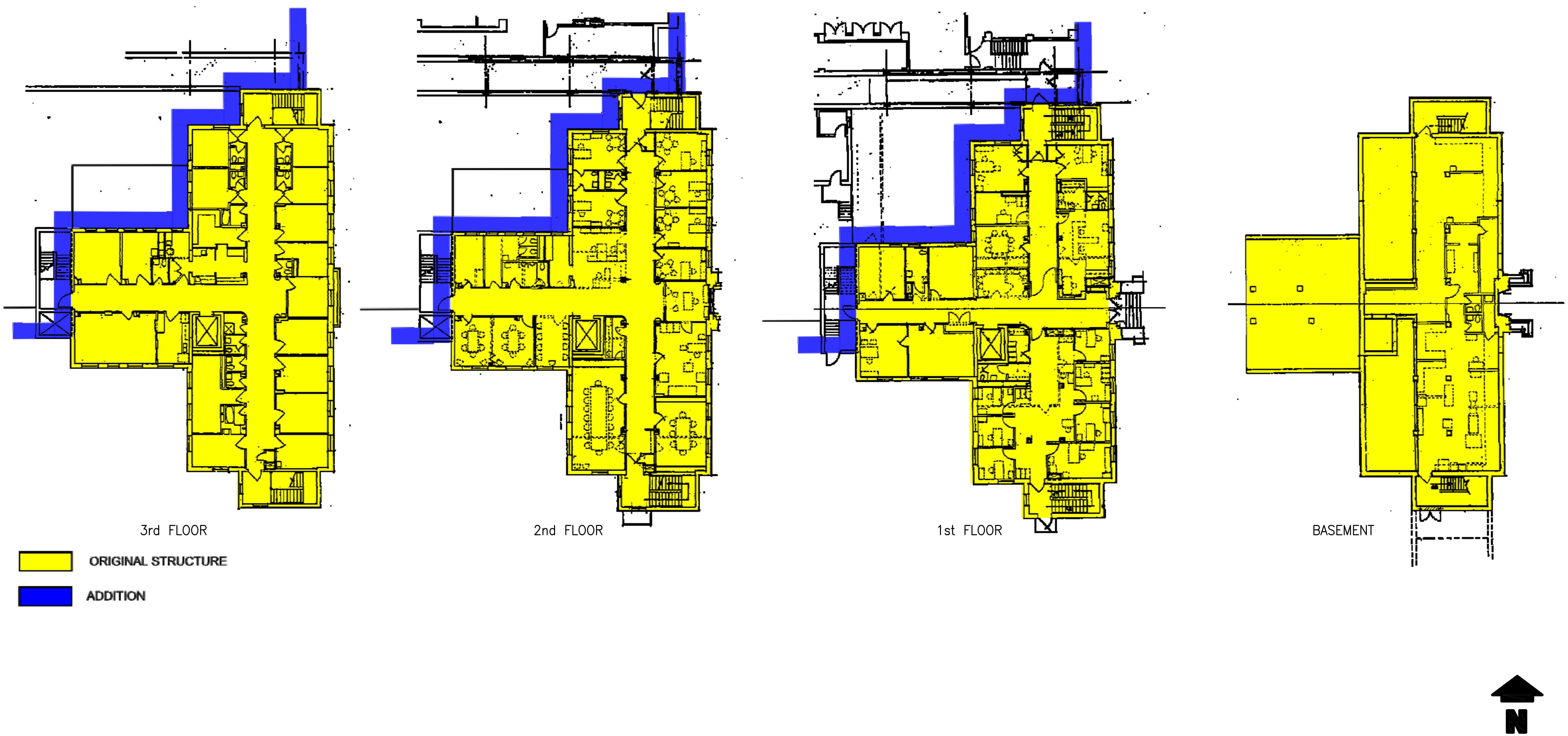
3rd FLOOR
2nd FLOOR
1st FLOOR
BASEMENT
ORIGINAL STRUCTURE
ADDITION
N

