



Board of Supervisors Memorandum

August 10, 2021

Pima County-owned High-Rise Buildings in the Downtown Area

Background

Pima County owns a total of 15 multi-story structures—buildings and parking garages—in the Downtown Tucson area. The ages of these County-owned structures range from 6 to 92 years. To maintain the integrity of these structures, Facilities Management conducts periodic assessments of these structures and respective elevators for indications of structural, interior and exterior building distress. In addition, opportunities for building efficiencies such as structure and utility upgrades, repair and replacements are considered in the planning and design phases of renovation projects. Conditions of building distress are often identified through staff observations and during demolition or renovation work within the structure. When signs of building distress conditions (e.g., cracking, leaking, corrosion, spalling—a breakaway of concrete surface) are observed at a County-owned facility, a licensed structural engineer is called to examine the area and provide a determination on the extent and cause of distress condition. The engineer also recommends remediation to sustain the safety and integrity of the structure.

The attached Facilities Management Building Reports Log identifies the downtown locations, the years when each building was constructed, the building code type of construction or remediation used, any structural issues, and planned major rehabilitation in the downtown area.

Routine Safety Inspections and Maintenance

Facilities Management conducts routine safety inspections through maintenance and its Loss Control Officers. Based on recent inspections and assessments, Facilities Management has not found any indications of structural damage at Pima County-owned multi-story structures in the downtown area. However, a few downtown high-rise buildings had cracking and material spalling issues, as identified later in this report.

Structural inspections on steel and concrete building structures are performed for tenant improvement or renovation projects to ensure the building structure supports the improvements and the intended use of the area. Structural design for these projects is completed by an Arizona licensed structural engineer in accordance with the latest adopted building code at the time of the work.

Major Ongoing and Upcoming Projects

Facilities Management observed what were thought to be structural issues with three high-rise building envelopes (external facings) which, if not addressed, could eventually lead to intrusive structural deterioration. Upon immediate observation of cracking and spalling, a team of façade specialists and architectural and engineering consultants were hired to further

investigate why these activities occurred. Their observations included testing, opening walls and inspecting building frames at the envelope connections to recommend remediation.

- **Historic Courthouse (HCH)–Built in 1929, south addition in 1954**

In 2016, prior to the recent HCH restoration project, Poster Frost Mirto and their team assessed the entire building, included in their report were recommendations to improve the building’s earthquake performance and to meet critical life safety conditions. Based on findings and recommendations in their March 2016 report, Facilities Management upgraded existing mechanical, electrical, plumbing systems, replaced all pipes and connections to Central Plant and modernized the elevators. The restoration project also included structural improvements that will enhance structural performance and preserve the useful life of the building. This extensive restoration work was completed in 2021. Plans to upgrade the cooling tower, which will increase tonnage capacity, are currently in progress. The cooling tower, located at Central Plant, will have an impact on Facilities Management’s ability to cool multiple buildings, including the HCH, more efficiently.

- **Administration–East Building (ADE)–Built in 1969**

The ADE showed signs of distress through water infiltration in the window wall systems and fallen debris. In 2017, GLHN Architects & Engineers was hired to analyze this infiltration and found window system seals and sealant had failed due to age of the structure in the areas that were accessible to the contractor. No deterioration of the steel structure was observed. GLHN reviewed and evaluated the ADE’s structural and envelope attachment systems and recommended replacement of the exterior window system as well as re-sealing all joint connections at the concrete panels to protect the building’s structure and improve energy efficiency.

In 2019, Wiss, Janney, Elstner Associates Inc. (WJE), the building façade specialist, completed a structural analysis to assess the ability of the ADE’s structural framing to accommodate the recommended window system replacements. GLHN completed drawings to replace the entire window system. Although water infiltration was observed, WJE found no evidence of structural deterioration. Based on the GLHN and WJE’s recommendations, the extensive façade and tenant improvements work has begun and will be completed in 2023, as detailed in the June 9, 2021, *Various Administration-East Building Improvement Projects* memorandum to the Board of Supervisors. Throughout the project, as the structural skeleton is exposed, observation of structural connections will continue and, if required will be remediated.

