WJE

City Hall

Supplemental Condition Assessment

1 Municipal Drive
Fishers, Indiana 46038

FINAL REPORT – REVISION 1
April 1, 2021
WJE No. 2021.1687

PREPARED FOR:
Ms. Rachel Tudor
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1 Municipal Drive
Fishers, Indiana 46038

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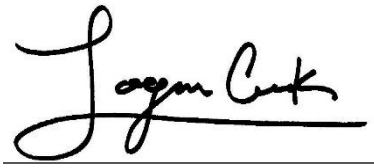

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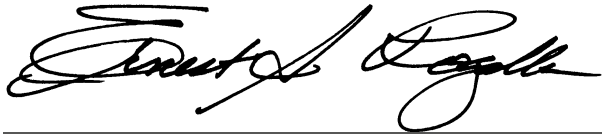

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INTRODUCTION

At the request of the City of Fishers (Fishers), Wiss, Janney, Elstner Associates, Inc. (WJE) provided professional services to complete a supplemental general condition assessment of the Fishers City Hall building (City Hall) located at 1 Municipal Drive in Fishers, Indiana. The purpose of the assessment was to document the current general condition of the building to supplement and update findings from WJE's previous condition assessment in 2018. The 2018 effort was summarized in WJE's report dated September 28, 2018.

Fishers requested the assessment expand upon WJE's 2018 findings with specific focus on the exterior building enclosure, foundation related settlement issues, and cursory interior space renovation concepts. Mechanical, Electrical, and Plumbing systems, fire and life safety, and ADA evaluations were not included in WJE's supplemental condition assessment.

Fishers requested WJE assist with developing preliminary opinions of probable costs for repair and maintenance recommendations and for renovating the interior spaces of the City Hall Building based on feedback provided by key Fishers staff members. For opinions of probable costs related to interior renovations and planning, WJE relied upon Meyer Najem Construction (Meyer Najem) to assist with developing preliminary opinions of probable construction costs.

Fishers reported that the information collected from this assessment will be utilized for capital planning and budgeting purposes over a ten-year term. Fishers also reported they intend to utilize findings from WJE's supplemental condition assessment to evaluate the feasibility of maintaining and renovating the existing building compared to building a new City Hall building. A feasibility study is beyond the scope of WJE's current engagement.

This report summarizes our findings, opinions, recommendations, and opinions of probable costs. The opinions of probable cost are included in APPENDIX A.

When necessary, this report references pertinent information contained in WJE's 2018 report which is attached in APPENDIX B.

This revised report updates and supersedes our previous report issued on March 31, 2021 to update historical background information based on comments by Fishers.

BUILDING DESCRIPTION

The City Hall building is a two-story wood-framed structure which was built circa 1991 and houses offices, lounge areas, storage rooms, restrooms, and an auditorium. The building is approximately rectangular in plan with smaller wings extending to the north and south. The main portion of the building, excluding the wings, measures approximately 160 feet in the east-west direction and 120 feet in the north-south direction. Figure 1 shows an overall aerial plan view of the building and Figures 2 through 5 show the four principle exterior wall views of the building.

The visible exterior walls of the building consist of split-face concrete masonry unit (CMU) wainscotting; brick masonry with limestone sill accents; double-hung vinyl windows; and a band of exterior insulation and finish system (EIFS) at the top of the wall. The roof configuration contains both hipped and gabled profiles with a single layer of laminated architectural asphalt shingles. The slope of the roof varies from 7 to 9 units vertical to 12 units horizontal (7:12 to 9:12).

The foundation of the building generally consists of cast-in-place concrete footings and sub-grade CMU foundation walls which support perimeter walls and interior columns. The majority of the first floor consists of a 4-inch thick concrete slab on grade. A partial basement is located at the northwest corner of the building and measures approximately 50 feet in the east-west direction and approximately 33 feet in the north-south direction. Access to the basement is provided by one interior stairwell and the elevator. The exterior walls of the basement consist of 10-inch thick reinforced concrete walls, and the floor consists of a concrete slab on grade.

The elevated floors typically consist of a 2-inch thick lightweight concrete topping slab over plywood sheathing supported by pre-engineered wood floor joists spaced at 2 feet on center. Above the auditorium, the second floor structure consists of a 3-inch concrete slab on metal floor deck supported by open web steel joists spaced at 2 feet on center. The wood and steel floor joists are generally supported by steel wide-flange beams. The roof framing is comprised of pre-engineered metal plate connected wood trusses typically spaced at 2 feet on center. Supporting the floor and roof trusses are a combination of load bearing nominal 2x6 wood stud walls spaced at 16 inches on center, and steel hollow structural shape (HSS) tube columns.

Since original construction, the City Hall has experienced differential building movements; primarily on the west side of the building. These movements have resulted in cracking and distress of the first floor concrete slab on grade, exterior walls, and interior finishes. Initial underpinning efforts were attempted in 1994 on the west side of the building. In 2012 or 2013, additional underpinning efforts were attempted at limited interior locations.

DOCUMENT REVIEW

Documents received and reviewed during WJE's 2018 condition assessment included the following:

- Original architectural and structural drawings for Fishers Town Complex, prepared by Cole Associates Inc. (CAI), dated October 23, 1989. The drawings contained three different revision marks with the latest one dated December 12, 1991.
- Original mechanical, electrical, and plumbing (MEP) drawings by CAI - these drawings were not reviewed by WJE but were previously supplied to Applied Engineering Services (Applied) for review during our 2018 assessment.

Fishers provided WJE with the following documents during our 2021 Supplemental Condition Assessment:

- Geotechnical Engineering Investigation report prepared by Cardno ATC, dated July 3, 2013.
- Proposal/Contract for exterior foundation and drain repairs prepared by Acculevel, dated March 20, 2012.
- Estimates of design and construction costs for Mechanical, Electrical, and Plumbing systems prepared by AEC Engineering, undated.

Pertinent information contained in provided documents are included within our report or referenced with footnotes.

INTERVIEWS WITH FISHERS KEY PERSONNEL

On March 19, 2021, WJE met with Ms. Rachel Tudor (Fishers) as well as key staff to discuss the maintenance history for the property as well as user preferences related to the interior spaces of the building. Unless noted otherwise, historical information given in this report is based upon information Fishers provided to WJE.

The following pertinent information summarizes new or changed information relative to WJE's 2018 report included in APPENDIX B.

General Maintenance History

- The carpet and tile on the grand stairs at the lobby was replaced in its entirety with new carpet one to two years ago.
- The second floor Administration department space, as well as the conference room spaces on the second floor were renovated one to two years ago.
- The second floor Planning Department offices were renovated approximately 6 to 8 months ago with private offices placed along the exterior walls.
- A second floor art gallery space was added adjacent to the second floor administration department space.
- Fishers solicited quotes for replacement windows and doors which has not yet been executed at the time of this report.
- Fishers expressed concerns that ADA compliance issues remain for doors, restrooms, and stairs.
- Many window perimeter sealant joints continue to fail as a result of purported movements. This has required frequent sealing and modifications to reduce water infiltration and air leakage.
- Fishers reportedly routinely replaces fractured floor tiles within the building, and the stock of matching replacement tiles is near depletion. Historically, Fishers executes these floor repairs one to three times per year, depending upon the level of damage and the hazards created. Fishers reported the floor cracks area is typically widest in winter, and narrowest in summer, which maintenance staff attributed to moisture cycling of the building. Fishers also reported cracking of floor tiles has worsened significantly within the past 1 1/2 years.
- Fishers has repeatedly caulked along the east wall of the men's restroom. Fishers also reported repairs to restroom finishes occur at least three times a year.
- Ceiling tiles have fallen repeatedly within the offices along the west exterior wall of the second floor.
- Fishers repaired all finishes in the mechanical area during May 2020.
- The City last repaired cracked finishes in the Auditorium during December 2020.
- Fishers reported drop-in ceiling tiles in the Engineering Department offices on the west end of the building on the first floor have fallen in the past reportedly due to excessive movements of their supporting tracks.
- Fishers also continues to repair the exterior of the building. Exterior repairs typically occur annually and include masonry repairs or rebuilding distressed areas of brick masonry, and resealing of windows.
- The City reported having the ground area in front of the chiller, located northeast from the northwest building corner, completely excavated last summer because of basement flooding. The chiller area routinely held standing water, and water would seep into the nearby basement. We understand the 2020 modifications effectively eliminated the basement seepage.

User Preferences for Spaces

The following summarizes general comments related to the user spaces received from key staff members during WJE's March 19, 2021 site visit:

Space	Fishers' Preferences
General	New floor and wall finishes with updated style and color schemes Upgrading lighting, audio, visual, and IT systems and controls Addition of Lactation Room on first floor Upgrade doors for ADA compliance Complete renovation and upgrade of restrooms for ADA compliance Upgrade kitchenettes in all spaces
Lobby	Re-configure and update lobby space Remove planters Centrally locate reception desk area Overflow capability to accommodate crowds for events held in auditorium Upgrade audio and visual technology to accommodate overflow crowds
Auditorium	Storage for chair seating Re-configure or replace windows for improved daylighting control Reconfigure HVAC system to reduce mechanical noise Upgrade audio and visual technology Enhance entrances to welcome guests Possible extension for two-story ceiling above entirety of auditorium
Administration Department	Upgrade technology Provide additional collaboration space furniture Upgrade enclosed kitchenette area
Planning Department	Separate printer room Plan review station near main entrance to department Upgrade technology Provide additional collaboration space furniture Upgrade kitchenette with possible open concept
Human Resources Department	Maintain private and secure offices Consolidate file storage Upgrade technology Reconfigure space to provide perimeter offices for 4 to 5 staff with a larger conference room Upgrade Kitchenette
Engineering Department	Reconfigure space to provide perimeter offices, shared offices for field staff, and intern collaboration area (13-15 staff total for department) Upgrade kitchenette Upgrade technology Provide collaboration space furniture Enclose storage area Include conference room space for approximately 16 staff
Community Engagement and Public Relations Department	Reconfigure space with open concept and two or three private offices/meeting rooms Enclose storage area measuring at least 12-feet-by-12-feet with shelves

OBSERVATIONS

On March 19, 2021, WJE met with Ms. Rachel Tudor and Mr. Mark Holcomb of Fishers to make visual observations of the conditions of the building exterior and interior. The following summarizes observations which are new or changed from findings in WJE's 2018 report in APPENDIX B.

Refer to APPENDIX B for a more detailed summary and figures of 2018 findings.

Site and Grounds

No significant new or changed conditions observed.

Exterior Facade

The condition of the facade is generally similar to that observed in 2018. The following new and changed conditions supplement our 2018 findings.

New Conditions

- Water staining was observed at localized areas of the split face CMU wainscot throughout all exterior walls of the building (Figure 6). More severe water staining was observed at the partial walls near the two north entrances and portico column bases on the south end of the building (Figure 7 and Figure 8).
- EIFS lamina was cracked at both corners of the semi-circular window within the north portico (Figure 9).
- EIFS lamina was punctured in several locations on the chimney stack (Figure 10).
- The coating on portico columns was cracked and peeling. At isolated locations, corrosion staining is visible through cracked coating (Figure 11 and Figure 12).
- One window frame on the north facade was painted black (Figure 13).

Changed Conditions

- Previously observed corroded doors at the south main entrance of the building were replaced.
- Previously observed broken handrail supports were repaired.

Roof

- One previously observed disconnected deicing element on the west edge of the north gable was repaired since 2018.

Structural and Foundations

Basement

- Along the east wall of the basement, a steel wide-flange beam ("I-beam") was raised 0.3 inches above the bearing surface of the pocket (Figure 14).
- Hairline, vertical cracking existed on the west wall of the concrete basement near a wall penetration for a mechanical duct (Figure 15).

- Along the west edge of the basement floor slab, the vertical distance between wall paint and the slab measured approximately 3/16 of an inch.
- The basement floor slab slopes to a floor drain.
- Isolated cracking in the basement floor slab existed with widths generally measuring less than approximately 1/16 inch.

First Floor

- In general, observed distress was primarily limited to the western half of the building.
- Floor tile damage, comprised cracked tile and vertical offsets, existed on the first floor concrete slab-on-ground around the elevator (towards the west end of the building) and in the adjacent janitor's closet (Figure 16 and Figure 17).
- Cracks in walls at the first floor typically widen with increasing height. The widths of the cracks vary from hairline to 1/4 inches (Figure 18). The widths and orientations of the cracks are consistent with the southwest corner of the building moving differentially relative to the areas south of the elevator adjacent to the basement at the northwest corner of the building.
- Doors in the Engineering Department on the west end of the building do not align with frames and do not latch.
- The floor near the southern third of the west end of the building had a downward slope towards the southwest building corner.
- Cracked floor tiles existed below the landing of the main stairway (Figure 19).
- Cracking existed along the edges of the coffered ceiling in the Auditorium, where the gables meet the flat upper section (Figure 20).
- The wallboard around the duct along the east wall of the Auditorium had pronounced sagging and narrow cracking (Figure 21)
- The coffered ceiling edge of the Auditorium against the top of the wall appeared to have a minor visible downward displacement away from its north and south ends.
- Horizontal wood framing was installed in the audio-visual room (A-V Room) at the northwest corner of the Auditorium. This framing, braced the wall between the two rooms (Figure 22). The City had the bracing installed to stabilize the wall to accommodate installation of large televisions on the wall in the Auditorium.
- Along the west face of the A-V Room of the Auditorium, the gypsum sheathing finish had tearing at the southwest room corner and some buckling near mid-length (Figure 23).

Second Floor

- Cracked floor tile existed in front of the elevator at the second floor (Figure 24). A large section of a floor tile was missing the elevator door threshold at this location
- On the wall north of the elevator core at the second floor, a vertical gap existed between the bottom of the wall and the floor. The wall was tight against the ceiling. Fishers reported this particular ceiling crack was repaired less than a year before our assessment.