FIGURE 2

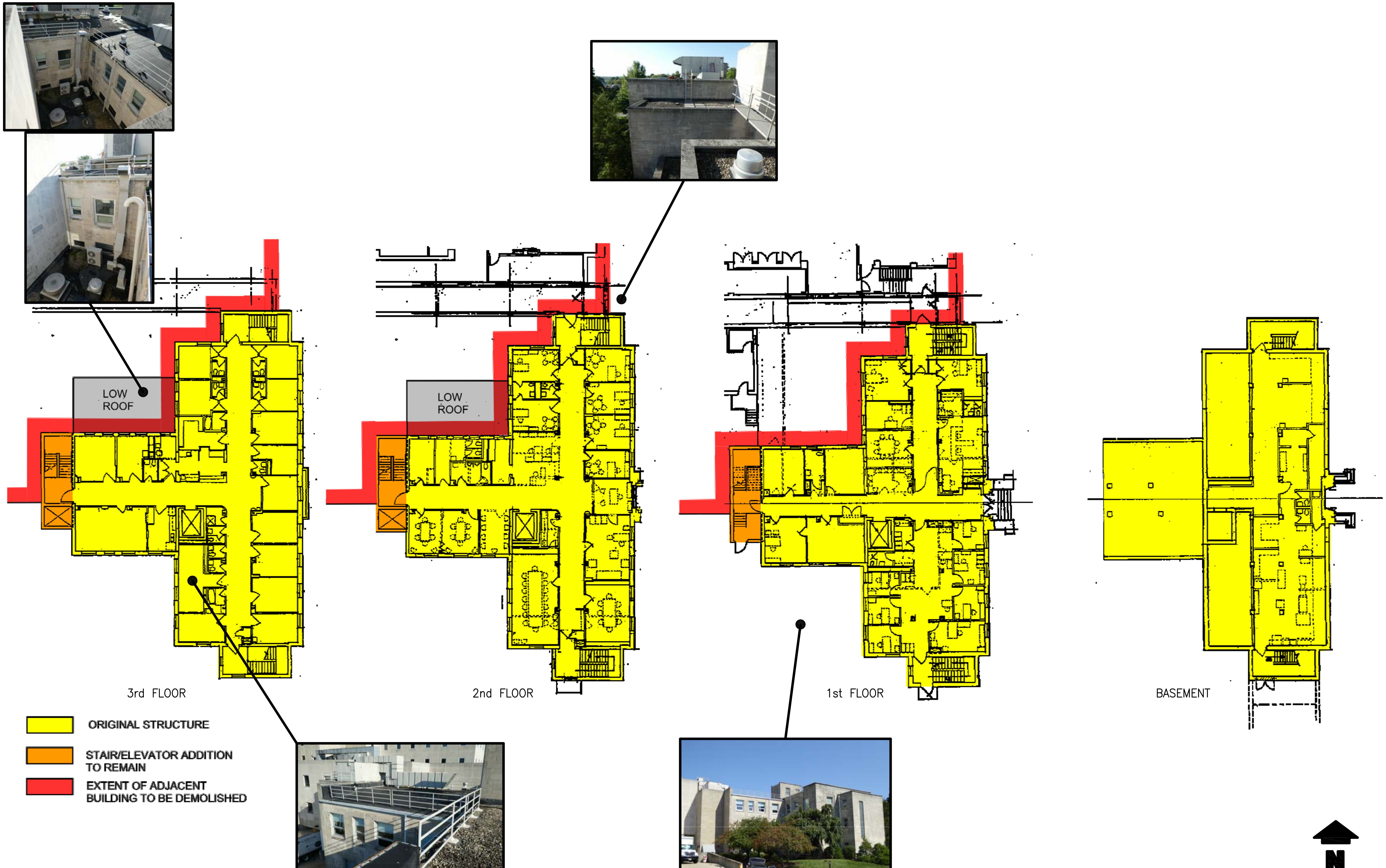
LOW ROOF
LOW ROOF
3rd FLOOR
2nd FLOOR
1st FLOOR
BASEMENT
ORIGINAL STRUCTURE
STAIR/ELEVATOR ADDITION TO REMAIN
EXTENT OF ADJACENT BUILDING TO BE DEMOLISHED
N

FIGURE 3

SUMMARY OF ANTICIPATED COSTS – KOHR BUILDING

Immediate/In conjunction with demolition - $600,000 to $750,000

• Install new electrical power service • Install new domestic water service • Install new fire service • Install new communications service • Install new fire alarm control panel	$100,000
• Reconstruct façade where demolition exposes the interior of the building. Construction to match the appearance of the remainder of the building.	$500,000
• Potential premium to demolition contract to keep and work around Kohr Building versus raze the entire site.	$150,000

