

Lake Anne of Reston Condominium Association

11402 Washington Plaza West
Reston, VA 20190

CURSORY CONDITIONS ASSESMENT

Prepared for

**Fairfax County Department of Public Works
and Environmental Services**

DRAFT REPORT

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Samaha Associates, P.C.

Architects

**10521 Rosehaven Street, Suite 200
Fairfax, VA 22030**

Ascent Engineering Group

Mechanical/Electrical/Plumbing
5228 Valleypointe Pkwy
Suite 4
Roanoke, VA 24019

Ehlert Bryan

Structural Engineers
8609 Westwood Center Drive
Suite 800
Tysons, VA 22182

Downey and Scott, LLC

Cost Estimating
6799 Kennedy Road
Unit F
Warrenton, VA 20187

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The purpose of this cursory conditions assessment for the Lake Anne of Reston Condominium Association (LARCA) property was to visually survey architectural, structural, mechanical, plumbing, and electrical elements of the buildings, site, parking lots, and plaza at the request of Fairfax County Department of Public Works and Environmental Services (FCDPWES). The assessment included visual observations of five buildings the Market-deli, Chimney House - Commercial Plaza, Chimney House - "J" Building, Quayside, and Heron House. The conditions assessment is a visual assessment to determine deficiencies and life safety concerns on a gross order of magnitude observations. Individual residences or businesses were not included in this survey. Survey of the exterior was limited to observations from the ground level. Americans with Disabilities Act (ADA) compliance was not included as a part of this conditions assessment study.

This report includes general descriptions of the observations made on site with recommendations for repairs or replacements. The report is organized by building and then broken down by discipline. Cost estimates have been provided for each deficiency. A summary list of deficiencies has been provided in Appendix A that lists all deficiencies, the cost estimate, and a ranking system for prioritization in repairs. The priority rating ranks each item on a scale of 1 to 5 with 1 being the highest priority and 5 being the lowest priority. Items ranked 1 and 2 should be addressed as soon as possible. If not addressed these items could pose a potential life safety issue or future damage to the building. Items ranked 3 are medium priority items that need to be addressed soon to prevent accelerated deterioration and/or rectify non-compliant construction. Items ranked 4 and 5 are lower priority items that are not in compliance with code and are recommended to be addressed for best practices. By default, some items in categories ranked 4 and 5 may be a requirement of permitting from higher priority items ranked 1 thru 3. Photographs of the site deficiency items are provided in Appendix C. Site deficiencies were limited to architectural observations and did not include civil survey of engineering services.

Ranking Legend

- 1 May pose a current life safety issue and should be addressed immediately.
- 2 May pose a life safety issue and/or create accelerated damage and deterioration without immediate resolution.
- 3 May promote accelerated deterioration if not addressed over time.
- 4 Non code compliant construction that should be upgraded with other work.
- 5 Should be addressed when feasible for best practices, including owner/user desired improvements.

The assessment was performed by Samaha Associates (Architecture), Ehlert-Bryan (Structural), and Ascent Engineering (Mechanical, Electrical, & Plumbing) conducting site visits over several days. Samaha associates visited the site on June 14th, June 16th, June 17th, June 24th, and July 15th, 2021. Ehlert-Bryan visited the site on June 16th, 2021. Ascent Engineering visited the site on June 24th and July 15th, 2021. LARCA staff met with the survey team on site several of those days to give access to the mechanical rooms, limited balconies, and roofs.

EXECUTIVE SUMMARY:

The Lake Anne area in Reston, Virginia, is a historic community that provides residents and the public with access to places to live, work, and play. Designed by Robert E. Simon, Lake Anne was the first village center created in the planned community of Reston – first planned city in the United States. Lake Anne Village Center was constructed from 1963 through 1967.

Since its construction the intended and planned use for these buildings and spaces has remained the same, mainly serving as a mixed-use residential and commercial village center. In 2017, the National Register of Historic Places named Lake Anne Plaza as the “historic heart and soul” of Reston, Virginia, an official “historic place”. At the time of the conditions assessment and report, the site has restrictions and protections preserving the history that composes Lake Anne of Reston.

All five buildings surveyed are showing signs of their age and need significant repairs. The scope of repairs needed for each building varies and is detailed in the report documents. Common items include damage and distress to the exteriors of the buildings brick and concrete surfaces. Many of the existing mechanical, plumbing, and electrical systems are original to the buildings initial construction and need to be upgraded or replaced. The balconies on the buildings are showing signs of deterioration and need to be addressed with some additional investigations. Any renovations that require a building permit may be required to address existing ADA compliance issues per current Fairfax County permitting standards. The ADA improvements would need to account for 20% of the budget for any renovations. The age of existing items and/or the timeframe any previous maintenance or repairs were done was provided through interviews with LARCA staff and community members if it could not be determined from visual observation.