- The gypsum sheathing on the northeast wall of the second floor janitor's closet was buckling at horizontal wallboard joints (Figure 25).
- Replacement tiling was observed in the northernmost toilet stall of the second floor men's restroom. The floor had pronounced downward slope toward the southwest building corner; the slope was readily visible based on comparison to the toilet that appeared level.
- Ceiling tiles in the men's restroom had to be repositioned. Ceiling tiles were perceptibly displaced relative to the plane of the ceiling.
- Cracking was perceptible while walking on the carpeted floor.
- Extensive floor cracking with 3/8-inch gap was evident along the door threshold between the conference room and adjoining server room on the second floor. While standing in the doorway and looking at the floor, light from the room below was visible, and a vertical leg of a plate or angle was visible along the crack edge (Figure 26).
- At the northeast corner of the server room, a vertical wall crack was noted where the north wall meets the east wall. The tearing and stretching at the crack indicated the east wall is down relative to the north wall. The crack was widest in the top half of the tall wall, where its width was approximately 3/16 of an inch (Figure 27).
- At the time of our visit, the new finishes within the Planning Department offices on the west end of the building already had substantial cracking. Gypsum sheathing cracking in the Planning Department offices is primarily along the west wall.
- Shifted or dislodged drop-in ceiling tiles relative to supporting tracks existed in the Planning Department offices.
- A ridge was perceptible oriented in the east-west direction aligned with the south edge of the elevator (near mid-length of the west exterior wall) on the second floor in the hall outside the Planning Department. When a ball was dropped on the floor just south of the ridge, the ball rolled south down the hall.
- The joints of the upper-level floor tiles around the main stair opening have substantial cracking in both north-south and east-west directions (Figure 28). Separations also existed in wood trim at the stair opening at mitered corners (Figure 29).
- Cracking of gypsum wall sheathing along the vertical joints of the walls was present at the kitchenette in the second floor Administration Conference Room.
- A cracked floor tile existed in the kitchenette in the Administration offices at the east end of the building (Figure 30).
- Horizonal cracking of interior gypsum sheathing and nail pop-outs existed in the storage room at the north end of the building adjacent to the stairwell on the second floor.
- The walls near the bottom of the stairway leading to the mechanical floor had cracked.

Mechanical Room

- The gypsum sheathing was cracked along the south (exterior) wall of the mechanical room. The crack profiles were consistent with lesser differential settlement occurring near mid-length of the wall and worsening with distance westward.

Attic Space

- Previously repaired roof trusses existed in the west attic space. The repairs consisted of truss member replacement or sistering (adding framing along existing framing).
- Diagonal web members of several trusses were pulled away from the metal plates that originally connected the web members to the cord members (Figure 31). This condition was primarily along the west face of the building, near mid length of the building.
- Plywood on the wall between the attic space and mechanical space had noticeable buckling.

Exterior Concrete Flatwork

- The concrete flatwork against the west exterior wall of the auditorium has experienced settlement of approximately one inch relative to the building face (Figure 32).

Planters

- The masonry planter at the south end of the main north entrance ramp has experienced settlement of approximately 3/4 inch relative to the adjacent north masonry wall of the building (Figure 33).

Interior Finishes and Spaces

Significant changes to interior finishes and spaces which have been replaced or renovated are noted in the General Maintenance History section above. Additionally, distress conditions of interior spaces related to building movements are summarized above in the and Structural and Foundations Section.

DISCUSSION AND CONCLUSIONS

General

The observed condition of City Hall remains generally consistent with findings summarized in WJE's 2018 report considering approximately 2.5 years of additional use. While there have been interior renovations and select repairs and maintenance completed to the interior and exterior, many of WJE's previous findings remain relevant.

Concern remains for the possible continued differential settlement issues of the building, particularly on the west side of the building which are discussed in more detail below.

Also, possible ADA compliance issues with the restrooms, doors, and stairs remain unchanged from WJE's 2018 findings and should be further evaluated.

The following discusses opinions and conclusions which are new or changed from WJE's 2018 report.

Site and Grounds

No significant observations related to the site and grounds were noted during our 2018 or 2021 assessments. The site and grounds observed were well maintained and in generally serviceable condition at this time.

Exterior Facade

Water staining on CMU likely resulted from expected drainage of water in the exterior wall. The original architectural drawings[1] schematically show the exterior wall designed as a cavity wall system with an air cavity between the masonry veneer and the wood-framed backup wall. Cavity walls are designed to manage water within this drainage cavity. Small amounts of water are expected to enter the cavity wall system through the mortar joints and even the masonry veneer itself. The water which enters the wall is collected in the drainage cavity which directs water to through-wall flashings to drain to the exterior.

Also, water absorbed into porous masonry veneers, such as the split face CMU wainscot, may weep out of mortar joints after a rain event. Fishers reported no water infiltration at exterior walls; thus, the water staining is likely only an aesthetic issue at this time. However, over time, continued excess water absorption through the CMU walls may lead to freeze-thaw damage to the CMU. WJE observed this at localized areas of the CMU walls in 2018 at the north entrance ramps, which remain. If concerns remain, further monitoring and investigation of the exterior walls, such as water testing and material testing, may provide further information on the performance of the exterior walls.

Cracked and punctured EIFS lamina can lead to water infiltration into the EIFS insulation and subsequent water damage to the wood structure and interior finishes. The observed EIFS damage is localized and not widespread, thus the damage is likely related to isolated exposure or impact and can be treated with topical repairs. However, further investigation of the EIFS damage would be necessary to confirm the cause or define any underlying damage.

Failed coating on portico columns may continue to cause corrosion of metal within the column sleeves. The original drawings[2] indicate the visible portions of the portico columns are only decorative fiberglass elements covering steel HSS columns which support the portico above. There are no metal elements shown in the original drawings within the column sleeve material, thus further investigation would be warranted to determine if the corrosion staining is indicative of a more significant issue.

Roof

While the condition of the roofing, trim, and accessories are similar to those observed in 2018, the weathering and deterioration of components observed in 2018 has continued as would be expected of a roof this age. In 2018, Fishers reported the roof was replaced circa 2012. In our experience, asphalt shingle roofs similar to the system installed on City Hall remain serviceable for twenty to twenty-five years with regular maintenance before replacement should be considered.

[1] Detail S6/A-8 of the Original Architectural Drawings designed by Cole Associates, Inc. dated October 23, 1989.

[2] Detail E2/A-5 of the Original Architectural Drawings designed by Cole Associates, Inc. dated October 23, 1989.

Structural and Foundations

The 2013 report by Cardno ATC included data from four soil boring logs[3] ATC Associates Inc. (ATC) made on February 7, 2001, as well as twenty-four soil borings and two hand auger borings made by Cardno ATC on June 18, 2013. All borings around the western half of the building found the soils unsuitable for supporting the building. Standard Penetration Blow Counts were as low as 0 at several borings, indicating unreliable soil strength at those locations. The depths to the layers of those unsuitable soils ranged from 6.0 to 15.5 feet from the existing surface. The deepest depths of unsuitable soils were typically around the southwest building corner and consistent with the general patterns of observed distress from building movements.

The high moisture contents reported from the soil borings (as high as 55 percent) suggests select soils may be behaving more like a liquid than a solid (the moisture content is greater than the liquid limit). Additional soil testing would be necessary to confirm the properties of the soils, but the two borings with the highest moisture content had standard penetration blow counts of only 2.

Cardno ATC opined the following in their 2013 report:[4]

> *It is our opinion that if the existing building is to be renovated and expanded, the non-basement portions of the existing building west of a line at the east side of the main entrance should be underpinned/supported on deep foundations in order to reliably prevent future settlement and eliminate the need for potential future repairs such as those that have reportedly been performed to date.*
>
> *In order to suitably prevent future settlement of the floor slab and thus prevent damage to building elements supported on the floor slab (e.g., walls, doors, etc.) and to maintain an acceptable level of serviceability of the building, the first floor slab will need to be made a structural slab supported on the deep foundations.*

Options they discussed to support the western half of the structure included helical piers, auger-cast concrete piles, and micro-piles ("push-piles").

Cardno ATC did not explicitly address the eastern half of the structure with regards to leaving as-is, but in their recommendations for an option to replace the building, Cardno ATC stated in their 2013 report:[5]

> *It appears that the soils east of the existing main building entrance are suitable for support of conventional shallow spread footings and slab-on-grade floors. It is expected that isolated pockets of softer silty clay soils may need to be undercut at some footing locations, however, extensive and deep undercutting and replacement of unsuitable soils such as required for the western portion of the building area is not expected in the eastern portion of the building area.*

[3] ATC 2013 report, p. 51 through 54.

[4] ATC 2013 report, p. 6.

[5] ACT 2013 report, p. 11.

Cardno ATC noted helical piers were first installed below the perimeter walls around the southwest corner of the building in 1994, and no other underpinning occurred at that time.[6] Information related to the helical piers first installed below the perimeter walls was not available to review.

Cardno ATC's report also stated additional helical piers were installed "within the last year,"[6] which corresponds to late 2012 or early 2013. Acculevel's March 20, 2012 Proposal/Contract included a scope to install 14 helical piers comprising "non coated P35H material to be installed to approximately 35-feet below the footer." Refer to Figure 34 showing a sketch of the purported locations (numbered and shown with a blue dot) provided by Acculevel.

The underpinning efforts performed in 1994 have been seemingly unsuccessful in mitigating building settlement issues at City Hall. It is currently unclear if the later underpinning efforts (2012 or 2013) have been successful, in part because we are unaware of any detailed elevation surveys indicating specific floor movements over time. Regardless, based on reports from Fishers and our observations, widespread problematic movements may have continued to develop, particularly in the western portion of the structure.

Potential causes for possible inadequate underpinning performance include improper installation of the helical piers, lateral instability of the piers in soils that may be liquid-like, and settlement of the soils supporting the bottom ends of the helical piers. The reported history of continued movements at the City Hall building and lack of any documented elevation surveys to monitor specific floor movements over time suggest relying on the existing piers as part of a foundation repair plan may have substantial risk without further study.

While the soils and movement of foundations are likely a significant source of building movements causing distress, thermal expansion and contraction of the building structure and moisture expansion and contraction of the wood framing may also be contributing. Further investigation of the building movements, including an elevation survey of the first and second floors, would be necessary to determine if the thermal and moisture expansion and contraction of the structure is significant.

The damaged roof trusses have reduced capacity to support snow and wind loads, and accordingly they require prompt repair. Also, because our inspection was only cursory and not comprehensive, we recommend inspecting all roof trusses for damage, and making additional repairs as appropriate.

The probable primary cause of damage to the roof trusses is differential building movements. Wind and snow loads may have also contributed to the truss distress.

Building movements have most likely adversely affected roof trusses not currently showing signs of distress. While not yet failed, these adverse effects may have reduced the capacities of the trusses to resist snow, wind, and roof loads. This can occur when a truss' support points changes from an original level orientation. Downward movement changes the reaction forces at the support thereby changing and redistributing the forces and stresses within the truss.

Further assessment of the effects the building movements exert on the trusses would be necessary to determine if there is a significant reduction in the load-carrying capacity of the trusses. Further assessment

[6] ATC 2013 report, p. 1.

of the roof trusses would require a better understanding of building movements, which an elevation study of the first and second floors can provide.

WJE did not observe the condition of the second floor wood joists above the first floor ceiling finishes. Common industry practice is for the joist designer to assume the joists will simply span from the supports at the joists ends (a "simply-supported" condition). Large building movements, like those developed in City Hall, have the potential to change joist loading adversely by distorting the joists. The joists could become damaged if the distortion is severe. Further investigation of the second floor framing would be necessary to determine if the building movements have adversely affected their load carrying capacities.

Building movements such as those observed at City Hall may also increase the risk of damages to underground utilities servicing the building. Of particular risk may be the natural gas lines, since soils tend to filter the odorant intentionally added to natural gas as a warning indicator of a leak. Inspection and evaluation of all utilities would be necessary to determine if building movements may have affected underground utilities.

Interior Finishes and Spaces

Except for finishes and spaces which have been replaced or renovated as noted in the General Maintenance History section above, interior conditions are generally consistent with our 2018 findings.

Distressed interior finishes resulting from differential building movements will likely continue to occur until the cause of the building movements is remedied. Thus, routine maintenance of interior distress will be warranted until such time that effective remedies are implemented.

Based on feedback of Fishers staff regarding the reported current use and functional challenges of existing spaces, updates, and renovations to a large proportion of the interior space of City Hall may be necessary to accommodate current and future functional needs of the City Hall operations. During a larger renovation project, previously identified issues summarized in WJE's 2018 report could be addressed as part of the project. For example, worn or damaged flooring and finishes, which would otherwise be considered routine maintenance and repair, would be replaced as part of renovation projects.

Additionally, in WJE's 2018 report, WJE observed possible ADA compliance issues in the existing restrooms and stairs of the building. These issues remain. As part of a renovation project, these possible ADA compliance issues, and others which may exist, could be reviewed and remedied.

Engaging a qualified Design Architect would be an appropriate next step to complete schematic design and space planning for interior renovations. Qualified Design Architects will be able to assist with the evaluation of current and future functional needs as well as provide solutions to incorporate upgrades including ADA, technology, lighting, office furniture needs, etc.

RECOMMENDATIONS

Based on review of WJE's 2018 findings and findings from our 2021 assessment, WJE recommends the following prioritized repairs inclusive of recommendations made in 2018.

Immediate

Structural and Foundations

1. ***Repair Damaged Roof Trusses*** – The damaged roof trusses should be repaired within the next six months. Repairs should be designed by a qualified Professional Engineer.
2. ***Further Investigation of Building Movements*** – Further investigation and analyses of the causes of the building movements and remedial concepts to address the causes should be performed within the next year. Further investigation should include structural analyses, elevation surveys, and monitoring. Further investigation should also include inspection and assessment of buried utilities, second floor joist bearing conditions, and roof truss conditions. Concepts for repair and associated order of magnitude opinions of magnitude costs can be developed after further investigation is completed. Based on the results of further investigation of the building movements, other recommendations may be updated or revised. The following are further investigation tasks that should be considered:
   a. ***Inspection of Second Floor Joists*** – Ceiling spaces should be opened in representative areas and floor joists examined to determine if structural damage exists. This inspection should be performed within the next six months.
   b. ***Elevation Surveys of Floors*** – The elevations of the floors should be surveyed, and contours mapped to establish control points to definitively determine the magnitude of vertical building movements. The elevation survey should be performed within the next six months.
   c. ***Inspection of Utilities*** – Underground utilities should be inspected to determine if differential building movements may have caused damage. Inspection of underground utilities should be completed within the next three months.