- **Legal Services Building (LSB)–Built in 1964**

Pima County purchased this property in 1987. In August 2019, due to spalling bricks at LSB (formerly the Home Federal Savings and Loan Building, and the Great American Tower), Facilities Management hired WJE, a Chicago consultant with more than 65 years of national and global experience in façade renovations. The scope of work for WJE was to investigate the cause of the spalling and cracking of the LSB’s exterior brick veneers where pieces became dislodged from building and fell onto the sidewalk. There were no

injuries to passersby. As part of WJE's investigation, portions of the steel frame structure were found to have been exposed to moisture infiltration. Facilities Management implemented WJE's recommendations to install a temporary stainless steel mesh protection in an effort to stabilize the building exterior. This temporary repair should only be in place up to five years, as recommended by WJE. Because Facilities Management is entering the third year of this temporary work, construction on the recommended complete window replacement and extensive brick façade repairs are tentatively planned to begin in 2022.

Expansion joints, window replacements and proper sealing of the façade system will be included in this construction project. In addition, the existing non-functioning time and temperature sign connection at the top of the wall is enabling water intrusion into the brick veneer. Facilities Management is planning to remove the time and temperature sign to correct this condition in 2022. This rehabilitation project will result in more energy efficient exterior building envelope and a more stable exterior wall.

Additional Observations

- **33 N. Stone Avenue (formerly Bank of America Building)–Built in 1975**

In 2018, Facilities Management observed minor cracking in the building's stucco. There was also a non-structural, concrete spalling incident at one of the exterior concrete columns. In 2019, Structural Concepts analyzed the cracks and spalling and found no indications of structural damage. The stucco was patched and repainted.

Additional façade projects similar to the ADE project are planned for the LSB, Administration-West, 33 N. Stone, and Superior Court built in 1973.

- **Superintendent of Schools, 200 N. Stone Ave – Built in 1965**

In 2011, Pima County purchased this building from Chicanos Por La Causa. The building appraisal prior to purchase identified some areas of improvements. Prior to this purchase, Chicanos Por La Causa upgraded the HVAC and electrical systems. Facilities Management upgraded the plumbing systems and added ADA restrooms in 2019. In 2018, the aged leaking skylights were removed and replaced with smaller skylights and the roof structure was improved to increase energy efficiencies and maintain the integrity of the building. Staff continues to maintain and monitor this facility. There are no structural issues observed at this building.

- **Parking Garages**

Studies have been completed at several parking garages over the years. Routine maintenance will continue, as recommended, for the structural longevity of those structures. No structural issues were observed at the downtown parking garages.

Scott Avenue Garage (SAG) – Built in 1970

Pima County purchased the SAG, formerly known as the Home Federal Parking Garage, and the LSB from the City of Tucson in 1987. The SAG has had several evaluations and repairs over the years: March 1997, April 2004, February 2008. In late 2020, Facilities Management maintenance staff observed concrete cracking and spalling on Levels 2 and 6 of the garage. Structural Concepts, Inc. was hired to investigate and render a determination regarding the structural integrity of the areas of concern. This contractor determined the spalling was likely a result of restricted lateral movement, which does not affect the functionality and capacity of the staircase (Level 6) and some moisture infiltration on a beam (Level 2). No structural damage was observed in these areas during the investigation; however, the contractor recommended several repairs to prevent future structural issues.

In follow up to the structural engineer's recommendations for future repairs, Facilities Management met with a structural engineer a few weeks ago and garage repairs are in progress.

- **Elevators**

All elevators in the downtown area have been upgraded and/or modernized, some several times, since 2001. The latest upgrades occurred with the replacements of all elevator sensors and other equipment in 2017. The pre-planning phase of ADE elevator modernization is underway with completion scheduled for summer 2023. Routine elevator monitoring and maintenance are ongoing at all County-owned facilities.

Routine maintenance, testing, assessments and certifications are completed by Pima County's contractors, KONE and Johnson Controls, in accordance with A.R.S. Title 23, Chapter 2, Article 12 and State of Arizona Administrative Code Title 20, Chapter 5, Article 5, to ensure the elevator functionality and safety of employees and the public. Facilities Management staff also conducts periodic observations and immediately contacts its contractor for service or repair when elevator problems are observed and reported. In addition to state requirements for annual safety inspection, testing and reporting, Facilities Management conducts and documents elevator car calls weekly to test the emergency phone communications systems, which are monitored 24 hours per day, seven days each week to ensure the safety and functionality of these structures.