Two to three years or when the building is repurposed - $1.25M to $1.5M

• All new HVAC • All new power equipment and lighting • All new plumbing fixtures	$1,032,000
• Remove and replace all flat roofing • Remove and replace/rework gutters, collector heads and downspouts • Repairs to the existing limestone masonry façade including cleaning • Remove and replace all exterior sealant joints • Clean and repair limestone cheek walls at east entrance • Repair concrete steps and walkway at east entrance • Replace handrails at east entrance	$235,000
• Potentially excavate and expose the basement wall along the east elevation and install new waterproofing and perimeter drain tile to address water leaks into basement level.	$250,000

FIGURE 4

SUMMARY OF ANTICIPATED COSTS – PARKING GARAGE

Immediate/In conjunction with demolition - $140,000

• Install new electrical power service • Install new domestic water service • Install new fire service • Install new communications service • Install new fire alarm control panel	$85,000
• Façade/guardrail reconstruction on south elevation following hospital connector bridge removal • Install sealant at the exterior column-to-spandrel joints to minimize water infiltration at post-tensioned tendon hardware blockouts • Install door sweeps on all stair tower man doors with access to the garage to minimize moisture infiltration into stair towers	$55,000

2 to 3 years - $1,120,000

• All new power equipment and switch over to LED lighting	$300,000

• Concrete repairs including patching, crack injection
• Remove and replace deck sealant joints
• Prepare and install 100% silane and corrosion reducing sealer on all deck surfaces to form a hydrophobic barrier against moisture and deicer penetration into the concrete (need to reapply ever 3-4 years)
• Repair/replace horizontal expansion joints
• Façade repairs
    o Sealant joint replacement
    o Wet seal curtain wall glazing
    o Repair damaged limestone panels
• Stair tower repairs
    o Prepare and paint doors and frames
    o Prepare and paint stair railings and metal structure
    o Prepare and paint interior/exterior stair walls
    o Replace failed floor coating in southwest tower
    o Replace broken door hardware
    o Remove and replace roof membrane system
• General repairs including painting miscellaneous steel elements inside the garage and re-striping the parking stalls/lane markings
	$820,000

FIGURE 5

5 – 10 Years - $450,000

• Concrete repairs including patching, crack injection • Prepare and install 100% silane sealer on all deck surfaces • Replace failed deck sealant joints • Repair/replace horizontal expansion joints • Spot prepare and paint stair railings, metal structure, doors and frames • Replace failed sealant joints in façade	$450,000

APPENDIX

May 28, 2019

Mechanical, Electrical, and Plumbing Systems

Building Condition Assessment

for the

Kohr Building and Parking Garage

Bloomington, Indiana

prepared by

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Introduction

This report will include the following sections:

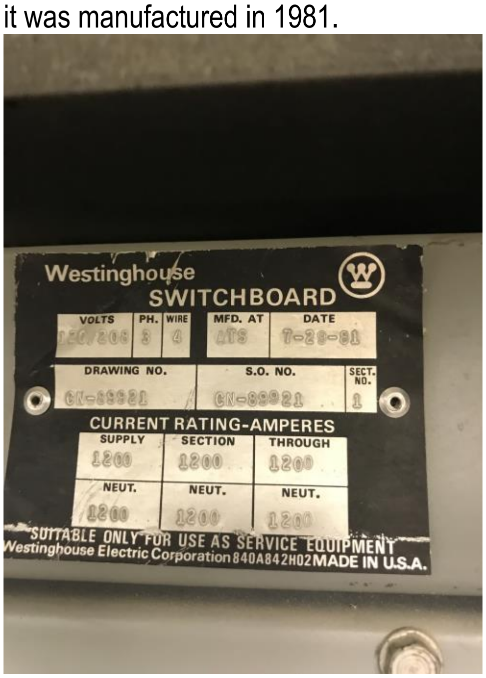
I. Physical Description/Existing Conditions
II. Condition Assessment/Analysis
III. Feasibility and Recommendations, including Opinions of Probable Costs
IV. Summary

I Physical Description/Existing Conditions

All systems have been visually reviewed in the field. In general, there are functional existing heating, cooling and ventilation; plumbing; electrical (power, lighting and fire alarm), and wet-pipe fire suppression sprinkler systems throughout the 1947 Kohr Building and limited heating and exhaust, electrical (power and lighting, fire alarm and emergency communications), minimal domestic water for hose bibbs, and fire-suppression standpipes in the 1989 Parking Garage

Site Utilities: Kohr Building

POWER
Power is fed to the building from the adjacent main hospital power system and it consists of 1,200 amps at 120/208 v., 3 ph. The Main Distribution Panel (MDP) is located near the northwest corner in the lower level and it was manufactured in 1981.