Priority I (One to Three Years)

Roof

3. ***Review Edge Sheet Metal*** – Investigate the substrate located behind the sheet metal to determine whether damage exists. If substrate damage is observed, then repairs to the affected area would be recommended.

Exterior Facade

4. ***Rout and Seal CMU Cracks*** – Rout existing cracks in the CMU walls and install sealant.
5. ***Install Concrete Curb*** – Install a concrete curb at the base of the CMU wall along the entire length of the sidewalk.
6. ***Replace Guardrail Post Bases*** – Guardrail post base grout pockets should be removed and replaced, and sealant applied around the extents of the posts to prevent water migration into the grout pockets.
7. ***Replace Coping Joint Sealants at Ramp*** – Remove and replace sealant joints at limestone copings along the ramp.

8. ***Install Sealant at Precast Head Joints*** – Remove and replace mortar at cracked head joints in the precast accent units or remove damaged mortar and install sealant.
9. ***Repair Brick Mortar Joints*** – Rout existing cracks in the brick veneer and install sealant.
10. ***Repair Brick Sealant Joints*** – Remove and replace failed sections of sealant joints in the brick veneer.
11. ***Replace CMU Expansion Joint Sealant*** – Remove and replace failed sealant in the CMU expansion joints.
12. ***Monitor Sidewalk Cracks*** – Existing cracks in the concrete sidewalk slabs should be periodically monitored for any possible differential settlement that could create a tripping hazard. This should be performed yearly.
13. ***Repaint Entry Doors*** – Clean entry door framing free of corrosion and repaint.
14. ***Repair EIFS Crack*** – Rout and seal cracks in the EIFS soffit return.
15. ***Repair Fascia Boards*** – Deteriorated sections of the fascia boards should be removed and replaced.
16. ***Replace Windows*** – Replace windows with current energy efficient windows. Phasing of the window replacement could be considered. For purposes of cost estimates, the total cost is included in Year 1.

Interior Finishes and Spaces

17. ***Reset Auditorium Doors*** – Remove and reset entry doors to the Auditorium.
18. ***Install New Handrails in Stairs*** – Remove and replace existing handrails at the stairs to be ADA compliant.

Priority II (Four to Seven Years)

None

Priority III (Seven to Ten Years)

Roof

19. **Roofing Replacement** – With adequate inspection and maintenance, the existing asphalt roofing system may remain serviceable through the ten year term. However, for budgeting purposes we are including replacement of the roofing within Priority III.

Upgrades

20. **Design and Renovation of Interior Spaces** – Based on preferences expressed by key Fishers staff related to the function and current challenges of the interior spaces, we recommend engaging a Design Architect to evaluate needs and space planning in more detail through a Schematic Design phase. A General Contractor should also be engaged in the Schematic Design phase to assist with cost estimating of the schematic designs. WJE collaborated with Meyer Najem to develop cursory concepts for preliminary order of magnitude pricing for this report based on the expressed preferences of key Fishers staff during our March 19, 2021 site visit.

OPINIONS OF PROBABLE COSTS

See APPENDIX A for opinions of probable costs. Costs for the recommended repairs are given in present-day dollars local to the project site and are not modified for cost increases in the future. The estimated costs provided should be considered as preliminary order-of-magnitude cost figures based on estimated quantities and do not include costs associated with contractor general conditions, permitting, bonds, or contingency.

WJE recommends adding 20 to 40 percent for contingencies and contractor general conditions based on previous experience.

Actual costs can vary due to the actual method and details selected, contractor means and methods, actual quantities, and whether the work takes place intermittently or all at once. Cost estimates were made by either reference to a standard estimating guide, from our experience with similar work, or discussions with local contractors. For interior renovations and planning, WJE relied upon Meyer Najem Construction (Meyer Najem) to assist with developing preliminary opinions of probable construction costs.

Costs were not obtained from a contractor bidding on a set of repair drawings and specifications and they were not prepared by a professional cost estimator. Competitive bids using a set of repair drawings and specifications developed by a licensed architect or engineer experienced with repairing these types of structures should be obtained if more accurate costs are required and implementation of the repairs is desirable.

FIGURES

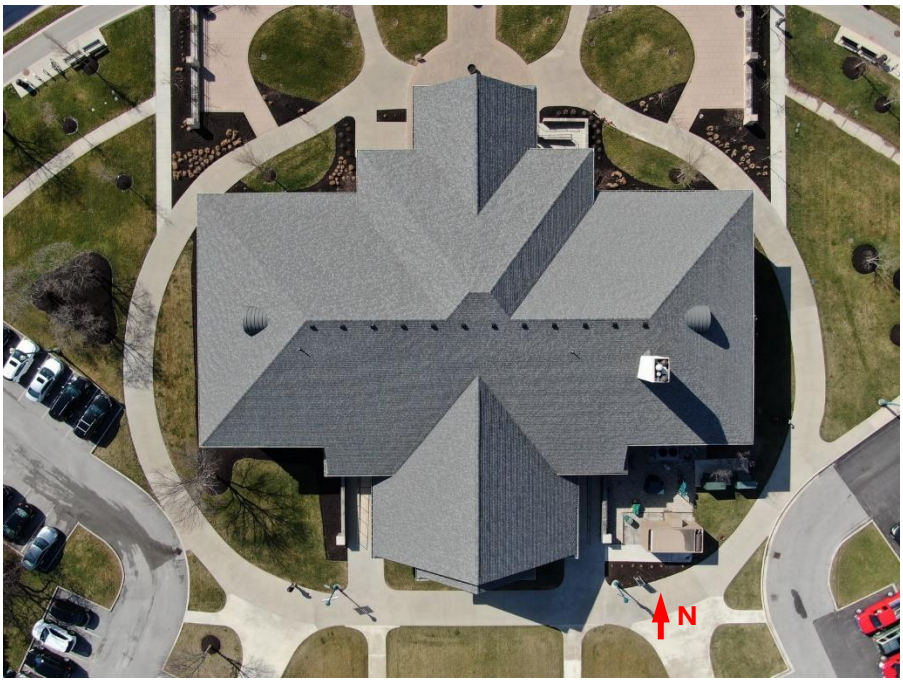

Figure 1. Aerial view of Fishers City Hall

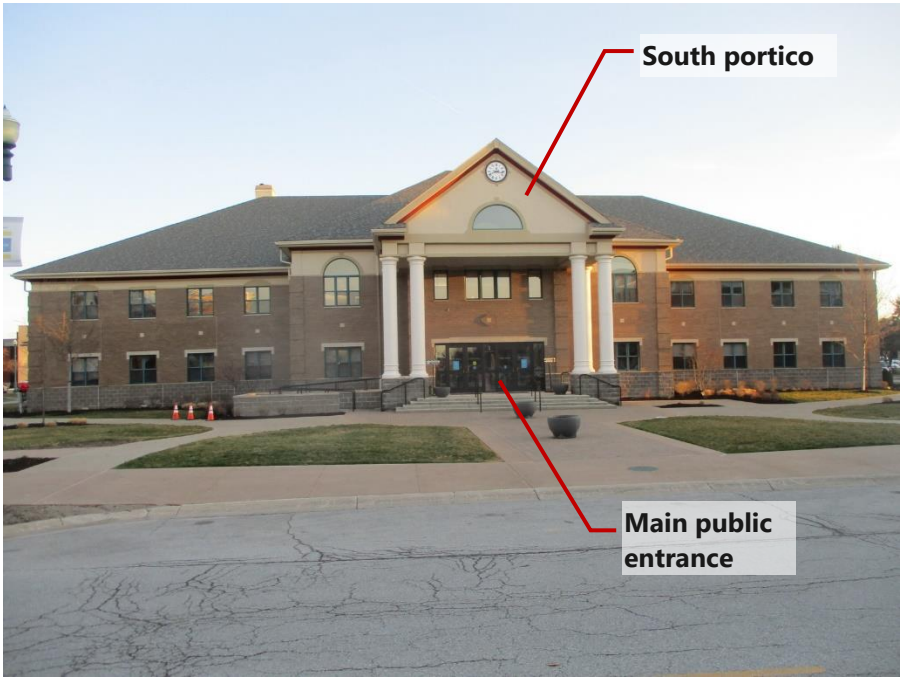

Figure 2. South exterior wall of City Hall showing the main public entrance

Figure 3. East exterior wall of City Hall

Figure 4. North exterior wall of City Hall

Figure 5. West exterior wall of City Hall

Figure 6. Water staining on split face CMU wainscoting

Figure 7. Water staining on the CMU partial wall near the northeast entrance

Figure 8. Water staining at the portico column base near the south entrance of the building

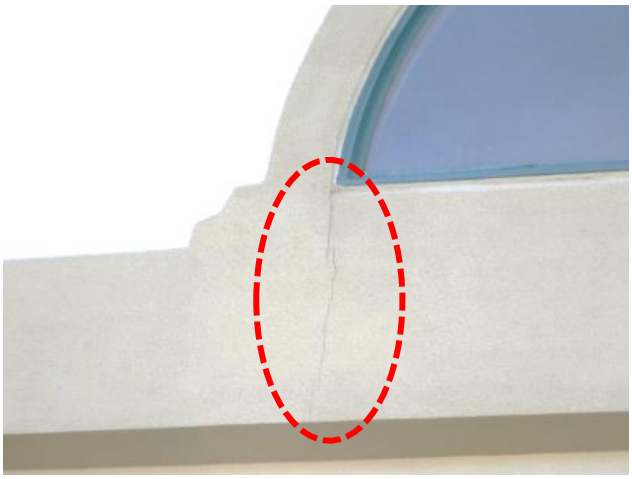

Figure 9. Crack in EIFS lamina at north portico window

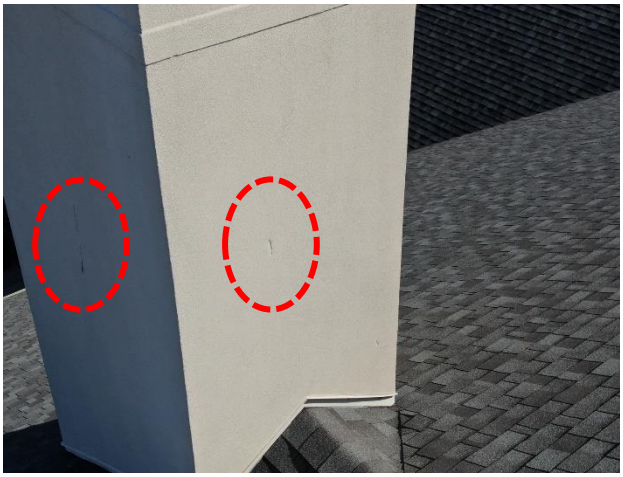

Figure 10. Punctured EIFS lamina at the chimney

Figure 11. Cracked coating at portico column near the south entrance

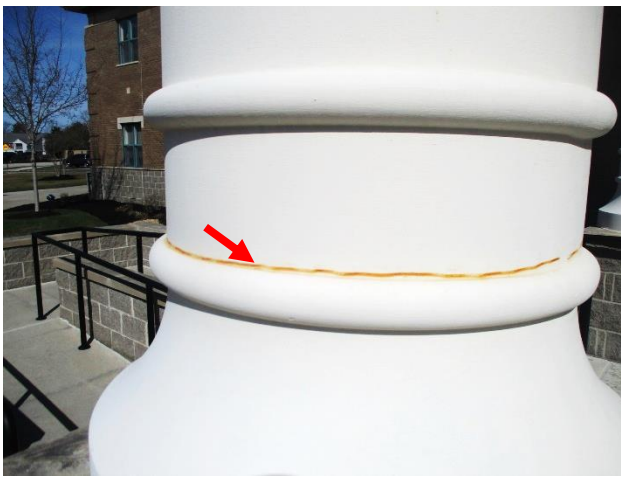

Figure 12. Corrosion staining at the base of the portico column near the south entrance

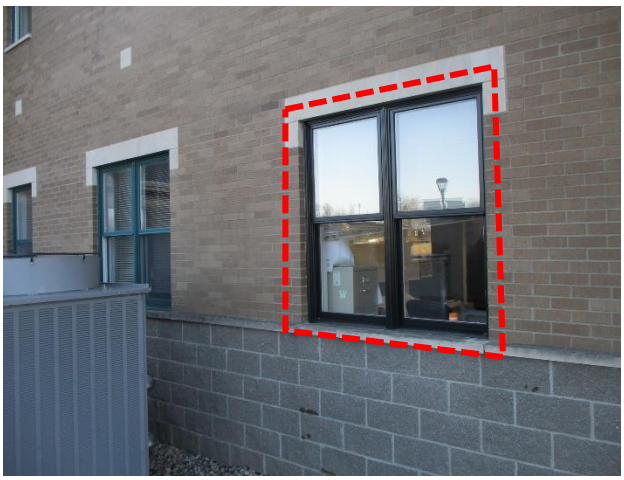

Figure 13. Painted window frame on the south facade

Figure 14. Steel wide-flange beam with gap between the bearing surface of the pocket

Figure 15. Hairline, vertical cracking on west wall of concrete basement

Figure 16. Cracking of floor tile at first floor around elevator and near janitor's closet

Figure 17. Cracking of floor tile at first floor around elevator and near janitor's closet