Building Code Requirements

Pima County is currently enforcing the 2018 International Code Council's Model Codes, 2017 National Electric Code, and locally adopted amendments for new construction. These codes are considered to be the preeminent codes and are used by a multitude of Authorities Having Jurisdiction (AHJ) across the United States and the World. Amendments are made to address local specific topical and geographical conditions.

The Honorable Chair and Members, Pima County Board of Supervisors
Re: **Pima County-owned High-Rise Buildings in the Downtown Area**
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Structural design of a high-rise building is required to be completed by an Arizona Licensed Structural Engineer. The registrant will incorporate the structural elements of the building into the overall design. These elements include seismic, wind, and gravity loads to ensure the structure is capable of withstanding structural forces.

Quality assurance inspections for new or remodeled high-rise buildings are provided by a third party special inspection agency, in conjunction with Pima County inspectors to ensure conformance with model building codes and structurally engineered design. Pima County has no maintenance inspection requirements rather that becomes the responsibility of the property owner.

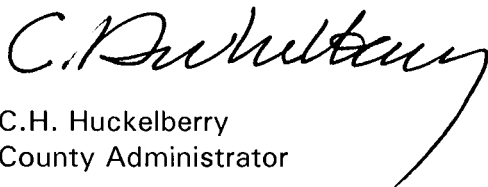
In Florida the repeated design wind loading coupled with corrosive salty air has the potential to accelerate reinforcement corrosion and concrete spalling. These are conditions that we do not have in the arid southwest.

It is anticipated the International Code Council will be following up with national recommendations which will guide any local changes.

Summary

Facilities Management has not observed any significant structural issues at most Pima County-owned structures in the Downtown Tucson area. The concerns identified at ADE, LSB and SAG are in various stages of repair and rehabilitation. Maintenance and inspections, such as those for elevators, required by law will continue to meet or exceed standards to maintain certifications. Facilities Management will continue to monitor, maintain and, if needed, repair conditions at all Pima County-owned structures to preserve the life of these public assets, protect the safety of occupants, and improve energy efficiencies.

Sincerely,



C.H. Huckelberry
County Administrator

CHH/mp – August 5, 2021

Attachment

- c: Jan Leshar, Chief Deputy County Administrator
- Carmine DeBonis, Deputy County Administrator for Public Works
- Mark Napier, Assistant County Administrator
- Lisa Josker, Director, Facilities Management
- Carla Blackwell, Director, Development Services