IMPLEMENTATION PLAN:

The visual assessment recommendations for repairs, replacements, and testing made within this report should be implemented as soon as funds allow to prevent further deterioration of the buildings and site. Implementation of the recommendations should be done following the priority rating system outlined above to ensure building and systems efficiency, integrity, and safety. Items ranked 1 should be addressed as soon as possible to prevent potential life safety concerns. Items ranked 2-3 should then be addressed in order of priority as budget and scheduling allow until all items have been completed. Items ranked 4-5 should be addressed as funds are available to resolve code-compliance, long-term maintenance issues, and/or equipment reaching end of service life. Testing and further investigations recommended in this report may uncover additional repairs that need to be made that could not be evaluated from a visual assessment. It is recommended these investigations be done as soon as possible to determine the entire scope of repairs needed for the site.

Items not addressed in a timely fashion will cause further deterioration of the buildings and potentially create worse conditions and more costly repairs. The costs provided in the recommendation list include an escalation fee for 18 months from the date of this report. Items corrected after this time will likely see an increase in cost from those presented in this report.

Information regarding each building and ranking priority with cost estimates can be found in Appendix A recommendation list. Appendix C has a summary of the cost by priority rating.

MARKET-DELI

The Market-Deli is a one-story building, that is occupied by a single commercial tenant. The building is a brick masonry building, capped with a metal coping. The front elevation of the building, facing the public parking lot, has large wood framed glass windows on either side of the aluminum storefront entrance doors. The roof is a flat membrane roof ballasted with gravel. On the front of the building is a large sign for the market framed by two wood columns and beams. Adjacent to the building is a small patio seating area partitioned off with a low masonry retaining wall. A secondary/employee entrance is located off this seating area on the side of the building. There is a brick enclosed mechanical yard around the rear of the building.

ARCHITECTURE:

- MD-A01** The brick and mortar throughout the building are dirty with some areas showing signs of mold growth and efflorescence on the brick surface. The exterior of the entire building should be cleaned to remove dirt, mold, and efflorescence present on existing surfaces. Cleaning should be performed prior to any masonry repairs as further damage may be uncovered with the cleaning.
- MD-A02** The brick appears to be in good condition overall. Minor cracks in the brick surface and mortar were observed. There are some damaged bricks at the corner of the building that appear to have been struck by something. The side of the building has several holes drilled in the brick where signage may have previously hung but has been removed. Spalling, cracked, or damaged brick should be removed and replaced. Cracked and damaged mortar should be removed and repointed. Cracks in bricks and mortar allow water to penetrate the cavity of the wall, which over time can cause wood decay, mold growth and efflorescence.
- MD-A03** Overall the metal coping appears to be in good condition, however there was some damage to the coping along the rear of the building near the mechanical yard where it appears items were placed on the coping, crushing the metal profile. Damaged coping should be removed and replaced. Ensure new coping is installed properly with existing metal flashing for proper water drainage. At least one hole in the damaged coping was noted which can allow water to penetrate the wall.
- MD-A04** The side employee entrance into the building is down a half flight of stairs. The handrail for these stairs is only on one side of the stairs and does not meet current building codes. It is recommended when this railing is replaced that a railing that meets current code requirements be installed with handrails on both sides of the stair.
- MD-A05** The grade of the site rises as you towards the rear of the building. The side entrance has a retaining wall around the entrance that is approximately five feet tall. There is no fall protection provided at the top of this wall that is at grade. Guardrails are required for instances where changes in elevation are greater than thirty inches. A forty-two-inch-high guardrail should be provided at the top of this wall to prevent falling at this entryway.

MD-A06 The retaining wall shows significant wear. The wall has dirt and mold present on the brick, mortar, and masonry cap. There are many damaged bricks and some bricks with efflorescence on the surface. The mortar is cracking and damaged throughout the wall. The masonry cap is damaged in many places and the mortar joints are deteriorating. The earth above the wall slopes from the wall up several feet. The earth is present up to the top of the wall. The wall should be cleaned, damaged bricks replaced, and the mortar joints repointed. The masonry wall cap should be replaced and provided with sealant joints instead of mortar. Retaining wall cap should be sloped to prevent standing water. The height of the wall should be reviewed and possibly heightened as soil eroding down the hill is flowing over the top of the wall.

MD-A07 The wood window frames are weathering, and the glass is single pane. The wood windows should be replaced with aluminum framed storefront windows with double pane glass. Replacing the windows will make the building more energy efficient.

MD-A08 The roof had visible ponding water near the mechanical units when observed on site. Debris, mold, and organic growth were present on the roof surface. Drains and scuppers should be cleaned to ensure water is draining from the roof. Mold, debris, and organic growth should be cleaned from the roof. Investigation should be done to ensure the roof has proper drainage and adequate sloping to drain. Roof replacement is recommended as existing roof is over 20 years old based on documentation provided to the design team.