Figure 18. Crack in wall widened at increasing height

Figure 19. Cracks in floor tiles below landing of main stairway

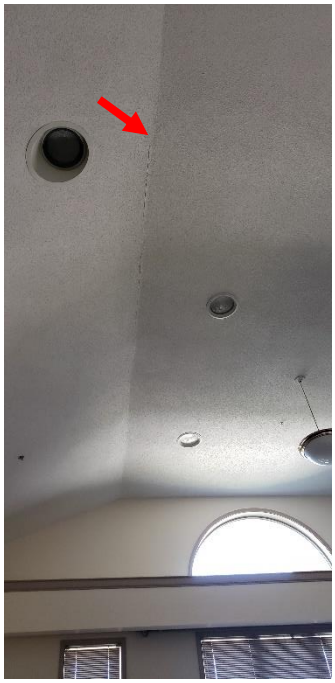

Figure 20. Cracks in gypsum sheathing of Auditorium

Figure 21. Sagging of duct on east wall of Auditorium

Figure 22. Wood bracing in A-V room at the northwest corner of the Auditorium to support televisions hung from the walls

Figure 23. Tearing of gypsum sheathing finish in A-V room of the Auditorium

Figure 24. Cracked floor tile in front of elevator at the second floor

Figure 25. Cracked gypsum sheathing at second floor janitor's closet

Figure 26. Cracked floor tiles at door threshold to the server room at the second floor

Figure 27. Crack in gypsum sheathing at northeast corner of server room on second floor

Figure 28. Cracking in joints of floor tiles adjacent to main stair opening on second floor

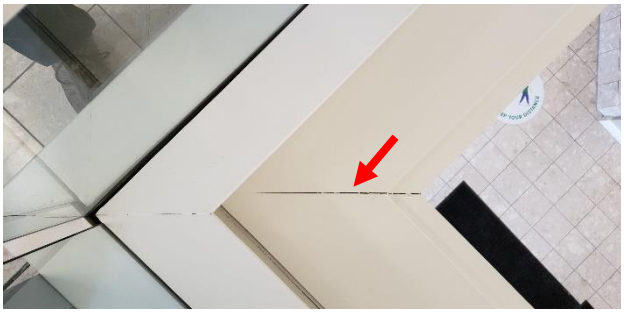

Figure 29. Separations in wood trim at mitered corners adjacent to main stair opening on the second floor

Figure 30. Cracked tile in administration office kitchenette

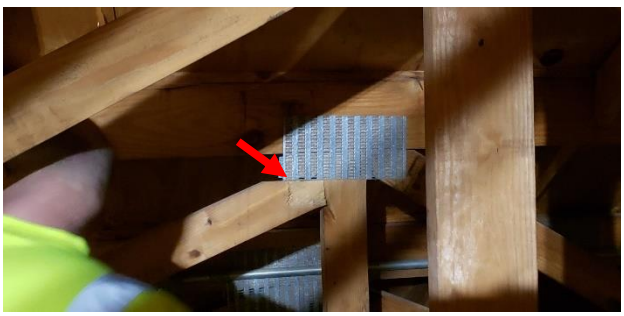

Figure 31. Disconnected diagonal web member of truss in west end of attic

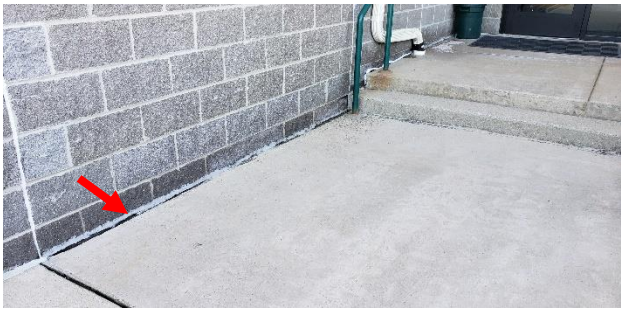

Figure 32. Approximately 1 inch of vertical displacement of the concrete flatwork at auditorium exterior wall

Figure 33. Approximately ¾-inch of vertical displacement of the planter adjacent to the north exterior building wall

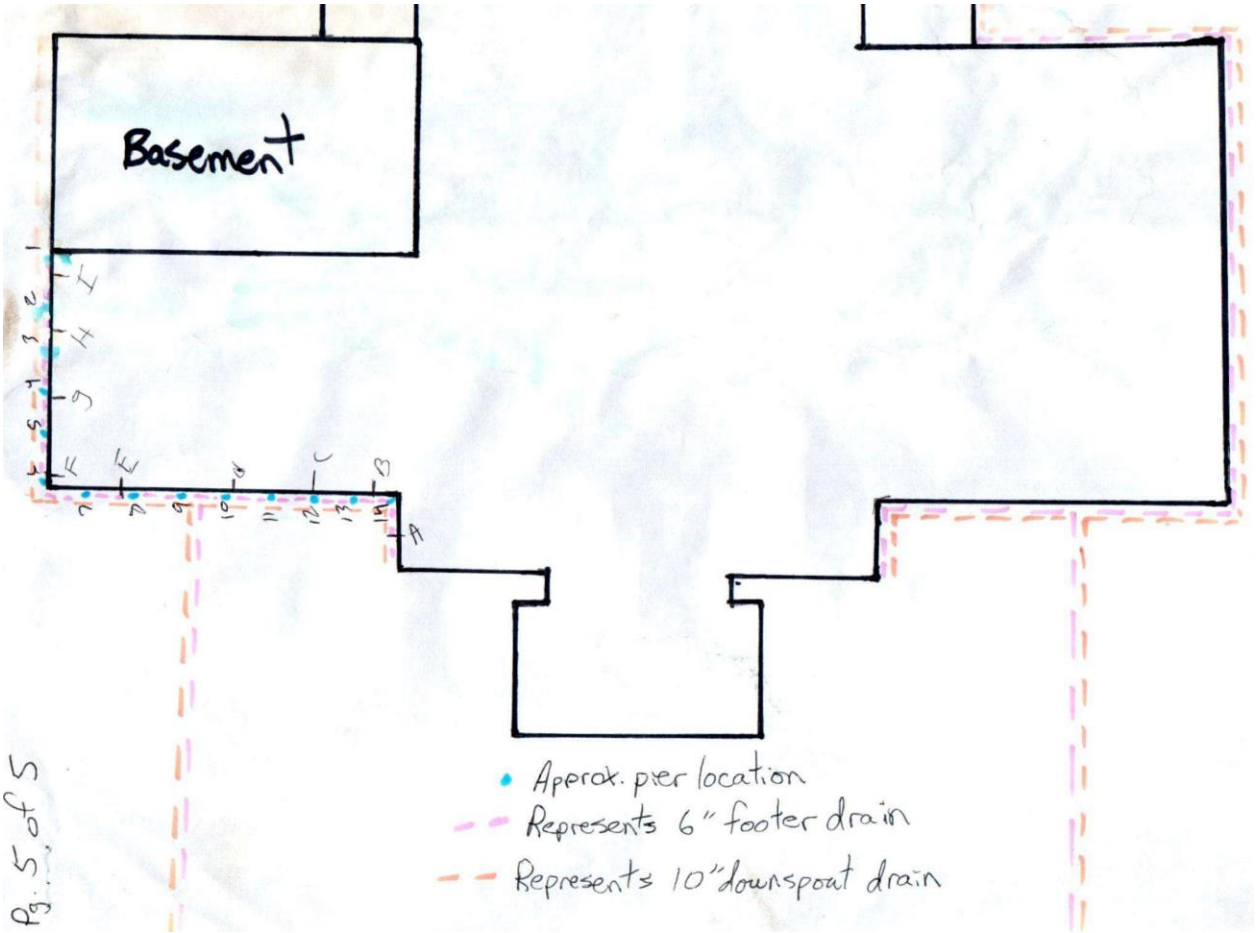

Figure 34. Excerpt from plan sketch showing approximate helical pier installation locations installed in 2012

APPENDIX A. OPINIONS OF PROBABLE COSTS

City Hall[7,8]																
Component	Quantity	Unit Cost	Unit Description	Estimated Cost	Immediate Needs	2021 Year 1	2022 Year 2	2023 Year 3	2024 Year 4	2025 Year 5	2026 Year 6	2027 Year 7	2028 Year 8	2029 Year 9	2030 Year 10	Sub-Total
Exterior Facade and Roofing																
Review Edge Sheet Metal	1	$1,000	LS	$1,000		$1,000										$1,000
Rout and Seal CMU Cracks[1]			LS	$2,000		$2,000				$2,000					$2,000	$6,000
Install Concrete Curb			LS	$7,000		$7,000										$7,000
Replace Guardrail Post Bases			LS	$15,000			$15,000									$15,000
Replace Coping Stone Sealant Joints at Ramp	100	$15	LF	$1,500		$1,500										$1,500
Install Sealant at Precast Head Joints	300	$35	LF	$10,500		$10,500										$10,500
Repair Brick Mortar Joints[1]	50	$100	SF	$5,000		$5,000				$5,000			$5,000			$15,000
Repair Brick Sealant Joints[1]			LS	$5,000		$5,000									$5,000	$10,000
Replace CMU Expansion Joint Sealant	300	$20	LF	$6,000			$6,000									$6,000
Monitor Sidewalk Cracks Annually			LS	$500		$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$5,000
Repaint Entry Doors[1]			LS	$2,500				$2,500					$2,500			$5,000
Repair EIFS Crack			LS	$5,000		$5,000										$5,000
Repair Fascia Boards			LS	$3,000		$3,000										$3,000
Replace Windows[2]			LS	$300,000		$300,000										$300,000
Roofing Replacement[3]	17,000	$7	LS	$120,000											$120,000	$120,000
Structural and Foundation																
Repair Damaged Roof Trusses	5	$2,000	EA	$10,000	$10,000											$10,000
Further Investigation of Building Movements[4]	1	$125,000	LS	$125,000	$125,000											$125,000
Building Movement Repairs and Design						Requires Further Investigation (order of magnitude is likely seven figures)										TBD
MEP Repairs[5]																
Replace All Air Handlers and Add Dehumidification			LS	$460,000		$460,000										$460,000
Replace all Supply and Return Air Duct Work			LS	$835,500		$835,500										$835,500
Replace Restroom Toilet Fixtures			LS	$55,530			$55,530									$55,530
Replace Indoor Light Fixtures with LED			LS	$197,000			$197,000									$197,000
Replace Outdoor Light Fixtures with LED			LS	$43,200				$43,200								$43,200
Upgrade Building Power and Distribution			LS	$45,000			$45,000									$45,000
Upgrade and Replace Emergency Generator			LS	$75,000			$75,000									$75,000
Replace Water Softener			LS	$8,500			$8,500									$8,500
Replace Restroom Exhaust Fans			LS	$4,500				$4,500								$4,500
Interior Finishes and Space																
Reset Auditorium Doors			LS	$10,000		$10,000										$10,000
Install New Handrails in Stairs			LS	$18,000		$18,000										$18,000
Design and Renovation of Interior Spaces[6]			LS	$5,000,000						$5,000,000						$5,000,000
				Total Immediate Repair Needs	$135,000											
				Total Estimated Costs, Uninflated		$1,664,000	$402,530	$50,700	$500	$5,007,500	$500	$500	$8,000	$500	$127,500	$7,397,230

Notes:
1. Assumes routine maintenance over term.
2. Based on pricing from Meyer Najem and Fishers previous window quote
3. Based on pricing from Meyer Najem
4. Does not include fees for design or repair
5. MEP Repair Cost estimates provided by Applied Engineering Inc. during WJE's 2018 assessment
6. Design and Renovation of Interior space based on pricing provided by Meyer Najem and includes window replacement, roofing replacement, and HVAC costs which are also included as seperate line items in this opinion of probabel cost. If windows, roofing, and HVAC are performed separate from Design and Renovation of Interior space reduce Design and Renovation of interior space by approximately $1M.
7. Estimates do not include contingencies. WJE recommends budgeting approximately **20 to 40%** for contingencies until designs are further developed.
8. Probable duration of design and repairs for all listed recommendations if commenced concurrently is on the order of 2 to 3 years.

Unit Descriptions
EA - Each; LF - Linear Feet: LS - Lump Sum; SF - Square Feet

APPENDIX B. WJE'S 2018 CITY HALL CONDITION ASSESSMENT REPORT

Report issued on September 28, 2018

CITY HALL
Condition Assessment

One Municipal Drive
Fishers, Indiana

Final Report
September 28, 2018
WJE No. 2018.3840

Prepared for:
Mr. Eric Pethtel
Director of Public Works
City of Fishers
One Municipal Drive
Fishers, Indiana 46038

Prepared by:
Wiss, Janney, Elstner Associates, Inc.
8847 Commerce Park Place, Suite G
Indianapolis, Indiana 46268
317.510.3940 tel

CITY HALL
Condition Assessment

One Municipal Drive
Fishers, Indiana

Logan J. Cook, PE
Project Manager & Senior Associate

Benjamin P. Clemons, PE
Senior Associate

Chadwick L. Collins
Associate III

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WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

TABLE OF CONTENTS

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

CITY HALL
Condition Assessment

One Municipal Drive
Fishers, Indiana

INTRODUCTION

At the request of the City of Fishers Department of Public Works (City), Wiss, Janney, Elstner Associates, Inc. (WJE) provided professional services to assess the existing conditions of the City Hall building located at One Municipal Drive in Fishers, Indiana. This report summarizes our findings and recommendations based on our assessments and interviews with city officials and users of the building.

For this assessment, WJE teamed with the local engineering firm Applied Engineering Services (Applied) to complete the visual condition assessment. WJE's services included an assessment of the building's interior, exterior envelope, and site. Applied's services included an assessment of the existing mechanical, electrical and plumbing systems, and appliances located throughout the building. The purpose of the assessment was to gain a general understanding of the current condition of the building and maintenance needs. The City reported that the information collected from this assessment will be utilized for capital planning and budgeting purposes.

BUILDING DESCRIPTION

Constructed circa 1991, the City Hall building contains two occupied floors with offices, lounge areas, storage rooms, restrooms, and an auditorium along with mechanical spaces in the basement. It also includes a third floor attic area. The building is rectangular in plan, measuring approximately 160 feet in the east-west direction and 120 feet in the north-south direction. See Figure 1 through Figure 5 for elevation views of the building and Figure 6 for an overall aerial plan view of the building. Access to the building is provided from a main entrance on the south elevation which leads to a centrally located atrium inside the building. Two additional entrances exist on the north elevation of the building, located on each side of the auditorium. Access to the basement and upper floors are provided from three different sets of stairs and one elevator located within the western portion of the building. See Figure 7 for an interior floor plan of the first floor of the building.