Facilities Management Building Reports Log

Item #	Building Name	Address	Year Construction Complete / Dwgs Seal Date	Age of Building	Type of Construction	Structural Issues	Planned Rehabilitation (energy efficiency upgrades, ext. panel maintenance)	Elevator Maintenance / Modernization	Heating/Cooling System Management/Maintenance	Report Description	Report Date	Report Firm	Summary/ Recommendations
1	Historic Courthouse	115 N. Church Ave.	1929/1954	92/67 Years	III-B (Concrete floor, columns & exterior walls, steel roof framing)	None observed	Completed 2021	Three (3) Elevator modernizations completed 2021	All mechanical, electrical & plumbing system upgrades completed 2021; heat, chilled water are supplied by Central Plant; project underway to replace four (4) chillers; upgrade cooling tower & increase tonnage capacity	Building Assessment for Rehabilitation for Visitor Center	March 2016	Poster Frost Mirto (PFM)	Recommended improvements completed 2021
2	Joel D Valdez Main Library	101 N. Stone Ave.	1987	34	Type 1 FR 1985 UBC Table 17A. 3hr reinforced concrete frame for floors/roofs and 4hr for columns. Sprinklered building.	TBD	Ongoing repairs to the marble façade which has failed and separating from the structure since original construction.	Annual inspections & regular maintenance done by elevator contractor; elevators in this building have been identified as needing modernization	Two (2) Chillers will need replacement within 3 years; Cooling Tower scheduled to be rebuilt within 3-4 years; boiler replacement 3 years	Exterior envelope assessment and replacement options	1) 06/18/2007 2) 06/24/2019 3) 08/14/2020 4) 01/28/2021	1) Gresham & Beach 2) BWS Architects 3) PCFM & WJE & RLB 4) Structural Concepts	Four (4) building movement cracks observed, no structural repairs required, finish repairs recommended
3	Public Service Center	240 N. Stone Ave.	2015	6 Years	II-A (Curtain wall window system, precast concrete wall panels, concrete floors, fire proofed steel structure)	None observed	None scheduled	Annual inspections & regular maintenance done by elevator contractor	Systems are operating as designed	Lower roof has a leak issue but resolution through the construction warranty	None	-	Continued maintenance and monitoring of structure
4	Superior Court	110 W. Congress St.	1973	48 Years	Steel frame structure, exterior façade - precast concrete panels with glass curtain wall system	TBD	Exterior window system to be replaced	Annual inspections & regular maintenance done by elevator contractor; prisoner elevator recently modernized	Heat, chilled water are supplied by Central Plant; project underway to replace four (4) chillers; upgrade cooling tower & increase tonnage capacity	Window Façade and Water infiltration investigation	None	-	Façade condition similar to 130 but minimal leaks are known.
5	Administration-East	130 W. Congress St.	1969	52 Years	Steel frame structure, exterior façade - precast concrete panels with glass curtain wall system	None observed	Exterior window system is designed and replacement is in progress from 2021 through 2022	(4) Elevator modernizations scheduled for 2021 & 2022	Heat, chilled water are supplied by Central Plant; project underway to replace chillers (4); upgrade cooling tower & increase tonnage capacity	1)GLHN Bldg. Exterior Infrastructure Analysis. 2)WJE -Window Façade and Water infiltration Investigation. 3)WJE Structure Capacity Analysis at Perimeter Beam.	1)GLHN 4-6-2017 2)WJE 12-20-2019 3)WJE 2-3-20	Wiss, Jannery, Elstner Associates, Inc. (WJE) and GLHN Architects & Engineers	Replacement of curtain wall window systems and sealant joints of concrete panels.
6	Administration-West	150 W. Congress St.	1966	55 Years	Concrete frame structure, exterior façade - precast concrete panels with glass curtain wall system	None observed	Exterior window system design is complete	Annual inspections & regular maintenance done by elevator contractor; modernization to be scheduled in 3 years. Future project.	Heat, chilled water are supplied by Central Plant; project underway to replace chillers (4); upgrade cooling tower & increase tonnage capacity	1)GLHN Bldg. Exterior Infrastructure Analysis 2)WJE -Window Façade and Water infiltration Investigation 3)WJE Structural Capacity Analysis @ Perimeter Beam	1)GLHN 4-6-2017 2)WJE 12-20-2019 3)WJE 2-3-20	Wiss, Jannery, Elstner Associates, Inc. (WJE) and GLHN Architects & Engineers	Future replacement of curtain wall window systems and sealant joints of concrete panels.
7	Legal Services Bldg. (LSB)	32 N. Stone Ave.	1964	57 years	Type 1A Construction-sprinklered bldg. Primary structure frame protected at 3hrs for columns, 2hrs min for horiz stl. Masonry composite wall is required for fire rating of the steel frame and at property line per IBC2018-table 601	None observed	Removal of the time and temperature sign planned for 2022 and associated parapet repairs to minimize water infiltration; Restoration/Replacement of the façade & windows by 2024	Annual inspections & regular maintenance done by elevator contractor; modernization to be scheduled in 4 years	Chilled water is supplied by Central Plant; project underway to replace chillers (4); upgrade cooling tower & increase tonnage capacity	Masonry Façade Assessment	1)11/26/2019 2)1/18/2019	1)Wiss, Jannery, Elstner Associates, Inc. (WJE) 2)Structural Concepts	1)Per WJE, isolate the brick façade ad the corner building columns with continuous vertical expansion joints. Repair brick corners by re-supporting the brick with adequate shelf support. Repoint brick joints. Addressing the rust on the columns and the shelf angles. Some bricks will need to be remade and bonded to the backside brick. Steel safety mesh has been installed to stabilize areas of concern where brick is under stress due to moisture intrusion. 2) Replace cracked glazed brick.