I Physical Description/Existing Conditions *(continued)*

Site Utilities: Kohr Building *(continued)*

WATER
Domestic water is provided from the adjacent hospital and it enters the basement near the northwest corner; there is no Reduced Pressure Zone Backflow Preventer (RPZBP).

SANITARY SEWER
The sanitary sewer has multiple exit points from the basement.

COMMUNICATIONS
Communications (telephone and high-speed) data are provided from the adjacent hospital.

NATURAL GAS
The is no natural gas service for this building.

I Physical Description/Existing Conditions *(continued)*

Building Systems: Kohr Building

MECHANICAL – Heating, Ventilating, and Air-conditioning
Heating: low pressure steam enters the basement mechanical room near the northwest corner from the adjacent hospital, where it terminates at a steam-to-hot water heat exchanger. The hot water is delivered to the perimeter radiant heating in some areas by pumps in this room.


Steam-to-Hot Water Heat exchanger


Perimeter hot water heater

I Physical Description/Existing Conditions *(continued)*

Building Systems: Propylaeum *(continued)*

MECHANICAL – Heating, Ventilating, and Air-conditioning *(continued)*
Ventilating and cooling are provided by two (2) packaged cooling-only roof-top units with DX (direct expansion) cooling; chilled water is not used in the building. The east unit is a constant volume unit dating to the early 1990's with a nominal capacity of 30 tons (nominal air-flow of 12,000 cfm) and the west unit is a Variable Air Volume (VAV) unit from 1982 with a nominal capacity of 40 tons (nominal air-flow of 16,000 cfm). The east unit serves the third floor and the west unit serves the balance of the building with above-ceiling terminals for zone control. The air-flow at the east unit is excessive for the ductwork and the space and the compressors have been changed to scroll compressors so that the fan be slowed down partially; this unit also has electric zone re-heat in the space. The west unit has shut-off type VAV terminals and it is setup to manage building pressurization (although the controls don't work correctly); a Variable Frequency Drive (VFD) has been added to the supply fan to improve the situation but the compressor in this unit has been replaced three (3) times in recent years.


East RTU


West RTU

I Physical Description/Existing Conditions *(continued)*

Building Systems: Propylaeum *(continued)*

MECHANICAL – Heating, Ventilating, and Air-conditioning *(continued)*
The communications room is served by a dedicated split-system ductless heat pump that was installed in 1982, but which still works.


Heat pump, on right

Indoor fan-coil for heat pump

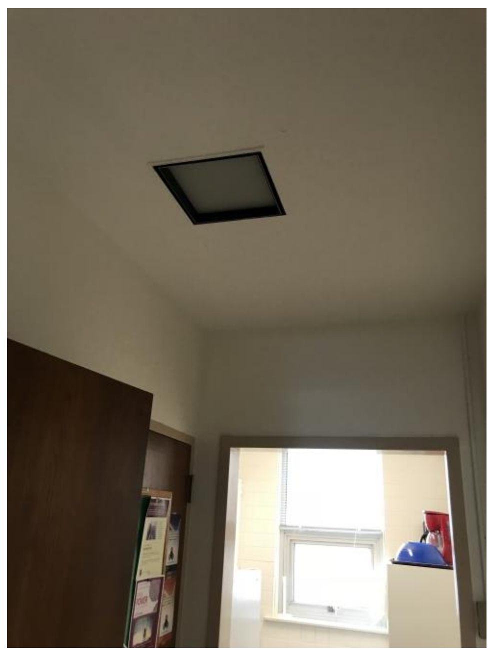
I Physical Description/Existing Conditions *(continued)*

Building Systems: Kohr Building *(continued)*

ELECTRICAL
Most of the power equipment appears to date to the major renovation that was done in 1981, which makes the equipment roughly 37 years old, although it is mostly in good condition. The capacity of the 1,200 a. MDP is 345 kva, which equates to roughly 14.4 va/sf if this building is roughly 24,000 gsf.