The building construction generally consists of a 4 inch thick concrete slab on grade containing welded wire fabric within the slab. The elevated floors typically consist of a 2 inch thick lightweight concrete topping slab over plywood sheathing supported by pre-engineered wood floor joints spaced at 2 feet on center. At the auditorium, the floor structure consists of a 3 inch concrete slab on metal floor deck supported by open web steel joists spaced at 2 feet on center. The wood and steel floor joists are generally supported by steel wide-flange beams. The roof framing is comprised of pre-engineered metal plate connected wood trusses typically spaced at 2 feet on center. Supporting the floor and roof trusses are a combination of load bearing nominal 2x6 wood stud walls spaced at 16 inches on center, and steel hollow structural shape (HSS) tube columns. The bearing walls and columns are supported by cast-in-place concrete footings.

The basement is rectangular in plan, measuring approximately 33 feet in the north-south direction by 50 feet in the east-west direction. The basement is located beneath offices on the western side of the building. Access to the basement is provided by one stairwell and the elevator. The exterior walls of the basement consist of 10 inch thick reinforced concrete walls, and the floor consists of a concrete slab on grade.

The interior floor finishes vary throughout the building and typically consist of commercial vinyl tile and carpet; however, marble tile exists in the lobby and public hallways. The ceilings are comprised of acoustical grid ceiling tiles along with gypsum board ceilings in the lobby and auditorium. The interior walls generally consist of painted gypsum board. Ceramic wall tile finishes exist in the bathrooms.

The buildings' exterior facade consists of split-face concrete masonry units (CMU), brick veneer, limestone sill accents, and an exterior insulation and finish system (EIFS). The CMU originates from grade and extends approximately four feet above grade, and is topped with a limestone coping. Brick with precast concrete window headers covers the majority of the first and second floors, and a narrow EIFS band is installed for the last 2 to 4 feet below the roof overhangs. EIFS was also used for the pediments on the north and south elevations. The roofing consists of asphalt shingles supported by wood sheathing.

DOCUMENT REVIEW

The following pertinent documents were provided for review:

- Original architectural and structural drawings for Fishers Town Complex, prepared by Cole Associates Inc. (CAI), dated October 23, 1989. The drawings contained three different revision marks with the latest one dated December 12, 1991.
- Original mechanical, electrical, and plumbing (MEP) drawings by CAI - these drawings were not reviewed by WJE but have been supplied to Applied for review.

Windows:

- Provided on Sheet A-8 is a *Window Schedule* that specifies the size (base and height) of each window. A note underneath the schedule states the following: *All window sizes shown are generic. Each manufacturer shall specify their window which will come the closest to matching these sizes. The typical window at City Hall is (W-B) which is a 60 inch by 60 inch double-hung window with vents.*
- Detail S6 on Sheet A-8 depicts a double-hung window section. Located at the window sill is a precast concrete sill with the top horizontal surface of the sill sloped away from the windows. Additionally, shown at the window head is a 4 inch deep by 8 inch talk precast concrete header.

INTERVIEWS WITH CITY MAINTENANCE PERSONNEL

WJE met with Ms. Rachel Tudor (Fishers) to discuss the maintenance history for the property as well as current maintenance and user concerns. The following pertinent information was provided during the building assessment by City personnel.

Maintenance History

- Previous water leakage was noted in the basement on the north wall behind the electrical panels. Exterior drainage at this location was repaired with no additional water leakage reported since the drainage repairs.
- The roof was replaced within the past six years.
- Post installed foundation piers reportedly were installed on the west exterior wall foundations.
- The carpet in the auditorium was replaced six to seven years ago.
- Carpet and ceiling tiles were replaced in the third floor space at the northeast quadrant in 2017.
- Cracking in the east walls of the auditorium finishes was repaired approximately five years ago. There has been no reported cracking since the repairs.

Maintenance Concerns

- There are possible ADA compliance issues in the bathrooms.
- Existing window sashes do not close tightly.

- Exterior and auditorium double door closure issues repeatedly occur.

User Preferences

- Replace windows with energy efficient windows.
- Upgrade the auditorium lighting.
- Repaint the auditorium.
- Replace carpet and floor finishes in the building.
- Upgrade kitchenette cabinets and appliances.
- Upgrade the exterior lighting.

OBSERVATIONS

On August 20, 2018, Messrs. Logan Cook, Benjamin Clemons, and Chadwick Collins of WJE, along with Mr. Elliot Lachmeyer from Applied, met with Ms. Rachel Tudor (Fishers) to make visual observations of the condition of the building and site. The following summarizes the significant observations.

Site and Grounds

No significant observations related to the site and grounds were noted.

Exterior Facade

- Vertical and stair-stepped cracks were observed in the CMU along the base of the east and west walls (Figure 8 and Figure 9). No vertical expansion joints were observed in the CMU at these walls.
- Crack gauge monitors previously installed at crack locations in the CMU were observed. These are located along the base of the exterior walls on the west exterior wall (Figure 10 and Figure 11). Previously installed crack gauge monitors show little indication of movement.
- Stair-stepped cracks were observed in the CMU walls at the edge of a previous repair location in the CMU wall at the base of the west wall (Figure 12).
- Cracked and spalled CMU is typical along the joint between the knee wall and concrete ramp on the north side of the building (Figure 13).
- Corrosion exists at the base of the handrails with cracked concrete on the north side of the building (Figure 14).
- There is a broken handrail support at the connection to the supporting wall on the east ramp on the north side of the building (Figure 15).
- Sealant joint failures are located at head joints in the limestone copings at the ramps on the north side of the building (Figure 16).
- Missing and cracked mortar is typical at head joints between the limestone accent units (Figure 17 and Figure 18).
- Cracked mortar joints are typical at the corners of the building in the brick veneer (Figure 19).
- Cracking exists in the brick veneer mortar joints on the south and west walls, typically emanating from the corners of window openings (Figure 20 and Figure 21).
- There is crazing of sealant in the CMU wall expansion joint (Figure 22).
- Chipped and flaking paint exists at window frame perimeter joints (Figure 23).
- Isolated cracks exist in the concrete sidewalk slabs (Figure 24).
- Typical windows are double-hung single pane windows with screens located on the bottom sash. The exterior side of the windows were painted and sealant was located around the perimeter of the windows at the joint between the window frame and brick veneer and precast sill and header.
- Corrosion exists at the base of the doors to the main entrance (Figure 25).

Roof

- There is cracked EIFS on the soffit return on the west side of the south gable (Figure 26).
- Fascia board on the south gable is deteriorating at hip returns (Figure 27 & Figure 28).
- There are raised shingles on the south face of the west gable (Figure 29).
- Water damage of fascia board was observed on the south gable roof (Figure 30). This location was along the south edge on the central southeast hip at west end where it meets the east face of the south gable roof.
- There are raised shingles on the south face of the east gable (Figure 31).
- The metal face of the east end vent is damaged (Figure 32).
- The fascia board is water damaged on the west edge on the central southwest hip at the north end where it meets the south face of the west gable roof (Figure 33).
- Flaking paint exists on the wood chimney cap (Figure 34).
- The fascia board is water damaged on the west gable on the central northwest hip where it meets the hip return (Figure 35).
- The fascia board is water damaged on the north gables (both the main gable and the column gable) where the boards met the hip returns at all four locations (Figure 36 & Figure 37).
- There is a de-icing system along the edge of the roof above the gutters on both the northwest and northeast entry areas leading to the two north elevation entry doors. The system consists of a looping wire clipped to the roof shingles just above the gutters; however, it is unknown whether the system is operable.
- There is a disconnected section of the de-icing system on the west edge of the north gable (Figure 38).
- Edge metal and shingles are out of plane at the southern termination of the west hip return on the central northwest hip roof (Figure 39).

Interior Finishes and Spaces

Restrooms

- The first and second floor women's restrooms contain one apparent wheelchair accessible compartment or stall, each with doors that swing outwards (Figure 40). The stalls measure approximately 70-1/2 inches deep by 46-1/2 inches wide.
- The second floor men's restroom contains no apparent wheelchair accessible stall and all of the doors swing inwards. The stalls measure approximately 59 inches deep by 46 inches wide.
- The first floor men's restroom contains one apparent wheelchair accessible stall. The stall door swings outwards and the stall measures approximately 58-1/2 inches deep by 48 inches wide.

Stairs

- Two stairwells located on each side of the auditorium consist of the following dimensions (see Figure 41):
  - Riser depth = 11 inches and height = 6-1/2 inches
  - Stair width = 42-3/4 inches
  - Handrails are a nominal 2x6 vertically installed protruding 1-1/2 inches from the face of the wall on both sides of the stairs.
  - Handrail height = 36 inches
- Entry stairs consist of the following dimensions (see Figure 42):
  - Riser depth = 12 inches and height = 5-3/4 to 6 inches
  - Handrails are a nominal 1x6 horizontally installed
  - Handrail height = 36 inches

- Several floor tiles at the entry stairs are cracked, broken, and missing sections (Figure 43 and Figure 44).

Floors

- Cracks were observed in the ceramic and vinyl floor tiles located adjacent to the auditorium near the elevator and northwest exit door (Figure 44 and Figure 45). The location of the cracking is above and adjacent to the basement walls.
- The carpet was torn and ripped at several locations throughout the office spaces (Figure 47 and Figure 48).

Ceiling

- Water staining of the gypsum board ceiling exists adjacent to a light fixture in the auditorium (Figure 49).

Attic

- Water staining was observed on the interior side of the plywood roof sheathing measuring approximately 8 linear feet (Figure 50). WJE was not able to obtain up-close access for hands on inspection at this location.
- Deteriorated plywood sheathing and 2x wood blocking and purlin were observed measuring approximately 25 square feet area (Figure 51). A sprinkler line and head were present adjacent to this location.

Windows and Doors

- Several windows did not properly close, with daylight visible at the sill (Figure 52).
- Sealant failures and separations between the window framing and trim were observed at several windows sill and jambs (Figure 53).
- Entry doors to the auditorium did not align when in the closed position (Figure 54 and Figure 55). The misalignment was approximately 7/8 inch between two doors.

Mechanical, Electrical and Plumbing (MEP) Systems

See Appendix A for the Applied Engineering report with their findings, conclusions, and recommendations related to existing mechanical, electrical, and plumbing systems. The following is a brief summary of the pertinent items listed in Applied's report.

- Air distribution and humidity problems were detected throughout the building.
- A power distribution problem was observed, with inadequate power in many parts of the building.
- Several MEP items identified throughout the building are in need of replacement.

DISCUSSION AND CONCLUSIONS

Based on our observations, experience with similar structures, and conversation with city personnel, the City Hall structure has maintenance items that should be addressed in the near term and improvements that could be implemented to enhance the building. Although the observed deteriorated conditions do not appear to significantly impact the integrity of the structure or the use of the building at this time, if left unmaintained, these conditions could worsen and eventually affect the serviceability of the building.

Site and Grounds

No significant observations related to the site and grounds were noted during our site visit. The site and grounds appear to be well maintained and in serviceable condition at this time.

Exterior Walls and Windows

The windows located throughout the building appear to be original single pane windows that contain one layer of glass. Single pane windows are typically less energy efficient than double pane windows, which contain two layers of glass. The cost benefits of replacing the original windows with energy efficient windows could be performed to determine the anticipated cost savings in both the heating and cooling of the building over time.

The spalled CMU at the base of the knee wall for the concrete ramp is likely due to a combination of high amounts of chloride exposure and also freeze-thaw deterioration. Sodium-chloride is a main constituent of common deicing salts used on walkways during the winter months, and it can cause deterioration to concrete and corrosion of steel. It is likely that the salt-saturated water collects in the joint between the slab and wall, allowing the chlorides to seep into the porous face of the CMU blocks. Additionally, moisture that enters this joint can freeze and expand during the winter months. This process is usually cyclical, as water can freeze and thaw within the joint repeatedly, causing stress on the CMU and resulting in additional deterioration. Installing a concrete curb at the base of the CMU wall would help to prevent water and chlorides from further deteriorating the masonry units.

The vertical cracks that were observed in the CMU on the exterior of the east and west walls are likely related to shrinkage and thermal expansion and contraction of the CMU masonry. No control joints are installed on the east and west walls to accommodate masonry movements that would be expected. As such, the cracking could likely have been avoided if control joints were installed in the walls when the building was constructed. A control joint provides a flexible connection that allows for shrinkage and thermal expansion and contraction of the CMU. Because these walls do not have any control joints, the blocks and mortar have cracked and separated to compensate for the actual movement of the CMU. Additional cracks were observed at the edge of repair areas, which were likely due to the expected shrinkage of the newer CMU relative to the original CMU. Cracks in the CMU wall should be routed and sealed with sealant to prevent moisture intrusion at the cracks and accommodate expected movements.

On the west side of the structure, larger cracks were observed in the CMU that are likely attributable to differential settlement of the slab-on-grade and basement foundations. Based on observations inside the City Hall building and conversations with City personnel, the slab-on-grade has reportedly settled more than the basement foundations. This differential settlement creates local stresses and deflections in the structural members and in the interior and exterior finishes at the perimeter of the basement. If these stresses and deflections exceed the capacity of a given building component, the distress, such as cracking, can occur in the component. In the case of CMU, concrete is brittle and when overstressed, cracking is common. The CMU blocks at the base of the exterior walls are not a structural component, so the observed cracks are principally an aesthetic concern. However, open cracks can lead to water infiltration into the wall cavity. These cracks can also continue to be monitored as a way to quantify the amount of differential settlement over time. Also, the cracks could be routed and sealed to prevent future water intrusion.

Split-face CMU, more than clay brick masonry materials, is inherently porous and allows water to migrate into the wall assembly. Due to the excess water entering the wall cavity, split-face CMU cladding can increase the susceptibility of the wall to water related maintenance issues such as water leakage into the wall cavity and interior space, as well as freeze-thaw deterioration of the CMU material itself. As such, in

current industry practices, additional precautions for managing water in the wall cavity are typically recommended when split-face CMU is utilized in exterior applications. With no reported leakage at the exterior walls, the existing building wall construction seems to be adequately managing water in the cavity without interior leakage at this time.