Facilities Management Building Reports Log

Item #	Building Name	Address	Year Construction Complete / Dwgs Seal Date	Age of Building	Type of Construction	Structural Issues	Planned Rehabilitation (energy efficiency upgrades, ext. panel maintenance)	Elevator Maintenance / Modernization	Heating/Cooling System Management/Maintenance	Report Description	Report Date	Report Firm	Summary/ Recommendations
8	33 N. Stone Ave.	33 N. Stone Ave.	1975	46 Years	Concrete structure, curtain wall exterior	None observed	None scheduled	Annual inspections & regular maintenance done by elevator contractor; elevators upgraded 4 years ago	Chilled water is supplied by Central Plant; project underway to replace chillers (4); upgrade cooling tower & increase tonnage capacity	Minor cracking in stucco finish, no structural issues identified	1/18/2019	Structural Concepts	Patch stucco and repaint location
9	97 E. Congress St.	97 E. Congress St.	1984	37 Years	Steel frame structure	None observed	None scheduled	Annual inspections & regular maintenance done by elevator contractor; various upgrades to elevators in 2016	HVAC system elements were replaced/upgraded in 2016	No issues	-	-	Continued maintenance and monitoring of structure
10	Public Works Building	201 N. Stone Ave.	1990	31 Years	Type II-A, Steel frame structure	None observed	Seal all windows	Annual inspections & regular maintenance done by elevator contractor; modernization/upgrades completed 2014	HVAC system upgrades in process FY 22	-	-	-	Continued maintenance and monitoring of structure
11	Superintendent of Schools Building	200 N. Stone Ave.	1965	56 Years	Brick exterior, steel frame structure	None observed	Work Completed 2020 - Removed old/leaking skylights, roof structure improvements and new smaller skylights added	Upgrades provided by previous owner	Plumbing system upgrades. Previous owner upgraded HVAC and electrical systems.	Property appraisal. No reports received by previous owner on previous observation; however, FM staff witnessed owner's upgrades	-	-	Continued maintenance and monitoring of structure
12	Public Works Garage	50 W. Alameda St.	1991	30 Years	Concrete	None observed	None scheduled	Annual inspections & regular maintenance done by elevator contractor; modernization/upgrades completed 2010 and 2017	Exhaust system maintenance on a regular basis	Structural capacity to add 5 floors to the existing garage structure and meet the 2012 IBC requirements	10/6/2017	Martin, White & Griffis (MW)	Existing structure does not exceed the 2012 IBC seismic requirements and is sufficient to add the additional floors.
13	El Presidio Parking Garage & Plaza	165 W. Alameda St.	1968	53 Years	Reinforced concrete columns, beams, and slab.	None observed	Routine maintenance to seal moisture from getting to the rebar in the slab, especially level A and plaza level. Use Sikadur 31 to seal cracks in Level A. Plaza membrane should be inspected and repaired as needed.	Routine inspections and maintenance, per state requirements. Sensor upgrades in 2016.	Exhaust system maintenance on a regular basis	Structural Assessment Report	10/13/2020	Martin, White & Griffis (MW)	Continued maintenance and monitoring of structure
14	Public Service Center Garage	38 E. Alameda St.	2015	6 Years	Concrete double tees, precast concrete panels	None observed	None scheduled	Routine inspection and maintenance, per state requirements. Sensor upgrades in 2016	Exhaust system maintenance on a regular basis	-	-	-	Continued maintenance and monitoring of structure
15	Scott Ave. Garage	50 N. Scott Ave.	1970	51 Years	Concrete	Concrete spalling and cracking at one (1) location	Repairs in progress	Routine inspection and maintenance, per state requirements. Sensor upgrades in 2016	Exhaust system maintenance on a regular basis	Structural review investigating concrete spalling & cracking	10/8/2020	Structural Concepts, Inc.	Repair spalling & cracking per information provided in report