Lighting consists of mostly 1x4 prismatic lensed recessed fluorescent troffers (probably with 2 lamps each) and some 2x2 and 2x4 deep parabolic-louvered fluorescent troffers, all using T12 lamps. There are some old recessed downlights as well, which used incandescent lamps originally although most of those have been replaced with Compact Fluorescent (CFL) replacement lamps.

Typical 1x4 troffers on the 3rd floor



Typical recessed downlight

I Physical Description/Existing Conditions *(continued)*

Building Systems: Kohr Building *(continued)*

PLUMBING
Domestic water is provided from the adjacent hospital and most of the fixtures appear to have been added or replaced in the 1981 renovation. Some medical gas piping (Oxygen) remains although it is probably inactive. Sanitary and storm drains are present but mostly concealed, and, presumably, most of the piping dates to the 1981 major renovation.


Typical water closet


Typical lavatory

I Physical Description/Existing Conditions *(continued)*

Building Systems: Kohr Building *(continued)*

FIRE PROTECTION
The building has full wet-pipe automatic fire suppression sprinkler protection and a fully automatic addressable fire alarm system. The sprinkler system was originally fed from a local fire line entering from the south but that has been changed it the system is now a branch of the much larger system in the adjacent hospital.


Fire riser with abandoned source line in the foreground

I Physical Description/Existing Conditions *(continued)*

Site Utilities: Parking Garage

POWER
Power is fed from the adjacent hospital building and the panels were inaccessible at the time of the field survey.

WATER
Domestic water is fed from the adjacent hospital building to serve a few hose bibbs.

SEWER
Sanitary and storm drainage systems are present.

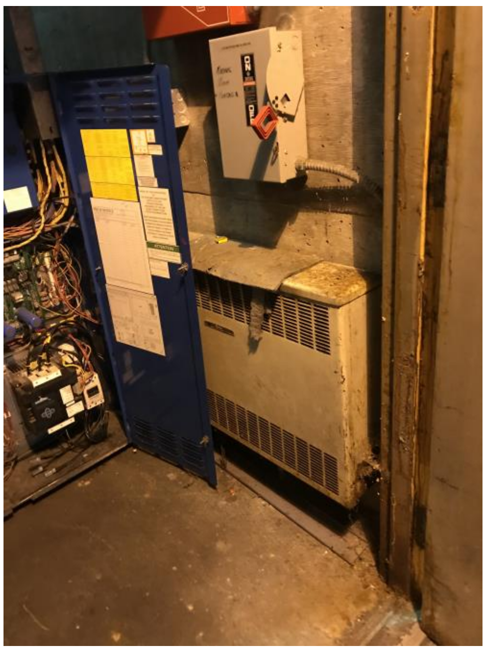
COMMUNICATIONS
The building has a conventional telephone service for elevator recall and emergency call use; presumably, this is fed from the adjacent hospital.

NATURAL GAS
There is no natural gas service to the building.

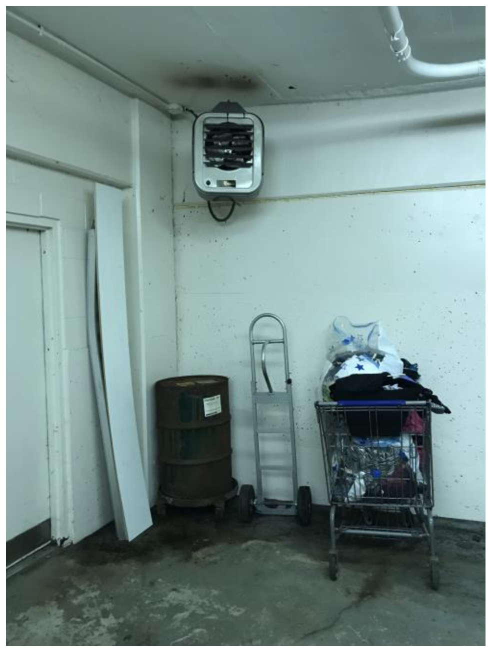
I Physical Description/Existing Conditions *(continued)*

Building Systems: Parking Garage

MECHANICAL – Heating, Ventilating, and Air-conditioning
Most of the building is an open unheated parking garage although the lower level is partially enclosed and has a large exhaust fan at the south end. There are a few enclosed rooms at grade level (east side) for shops and storage which have minimal electric heating and the elevator machine room has electric heating as well. The shop space also has an exhaust fan.