Corrosion at the post base of the handrails is likely due to water entering the grout pocket located around the circumference of the post base. Water in the pocket causes corrosion of the metal post base as visible with the corrosion staining on the grout and corresponding sidewalk. This corrosion, if permitted to continue, will eventually deteriorate the metal post base, thus weakening the capacity of the framing to support the code-prescribed loading for handrails. The grout pocket should be both removed and replaced, or sealant applied to prevent water from entering the pocket.

Broken handrail connections to the CMU wall are likely due to corrosion and improper installation of the connection bracket, causing stress on the weld. It could also be the result of a possible defect in the weld. With the connection to the wall no longer intact, the load on the adjacent two connections has been increased which could lead to additional failures in the remaining clips, representing a potential safety concern. The broken connection clip should be either repaired or removed and a new clip installed.

The mortar at head joints between the limestone window sills is typically deteriorated and missing at select locations. The mortar deterioration is likely exacerbated at these locations because the sills are exposed to water and snow which can accumulate on the horizontal surface. This moisture is subject to freeze-thaw conditions as described above, resulting in deterioration of the material. Installing sealant on the top surface of the joints at these locations, similar to coping units on a parapet, may provide a more durable repair than replacing the mortar in-kind.

Cracked mortar joints in the brick veneer at the building corners is likely related to thermal expansion and contraction of the brick masonry, and similar to CMU can result in stresses that causes the cracking observed. Also, cracks emanating in the brick veneer from window corners may be related to differential settlement of the exterior wall foundations as previously discussed.

The observed deterioration of the sealant in the expansion joints is most likely due to age and exposure. Most waterproofing sealants typically have a service life of five to fifteen years depending on its chemical composition and exposure to UV radiation and weather. Once deterioration of the sealant has occurred, the sealant should be removed and replaced.

Chipped or flaking paint at the window jambs on the exterior should be removed and the windows repainted to match existing. Windows that do not close properly may be damaged, warped, or were possibly installed misaligned. These windows would likely need to be removed and a replacement window installed.

Isolated cracks in the concrete sidewalks were generally located adjacent to the guardrail post locations. The steel guardrail posts were installed within a hole in the concrete slab and surrounded with cementitious grout. It is not known whether a hole was formed into the concrete slab for the posts during construction or if the holes were drilled subsequent to the sidewalk completion. Presently, the cracks are an aesthetic issue and can remain; however, the cracks should be monitored for any differential movement that could result in a tripping hazard.

Roof

The most probable cause of the deterioration of the fascia boards is freeze-thaw or decay due to the boards being cut so close to the plane of the roof. Due to their tight cut, WJE was not able to observe and confirm

the presence of a metal counter flashing behind the fascia board. A metal flashing would typically be warranted to ensure that any water which infiltrates behind the fascia board is directed out to the roof surface.

The ridges in the field of the roof are likely related to buckled sheathing boards. Further investigation would be warranted to confirm this cause. Regardless, the ridges in the field of the roof are primarily an aesthetic concern at this time.

The loose cabling of the de-icing systems could lead to ice build-up in the targeted area, compromising the ability to protect the walkway below.

The out-of-plane edge metal and shingles may indicate damage to the support substrate at the edge. Further investigation is warranted to confirm the condition of the substrate behind the sheet metal.

Interior Finishes and Space

Restrooms

The current governing code for the public restrooms located within City Hall is the 2010 Americans with Disabilities (ADA) Standards for Accessible Design, dated September 15, 2010 as referenced by 2014 Indiana Amendments to the 2012 International Building Code (IBC). Section 213.3.1 *Toilet Compartments*: states that at least one toilet compartment shall comply with Section 604.8.1. Section 604.8.1 *Wheelchair Accessible Compartments*: Wheelchair accessible compartments shall be 60 inches wide minimum measured perpendicular to the side wall, and 59 inches deep minimum for floor mounted water closets measured perpendicular to the rear wall. Section 603.2.1 *Turning Space*: states that the turning space for wheelchairs shall comply with Section 304. According to Section 304, the turning space shall be either a circular space measuring 60 inches in diameter (Section 304.3.1) or a T-shaped space with a 60 inch square minimum with arms and bases of 36 inches wide minimum (Section 304.3.2).

The code that was governing at the time of the design and construction for the restrooms was the 1991 ADA Standards for Accessible Design, which contained similar requirements for providing at least one wheelchair accessible stall. Section 4.17.3 *Size and Arrangement*: depicts the minimum standard stall size to be 60 inches by 59 inches for floor mounted water closets. Therefore, it appears that none of the provided stalls (men's or women's) provide the minimum required clearance in both directions to allow for wheelchair accessibility and turning space.

Stairs

Based on the 2010 ADA Standards code previous mentioned, Section 504 *Stairways* specifies that all steps on a flight of stairs shall have uniform riser heights and tread depths. Risers shall be 4 inches high minimum and 7 inches high maximum and tread depths shall be 11 inches deep minimum. Similar requirements for the stair parameters were defined in the 1991 ADA Standard for the original design and construction of the stairs. Based on these parameters, the as-built stairs dimensions for the riser and depth are within the acceptable range for the stairs.

Section 505 *Handrails* defines the parameters for handrail compliance. The top of the gripping surface of the handrail shall be between 34 and 38 inches above the walking surface (Section 505.4 *Height*). The clearance of the handrail gripping surface and adjacent wall surface shall be 1-1/2 inches minimum (Section 505.5 *Clearance*). The handrail gripping surface shall have a cross section complying with either Section 505.7.1 or 505.7.2. Section 505.7.1 *Circular Cross Section*: handrail gripping surface with a circular cross section shall have an outside diameter of 1-1/4 inches minimum and 2 inches maximum. Section 505.7.2

Non-Circular Cross Sections: handrail gripping surface with a non-circular cross section shall have an overall perimeter dimension of 4 inches minimum and 6-1/4 inches maximum. This section also specifies the maximum gripping surface of the handrail shall be 2-1/4 inches. The as-built handrails consist of a vertically placed nominal 1x6 (3/4 inch thick by 5-1/2 inches tall) wood board that has a non-circular cross section. The total perimeter distance of the handrail is approximately 12 inches, which exceeds the 6-1/4 inch maximum value. Additionally, the gripping surface is solid and measures 5-1/2 inches which exceeds the 2-1/4 inch maximum. Therefore, it appears that the handrails for the two sets of stairs adjacent to the auditorium do not comply with the current governing ADA requirements.

Based on a review of the governing code at the time of the design and construction (1991 ADA Standards), it contained similar requirements as the current code. Section 4.26.2 Size and Spacing of Grab Bars and *Handrails*: the diameter of width of the gripping surfaces of a handrail or grab bar shall be 1-1/4 to 1-1/2 inches, or the shape shall provide an equivalent gripping surface. Based on that parameter, the 3/4 inch wide installed handrail did not meet the design parameters when constructed.

Floors

Cracks were observed in both the ceramic and vinyl floor tiles located adjacent to the auditorium near the elevator and rear entry to the building. Located beneath a portion of the floor at this location is the basement. The flooring has cracked at the joint between the concrete slab on grade and the elevated floor that comprises the ceiling of the basement. As previously mentioned, differential settlement was observed at the basement walls and foundations; therefore, this settlement is likely the cause of the cracking observed in the floor finishes. The floor finishes are brittle and not able to accommodate the downward vertical movement of the basement wall framing, and have since developed cracks.

Ceiling

Water staining was observed on the gypsum board ceiling in the auditorium. The source(s) of the water leakage is unknown but could be attributed to either a previous roof leak or possible condensation from a mechanical duct located within the attic. Since no reported roof leaks have been observed, it is probable this leak location has been resolved.

Attic

Sections of the plywood roof sheathing contained signs of water staining and a few of the nominal 2x roof framing members appeared to contain possible deterioration. However, an up-close inspection of these two areas was not performed to verify whether the 2x framing was damaged. The age of these conditions is also unknown, as well as the source of the water leakage. The source of the water leakage appears to have been addressed possibly during the last roofing replacement as no known roof leaks have been reported at the building. However, the sprinkler line located adjacent to the one condition may have contributed to the cause of the water staining. Please note that it would be more economical to replace the roof sheathing from the exterior side during a future roof repair or shingle replacement as compared to repairs performed from the interior.

Mechanical, Electrical, and Plumbing (MEP) systems

See Appendix A for the Applied Engineering report with their findings, conclusions, and recommendations related to existing mechanical, electrical, and plumbing systems. The following is a brief summary of the pertinent items listed in the Applied report.

- Replace all air handlers and dehumidification.
- Replace all supply and return air duct work.

- Replace restroom fixtures.
- Replace indoor light fixtures with LED.
- Replace outdoor light fixtures with LED.
- Upgrade building power and distribution.
- Upgrade and replace the emergency generator.
- Replace the water softener.
- Replace restroom exhaust fans.

RECOMMENDATIONS

Immediate (Within the Next Year)

1. ***Repair De-Icing System*** - The system should be checked to determine operability, and the loose cabling section repaired.
2. ***Review Edge Sheet Metal*** - Investigate the substrate located behind the sheet metal to determine whether damaged exists. If substrate damage is observed, then repairs to the affected area would be recommended.
3. ***Repair Handrail Connection*** - Repair or replace the broken handrail connection to the CMU wall.

Priority I (One to Three Years)

4. ***Rout and Seal CMU Cracks*** - Rout existing cracks in the CMU walls and install sealant.
5. ***Install Concrete Curb*** - Install a concrete curb at the base of the CMU wall along the entire length of the sidewalk.
6. ***Replace Guardrail Post Bases*** - Guardrail post base grout pockets should be removed and replaced and sealant applied around the extents of the posts to prevent water migration into the grout pockets.
7. ***Replace Stone Sealant Joints at Ramp***- Remove and replace sealant joints at limestone copings along the ramp.
8. ***Repair Stone Head Joints*** - Remove and replace mortar at cracked head joints in the limestone accent units, or remove damaged mortar and install sealant.
9. ***Repair Brick Mortar Joints*** - Rout existing cracks in the brick veneer and install sealant.
10. ***Repair Brick Sealant Joints*** - Remove and replace failed sections of sealant joints in the brick veneer.
11. ***Replace CMU Expansion Joint*** - Remove and replace failed sealant in the CMU expansion joint.
12. ***Monitor Sidewalk Cracks*** - Existing cracks in the concrete sidewalk slabs should be periodically monitored for any possible differential settlement that could create a tripping hazard. This should be performed yearly.
13. ***Repaint Windows*** - Clean window framing free of chipping or flaking paint and repaint.
14. ***Repaint Entry Doors*** - Clean entry door framing free of corrosion and repaint.
15. ***Repair EIFS Crack*** - Rout and seal cracks in the EIFS soffit return.
16. ***Repair Fascia Boards*** - Deteriorated sections of the fascia boards should be removed and replaced.
17. ***Repair Water Stains*** - Areas of water staining in the auditorium could either be painted or sections of the gypsum board ceiling removed and replaced.
18. ***Replace Windows*** - Replace windows with current energy efficient windows. Phasing of the window replacement could be considered. For purposes of cost estimates, the total cost is included in Year 1.
19. ***Reset Auditorium Doors*** - Entry doors to the auditorium did not align when in the closed position; the doors could be removed and reset in the proper position.
20. ***Install New Handrails*** - Remove and replace existing handrails at the stairs to be ADA compliant.
21. Remove and replace carpet and floor finishes.

Priority II (Four to Seven Years)

22. ***Review and Repair Roof Framing*** - Attic wood framing with water deterioration and staining should be inspected and if the wood is found to be deteriorated, those sections should be either removed or replaced, or additional wood framing installed to strengthen the damaged wood members. If review and repairs are scheduled during a future roof repair project, this work could be performed from the exterior for a more economical cost.

Priority III (Seven to Ten Years)

No Priority III recommendations at this time.

Upgrades

Additions and upgrades to City Hall should be assessed based on existing space and needs of the building. The following is a summary of possible upgrades.

- Provide ADA compliant public restrooms on each floor.
- Upgrade kitchenette cabinets and appliances.

PROBABLE COST ESTIMATE

See Appendix B for opinions of probable costs. Costs for the recommended repairs are given in present-day dollars local to the project site and are not modified for cost increases in the future. The estimated costs provided should be considered as preliminary order-of-magnitude cost figures based on estimated quantities and do not include costs associated with contractor general conditions, permitting, bonds, or contingency.

We recommend adding 20 to 40 percent for contingencies and contractor general conditions based on previous experience.

Actual costs can vary due to the actual method and details selected, contractor means and methods, actual quantities, and whether the work takes place intermittently or all at once. Cost estimates were made by either reference to a standard estimating guide, from our experience with similar work, or discussions with local contractors. Costs were not obtained from a contractor bidding on a set of repair drawings and specifications and they were not prepared by a professional cost estimator. Competitive bids using a set of repair drawings and specifications developed by a licensed architect or engineer experienced with repairing these types of structures should be obtained if more accurate costs are required and implementation of the repairs is desirable.

CLOSING

This assessment was based on limited visual field observations only. Our findings and recommendations are based on observations of representative conditions at the building at the time of our assessment. Other conditions may exist, or develop over time, which were not found during our limited investigation. WJE reserves the right to modify our findings should additional information become available. Our recommendations and/or opinions do not represent a design or specification for repairs and additional investigation may be required as part of a comprehensive repair or replacement design. The recommended repairs or replacements should be designed by a Professional Engineer or Registered Architect licensed in the state of Indiana.

FIGURES

Figure 1. South elevation of City Hall building

Figure 2. West elevation of building

Figure 3. East elevation of building

Figure 4. Partial north elevation of building

Figure 5. Partial north elevation of building

Figure 6. Overall aerial view of City Hall

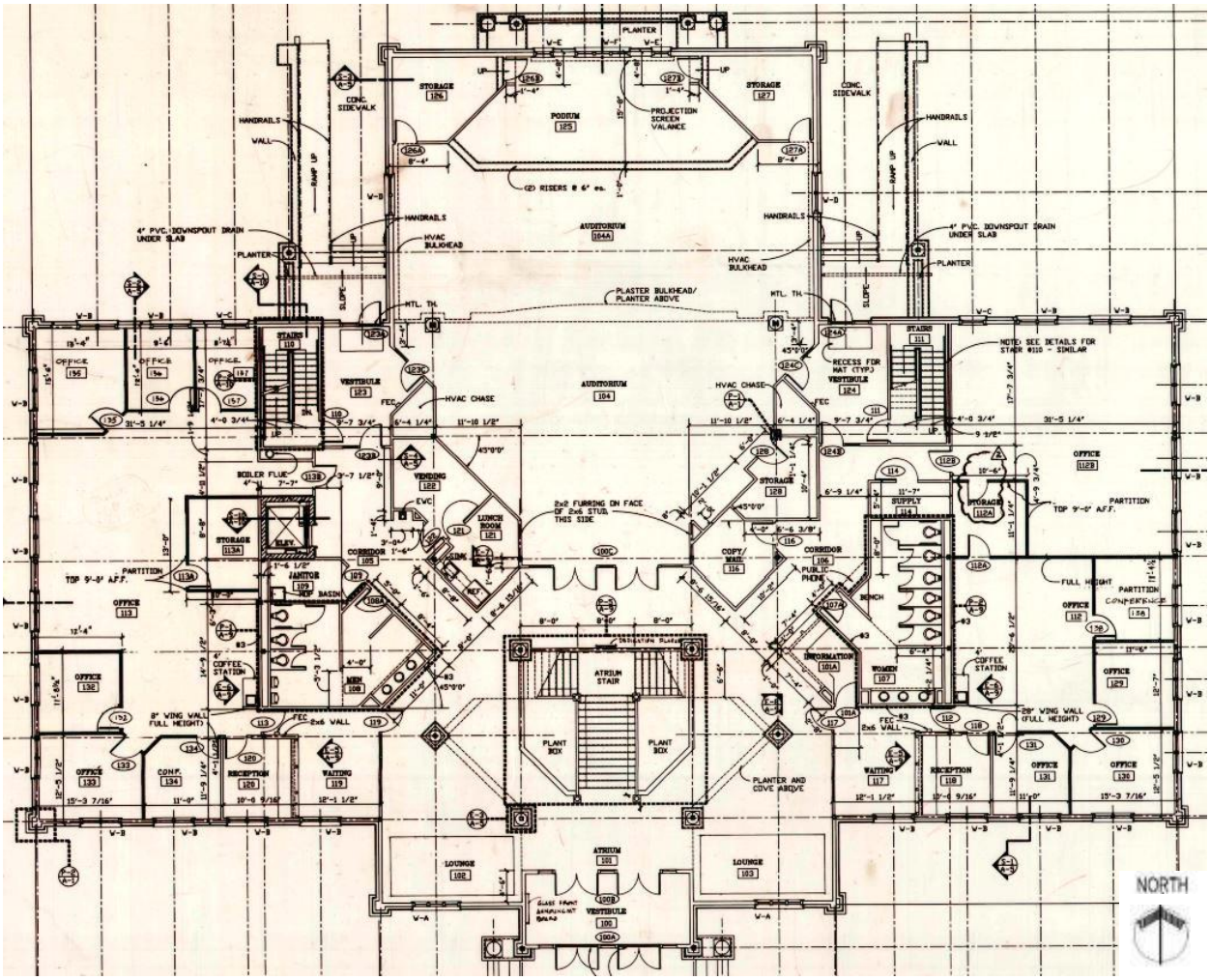


Figure 7. Architectural First Floor plan (CAI Sheet A-1)

Figure 8. Vertical and stair-stepped cracks in the CMU (shown in yellow)

Figure 9. Vertical crack in CMU (shown in yellow)

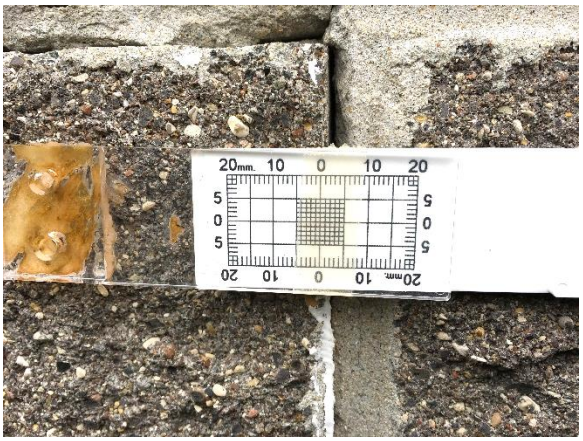


Figure 10. Existing crack monitor on the west wall

Figure 11. Existing crack monitor on west exterior wall

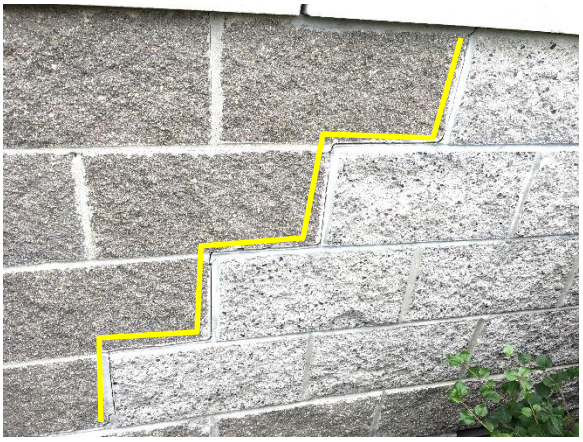


Figure 12. Stair-stepped crack in CMU (shown in yellow)

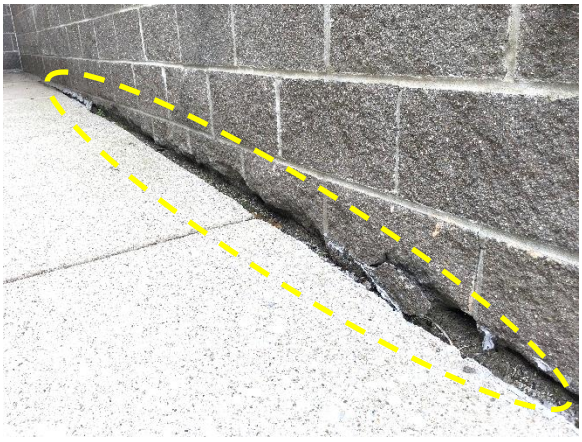


Figure 13. Spalled and cracked CMU along the joint between the wall and concrete ramp

Figure 14. Corrosion and staining at the base of the handrails on the north side of building

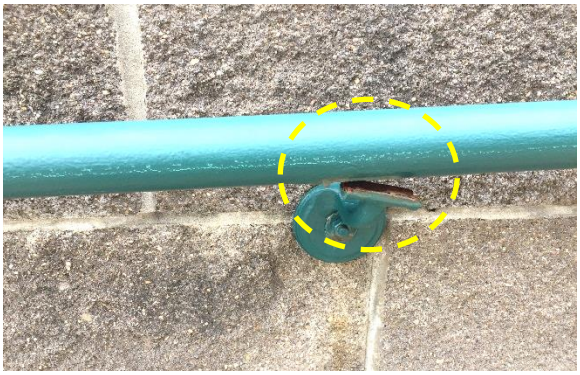


Figure 15. Broken handrail connection

Figure 16. Failed sealant head joint between limestone copings

Figure 17. Cracked and missing mortar at a head joint between limestone accents

Figure 18. Missing mortar at head joint between limestone accents

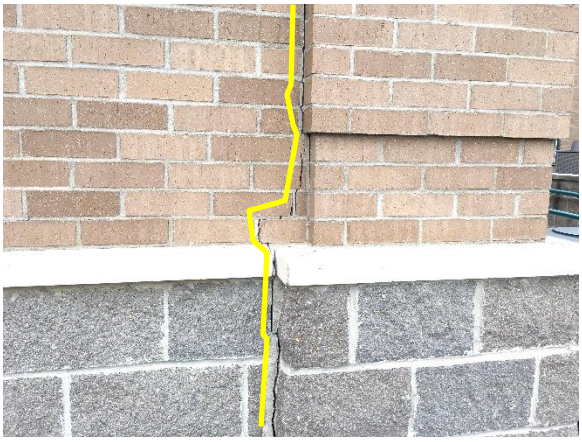


Figure 19. Cracked mortar joint near corner on the north wall (shown in yellow)

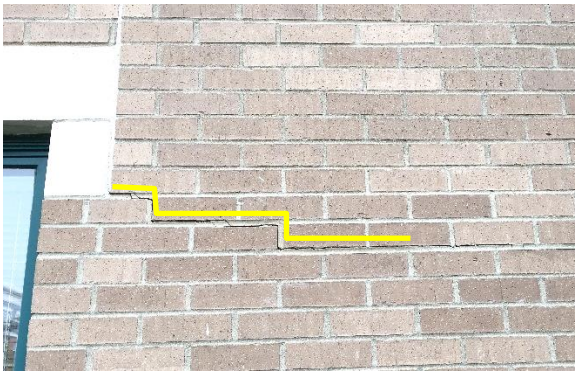


Figure 20. Cracked mortar joint (shown in yellow)

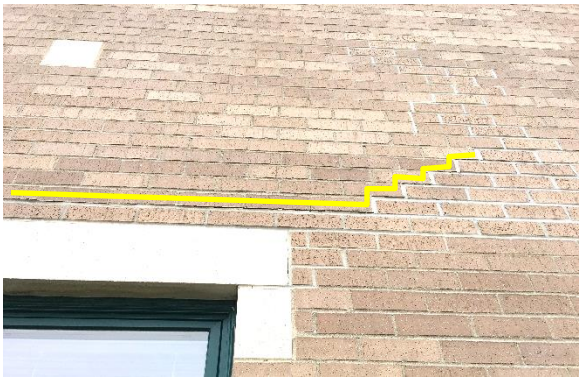


Figure 21. Cracked mortar joint (shown in yellow)

Figure 22. Crazing sealant at expansion joint

Figure 23. Flaking paint on window frame

Figure 24. Cracked sidewalk slab on north side of building

Figure 25. Corrosion and rust staining visible at base of main entry doors

Figure 26. Crack in EIFS soffit

Figure 27. Deterioration of fascia where it meets roofing plane

Figure 28. Deterioration of fascia where it meets roofing plane

Figure 29. Raised shingles on south face at west gable

Figure 30. Water damage of fascia at roofing plane

Figure 31. Raised shingles on south face at east gable

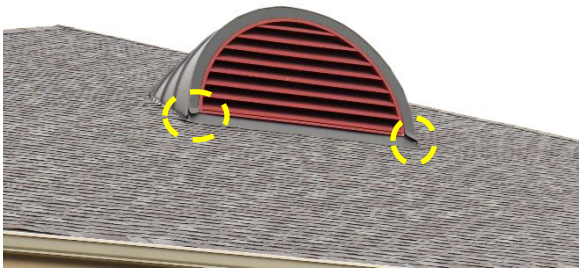


Figure 32. Damage to vent frame

Figure 33. Deterioration of fascia where it meets roofing plane

Figure 34. Deterioration of wood on chimney

Figure 35. Deterioration of fascia where it meets roofing plane

Figure 36. Deterioration of fascia where it meets roofing plane

Figure 37. Deterioration of fascia where it meets roofing plane

Figure 38. De-icing cable detached from clip

Figure 39. Edge metal and edge of shingles appear out of plane with roof edge.