Elevator machine room heater



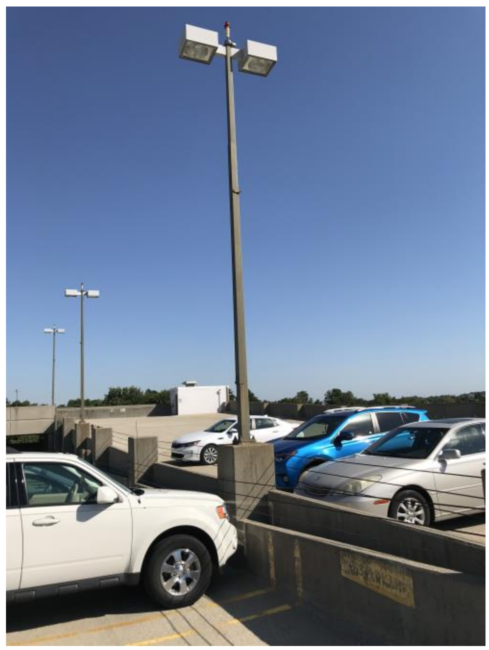
Shop heater

I Physical Description/Existing Conditions *(continued)*

Building Systems: Parking Garage *(continued)*

ELECTRICAL
The panelboards and/or transformer(s) were inaccessible at the time of the field survey, but the building has a power service that is adequate for lighting, the elevator, the unused parking controls, the parking control booths (lighting, power, and cooling), and the shop. The garage lighting consists of high-quality High Pressure Sodium (HPS) parking garage fixtures and typical pole-mounted fixtures on the roof, although these fixtures are old, having been installed at the time of construction in 1989. The interior fixtures appear to operate 24/7 but the pole-mounted fixtures on the roof appear to be controlled by a photocell and/or timeclock. Fluorescent fixtures are used in the elevator lobbies, stairs, and the shop/storage area.


Interior garage fixtures


Pole-mounted fixtures on the roof

I Physical Description/Existing Conditions *(continued)*

Building Systems: Parking Garage *(continued)*

PLUMBING
Storm and sanitary drainage are present as is domestic water for a few hose bibbs. The latter require winterization.

FIRE PROTECTION
The building has fire suppression standpipes in the stair towers but no sprinkler coverage. There is also an emergency call system.


Standpipe


Emergency call box

II Condition Assessment/Analysis: Kohr Building

Most of the existing mechanical, electrical, plumbing systems and equipment date to 1981, so the expected useful life has been reached or surpassed in most cases.

In the case of HVAC, the building does have cooling that is independent from the adjacent hospital's chilled water plant (although dependent on the hospital's power plant), but the equipment is failing and has never functioned particularly well in the building. Continuing use of the building will require all new HVAC equipment, ductwork, piping, controls, etc. Depending on the type of system selected, it may be necessary to bring a natural gas service to the building.

The power equipment is aging but it remains useful and the capacity of roughly 14.4 va/sf should be adequate for long-term continuing use. But parts can be difficult to find to repair equipment of this age, so it is sensible to replace the equipment if a major renovation is undertaken. Most of the wiring could remain even with new equipment though, so there should be no need to replace everything. All of the lighting is very antiquated and should be replaced with modern fixtures using LED sources. Because the power is fed from the adjacent hospital, it will be necessary to have Duke Energy install a service transformer (probably a pad-mounted transformer on the ground near the southwest corner of the building) and to build a feeder from there to the Main Distribution Panel (MDP).

For communications, it will be necessary to bring in a new fiber, coax (cable TV style), or copper (telephone system) service line or lines, as needed.

For plumbing, most of the piping should have significant remaining useful life, although new configurations could cause extensive replacement. All of the fixtures are antiquated and should be replaced with modern low-water-usage fixtures with automatic controls (flush valves and faucets). It will be necessary to have a water line brought in the from the local utility with a meter per their requirements.

For fire protection, the sprinkler system should have significant remaining useful life, although a sprinkler testing program must be put in place once the sprinklers reach 50 years old. It will necessary to bring in a new fire line from the local utility per their requirements to make this system independent again.