Figure 40. View of the wheelchair accessible stall in the women's restroom

Figure 41. View of stairs located adjacent to the auditorium

Figure 42. View of entry stairs located at the main entry to the building

Figure 43. Broken floor tile at entry stairs

Figure 44. Cracked and broken floor tile at entry stairs

Figure 45. View of cracked ceramic floor tile

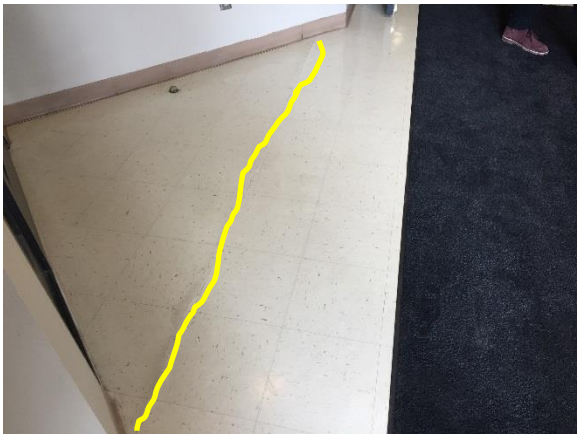


Figure 46. View of cracked vinyl floor tiles

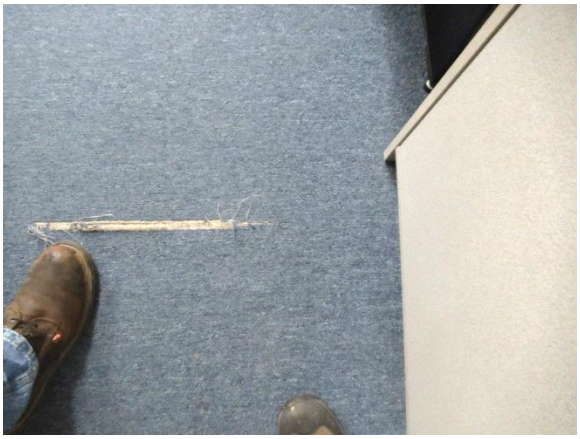


Figure 47. View of torn or ripped carpet

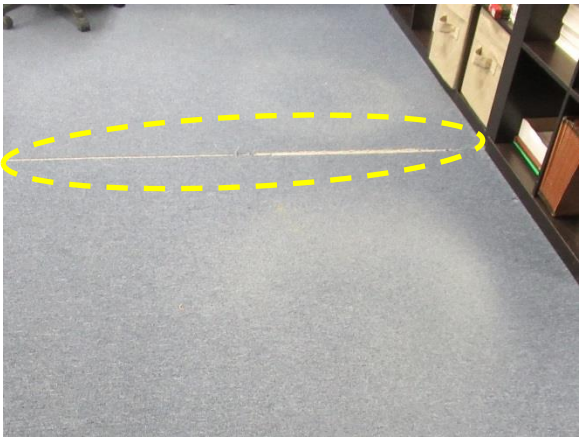


Figure 48. View of torn or ripped carpet

Figure 49. View of water staining on the ceiling

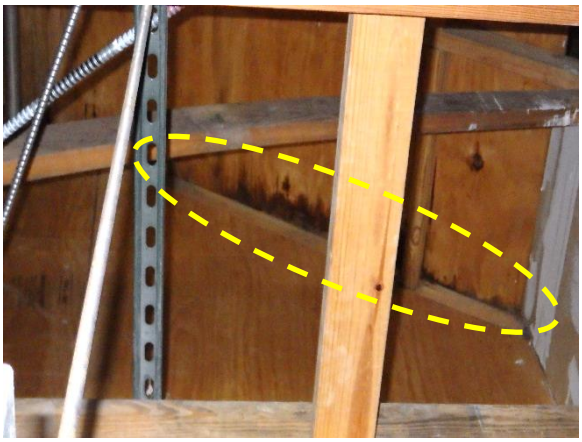


Figure 50. View of water staining on the plywood roof sheathing

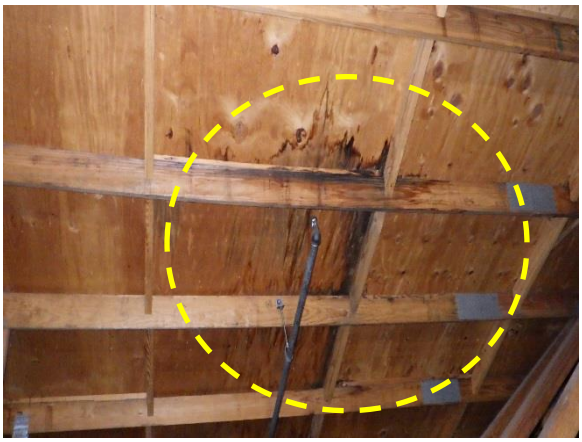


Figure 51. View of deteriorated plywood roof sheathing and 2x framing

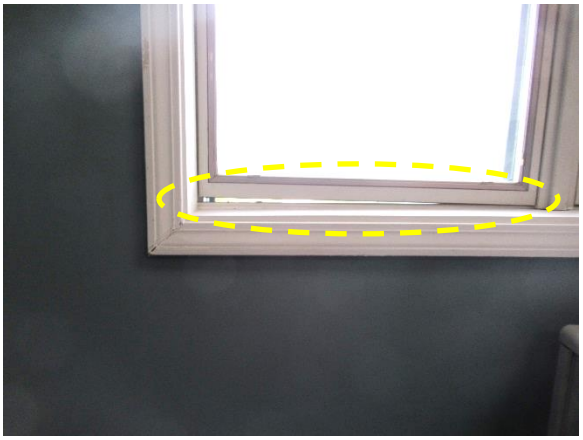


Figure 52. View of window that does not properly close

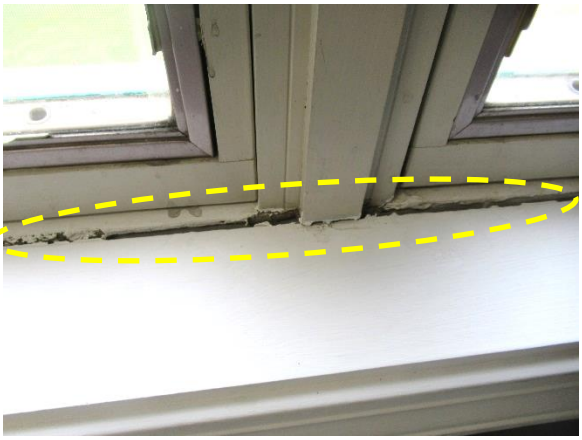


Figure 53. View of sealant failure and separation at window sill

Figure 54. View of entry door to auditorium

Figure 55. View of misalignment of doors in the closed position at the auditorium

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

APPENDIX A - APPLIED REPORT

Applied
Engineering Services

Fishers City Hall

General Background

Fishers City Hall Building is an approximately 23,210 sqft, two-story masonry building constructed in 1991. The building has a mechanical mezzanine located above the second-floor area and a small basement mechanical area.

The City Hall Building is now 26 years old and several of the mechanical systems were replaced in the past four years; however, several systems are original to the building. Overall, the building has been well maintained and equipment that has failed over the years has been replaced.

Observations

Fire Protection

The building is completely sprinklered with a "dry" pipe system. Much of the piping is in an unheated attic space. There have been several leaks in the past from corroded piping. A nitrogen generator has been installed on the system to help prevent corrosion on the inside of the pipe. Overall, the riser, pipe, and valving located below the basement area is in good working condition. However, the corroded piping located in the attic needs to be replaced.

Domestic Plumbing Systems

The domestic plumbing system is connected to a municipal water supply. Hot and cold-water piping is copper and sanitary piping is solvent weld PVC. The toilet fixtures and urinals are original and not water-saving type and lavatories are not ADA configuration. There is one ADA toilet fixture in each restroom.

All the domestic water for the building is run through a water softener. The softener is original to the building and is serviced regularly. Domestic hot water for the building is piped from gas-fired water heaters in the basement mechanical area.

Heating and Air Conditioning Systems

The heating and air conditioning for the building are provided by four (4) constant air volume hot and chilled water air handling units. One unit serving the community / meeting room is in the basement mechanical room and three (3) units are in the mechanical mezzanine area. Heating hot water is provided from two (2) gas-fired condensing boilers and two (2) hot water heating pumps. The boilers and pumps were installed in 2015 and are in good working condition. The building air conditioning is

provided by an air-cooled chiller with chilled water piped to each of the four air handlers. The chiller was installed in 2016 and is in good working condition. The building does not have dehumidification controls or humidifiers installed in the air handlers.

The building is divided into four (4) air conditioning zones: Air Handler #1 serves the main floor community / meeting room. Air Handler #2 serves the 1st and 2nd floors of the west side of the building. Air Handler #3 serves the main foyer and the 2nd floor north side of the building. Air Handler #4 serves the 1st and 2nd floors of the east side of the building. Over the years, there have been many changes to the floor plans of the building and many changes have been made to the air conditioning distribution ducts. Largely, only the supply air ducts have been changed and return air ducts have not. Inadequate cooling air flow is reported in many parts of the building and almost all office areas do not have return air ducts. When the door to an office is closed, the room begins to heat up due to no return air.

Ventilation air for all four air handling units comes from a dedicated outdoor air duct connected directly to each air handler.

Several areas of the building reportedly have problems with humidity control in the summer. The A/C systems do not have dehumidification capability and are only controlled by ambient air temperature.

Exhaust from toilet rooms is provided by roof-mounted centrifugal exhaust fans that are original to the building.

Electrical Systems

Existing electrical service is 120/208, 3-phase, 4-wire, 800A service fed into (1) 800A distribution panel located in the basement. The Owner has indicated the system has a peak load rating of 500A max. Capacity for this distribution system is 640A max per NEC. There is currently no spare capacity for additional circuit breakers.

The existing emergency and standby power to the building is fed from an existing 150KW natural gas generator located at the rear of the building. The generator is in good working condition and has approximately 8 years of service life. The entire building 800A electrical service is backed up by the generator in the event of a power failure.

Existing interior lighting is fluorescent tube mixed with LED tube replacement lamps.

Existing exterior lighting is a mix of HID pole-type lights and ground-mounted LED building lights. It is recommended to convert all exterior lighting to LED fixtures to capture energy savings.

Telecommunications Systems

The building currently has service (i.e., voice, data, and CATV) throughout the building. The older 110 blocks in the basement have been abandoned and a new fiber connection has recently been brought into the building. All telephones are currently VOIP protocol.

Fire Alarm System

The facility is currently serviced by a new Honeywell Fire-Lite MS-9200UDLS fire alarm control panel with addressable fire alarm devices throughout the building. The panel currently has a capacity of 198 addressable points and is not in need of upgrading or replacing in the foreseeable future.

Recommendations

General

The building has an air distribution and humidity issue. In the summer, the cooling system does not have enough air distribution capacity or provide appropriate dehumidification. The relative humidity rises to uncomfortable levels. Also, condensation is visible on several surfaces: supply duct work in mechanical spaces, and some surfaces like paper and cloth feel damp to the touch.

The building has a power distribution problem and has inadequate power in many parts of the building. The existing power distribution panels do not have available space or spare breakers to extend power to any new equipment.

The following is a list of items should be replaced:

Immediate (Within the Next Year)

1. No items were identified as needing to be done immediately.

Priority I (1 to 2 Years)

1. All air handlers and distribution ductwork should be replaced. Building needs to be evaluated for proper zoning and air capacity. Dehumidification capability should be incorporated into air handlers and controls.
2. Men's and Women's toilet rooms should be upgraded for ADA compliance and new water-saving fixtures installed.
3. Replace all exhaust fans for toilet rooms.
4. Interior and exterior lighting fixtures should be replaced with efficient LED lighting. Lighting controls need to be added for energy savings.
5. Building electrical power and distribution system should be upgraded. Increase service capacity and add distribution panels.
6. Emergency generator should be replaced and relocated with upgrade of building power system.
7. Domestic water softener should be replaced.

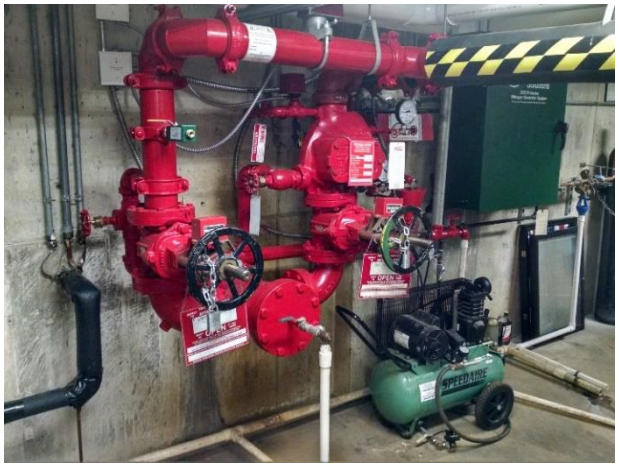
Site Photographs

Hot Water Heating Boilers Replaced in 2016.

Air Cooled Chiller Replaced in 2017.

Community Room Air Handler

Typical of Three (3) Air Handlers



Fire Sprinkler Riser.

Domestic Water Softener

Typical Attic Area Needs Added Insulation.

Typical Attic Area Needs Added Insulation.

Typical Supply Duct Added for Space Cooling.

APPENDIX B - COST ESTIMATE

Immediate Repair Needs and Physical Needs Over the Term

Component	Quantity	Unit Cost	Unit Description	Estimated Cost	Immediate Need	2019 Yr. 1	2020 Yr. 2	2021 Yr. 3	2022 Yr. 4	2023 Yr. 5	2024 Yr. 6	2025 Yr. 7	2026 Yr. 8	2027 Yr. 9	2028 Yr. 10	Over the Term Totals
Exterior Facade																
Repair De-Icing System	1	$500	EA		$500											$0
Repair Edge Sheet Metal	1	$500	EA		$500											$0
Repair Handrail Connection	1	$500	EA		$500											$0
Rout and Seal CMU Cracks			LS	$1,500		$1,500				$1,500					$1,500	$4,500
Install Concrete Curb			LS	$7,000		$7,000										$7,000
Replace Guardrail Post Bases			LS	$15,000				$15,000								$15,000
Replace Stone Sealant Joints at Ramp	100	$15	LF			$1,500										$1,500
Repair Stone Head Joints	300	$30	LF			$9,000										$9,000
Replace CMU Expansion Joint	300	$20	LF				$6,000									$6,000
Repaint Windows			LS	$500		$500										$500
Repaint Entry Doors			LS	$2,500		$2,500										$2,500
Repair EIFS Crack			LS	$2,500		$2,500										$2,500
Repair Fascia Boards			LS	$2,500		$2,500										$2,500
Interior Finishes and Spaces																
Repair Water Stains			LS	$1,000		$1,000										$1,000
Review and Repair Roof Framing			LS	$5,000						$5,000						$5,000
Replace Windows	60	$3,500	EA			$210,000										$210,000
Reset Auditorium Doors			LS	$1,000		$1,000				$1,000					$1,000	$3,000
Install New Handrails			LS	$15,000		$5,000										$5,000
Remove and Replace Carpet and Floor Finishes	23,000	$10	SF			$230,000									$230,000	$460,000
MEP Repairs																
Replace All Air Handlers and Add Dehumidification			LS	$460,000		$460,000										$460,000
Replace all Supply and Return Air Duct Work			LS	$835,500		$835,500										$835,500
Replace Restroom Toilet Fixtures			LS	$55,530			$55,530									$55,530
Replace Indoor Light Fixtures with LED			LS	$197,000			$197,000									$197,000
Replace Outdoor Light Fixtures with LED			LS	$43,200				$43,200								$43,200
Upgrade Building Power and Distribution			LS	$45,000			$45,000									$45,000
Upgrade and Replace Emergency Generator			LS	$75,000			$75,000									$75,000
Replace Water Softener			LS	$8,500			$8,500									$8,500
Replace Restroom Exhaust Fans			LS	$4,500				$4,500								$4,500
Total Immediate Repair Needs					$1,500											
Notes				Total Estimated Costs, Uninflated		$1,769,500	$387,030	$62,700	$0	$7,500	$0	$0	$0	$0	$232,500	$2,459,230
				Inflation Factor @ 3.0%		1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	

LS - Lump Sum	Total Estimated Costs, Inflated	$1,769,500	$398,641	$66,518	$0	$8,441	$0	$0	$0	$0	$303,360	$2,546,460
EA - Each												
SF - Square Feet							CUMULATIVE TOTAL, UNINFLATED:				$2,459,230	
LF - Linear Feet							CUMULATIVE TOTAL, INFLATED:				$2,546,460	