For fire alarm, such a system will probably be required for an office building of this size only for elevator recall and to monitor the sprinkler system, so the audible and visual notification elements of the existing system can simply be removed. If the Owner wants the full system anyway, it will be necessary to install incoming independent communications and a new Fire Alarm Control Panel (FACP) that is independent from the hospital's system.

II Condition Assessment/Analysis: Parking Garage

Most of the existing mechanical, electrical, plumbing systems and equipment date to 1989, so the expected useful life has been reached or surpassed in some cases.

In the case of HVAC, the lower level exhaust fan should be checked and tested to verify that it still operates as needed. The electric heater in the elevator machine room is in poor condition and should be replaced.

The power equipment is aging but it remains useful. But parts can be difficult to find to repair equipment of this age, so it is sensible to replace the equipment if a major renovation is undertaken. Most of the wiring could remain even with new equipment though, so there should be no need to replace everything. All of the lighting is antiquated and should be replaced with modern fixtures using LED sources. Because the power is fed from the adjacent hospital, it will be necessary to have Duke Energy install a service transformer (probably a pad-mounted transformer on the ground along the southside of the building) and to build a feeder from there to the Main Distribution Panel (MDP).

For communications, it will be necessary to bring in new independent copper (telephone system) service lines, for elevator recall and the emergency call system. This could be done with a fiber service as well.

For plumbing, most of the piping should have significant remaining useful life. It will be necessary to have a water line brought in the from the local utility with a meter per their requirements.

For fire protection, the standpipe system should have significant remaining useful life. It will necessary to bring in a new fire line from the local utility per their requirements to make this system independent again.

For fire alarm, such a system will probably be required only for elevator recall, but a new and independent Fire Alarm Control Panel (FACP) and new communications service will be required.

III-A Feasibility and Recommendations: Kohr Building

Even though the HVAC systems don't function particularly well and the lighting and plumbing fixtures are antiquated, it is feasible to setup the building to function independently of the hospital by adding the following—

A. Power service.
B. Domestic water service.
C. Fire service.
D. Communications service.
E. FACP.

It should also be feasible to add all of these services BEFORE the adjacent hospital structures are demolished, so there could be minimal down-time. At the time of demolition, the heat pump that serves the communications room will have to be relocated (probably to the ground) or removed.

But it must be said that long-term continued use of the building probably will require what amounts to all-new MEP systems. Such new systems could reduce operating costs and maintenance while improving performance across-the-board.

In terms of projected costs, we would suggest the following—

A. New power service: $30,000.00
B. New domestic water service: $20,000.00
C. New fire service: $25,000.00
D. New communications service: $15,000.00
E. FACP: $10,000.00

Short-term MEP investment: roughly $100,000.00

F. All-new HVAC: roughly $25.00/sf for roughly 24,000 sf or about $600,000.00
G. All-new power equipment and lighting: roughly $15.00/sf for 24,000 sf or about $360,000.00
H. All-new plumbing fixtures: roughly $3.00/sf for 24,000 sf or about $72,000.00

Long-term MEP investment: roughly $1,032,000.00

III-B Feasibility and Recommendations: Parking Garage

Even though the lighting fixtures are antiquated and the power equipment is aging, it is feasible to setup the building to function independently of the hospital by adding the following—

A. Power service.
B. Domestic water service.
C. Fire service.
D. Communications service.
E. FACP

It should also be feasible to add all of these services BEFORE the adjacent hospital structures are demolished, so there could be minimal down-time.

But it must be said replacement of all light fixtures with modern fixtures using LED sources could reduce operating costs and maintenance while improving performance, so such replacement should be considered as soon as feasible.

In terms of projected costs, we would suggest the following—

A. New power service: $20,000.00
B. New domestic water service: $10,000.00
C. New fire service: $25,000.00
D. New communications service: $15,000.00
E. FACP: $10,000.00

Short-term MEP investment: roughly $80,000.00

F. All-new power equipment and lighting: roughly $1.50/sf for 200,000 sf or about $300,000.00

Long-term MEP investment: roughly $300,000.00

IV Summary

Even though the Kohr Building is more than 70 years old and the Parking Garage is almost 30 years old, there is no reason that either or both structures can't be useful for many years in the future. In the immediate future, moderate investments in new service connections can make both structures operate independently without further modifications, but long-term re-use probably does justify much larger investment, especially in the Kohr Building.

Submitted by

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cc: file 18079