MD-A09 The sealant at the scuppers is cracking and deteriorating. Existing sealant should be removed, and new sealant installed.

PLUMBING:

MD-P01 The piping systems could not be observed. The storm system consists of flat roof drainage scuppers. Gas is provided to the cooking equipment. It is assumed that the piping systems are original to the building. It is recommended that further assessment is provided to video scope all underground sanitary sewer piping for integrity.

MECHANICAL:

MD-M01 It was observed that the building is currently served by multiple split system air conditioning units. There is also a small kitchen hood exhaust and makeup air system serving the kitchen area. These systems appear to have exceeded their expected service life. Ventilation air did not appear to be provided in sufficient quantities to meet current ventilation codes. It is recommended to provide new HVAC systems to bring the building into compliance with current ventilation codes. See related photo of existing kitchen exhaust system.

ELECTRICAL:

- MD-E01** The Market Building has been renovated in recent years, compared to the other buildings on site, and subsequently, the existing electrical systems appear to be in reasonable working order. There is presently no emergency backup power system. No specific electrical system upgrades are recommended at this time, and an emergency on-site power source is not required. If any mechanical system equipment is replaced, or upgraded, then the building electrical system may also need to be revised or upgraded accordingly.#
- MD-E02** Replace interior light fixtures with LED sourced fixtures. LED light fixtures are more energy efficient reducing operation costs. Replace all interior light fixtures in landlord spaces.
- MD-E03** Replace exterior light fixtures with LED sourced fixtures, including battery backup for egress light fixtures.
- MD-E04** Correct miscellaneous National Electrical Code (NEC) violations including missing box covers, maintenance clearances, GFI protection, and proper labeling. An example of NEC safety violations is exposed wiring at the rear of the building, not properly trained or protected (see related photo).

CHIMNEY HOUSE – COMMERCIAL PLAZA

The Chimney House – Commercial Plaza building is a two and three-story building that has commercial tenants, residential units, and a loading dock. The building is a brick masonry building with masonry caps on the lower stepped walls and metal coping on the higher parapet walls. The North façade facing the public parking lot contains the loading dock area, where North Shore Drive runs adjacent to the building. A service corridor connects the loading dock to Washington Plaza. Adjacent to the loading dock is a mechanical yard enclosed with a masonry wall and metal louvers. Above the loading dock and receiving area is a second-story mechanical yard and planter beds surrounding an enclosed playground. The building has residential units on the second and third levels and commercial spaces on the first and second levels. The windows throughout the building are various sizes and a mix of metal and wood frames. The windows are framed with precast concrete lintels and sills. There is a stair on the West Elevation that separates Chimney House – “Commercial Plaza” from “J Building”. The South elevation has planter beds with low retaining walls near the resident entrances. The roof is a flat membrane roof.

ARCHITECTURE:

- CP-A01** The brick and mortar throughout the building are dirty with some areas showing signs of mold growth and efflorescence on the brick surface. Concrete lintels and sills have metal staining present on the surface. The exterior of the entire building should be cleaned to remove dirt, mold, staining, and efflorescence present on existing surfaces. Cleaning should be performed prior to any masonry or concrete repairs as further damage may be uncovered with the cleaning.
- CP-A02** The brick appears to be in good condition overall. Minor cracks in the brick surface and mortar were observed. In a few locations missing or spalling bricks were observed. Spalling, cracked, or damaged brick should be removed and replaced. Cracked and damaged mortar should be removed and repointed. Cracks in bricks and mortar allow water to penetrate the cavity of the wall, which over time can cause wood decay, mold growth and efflorescence.
- CP-A03** Cracking and spalling brick was observed on concrete surfaces including sills, lintels, and balconies. Cracked and spalling concrete to be patched and repaired. Remove any loose or compromised concrete from surfaces and repair/repatch to match existing. If rebar is exposed the damaged concrete needs to be chipped around the corroding rebar; the steel rebar needs to be cleaned of any rust, then new concrete can be poured.
- CP-A04** The balcony railing appears to be rusted and does not meet current building codes. Railings should be replaced with a railing that meets current code requirements.
- CP-A05** Concrete steps located at the Northwestern corner of the building are cracking and damaged. Existing concrete steps should be removed, and new concrete steps should be provided. The existing metal handrail mounted to stair slab is rusting in-place and has become loose. When the steps are replaced a new, code compliant handrail should be provided on both sides of the steps.

- CP-A06** The retaining walls supporting the enclosed playground and around the rear of the loading dock area are showing signs of damage and stress. There are locations of visible canting/movement in these walls. Some portions of this retaining wall system appear to have been replaced. Canting walls should be repaired or replaced, possibly with a thicker wall to properly support the earth behind.
- CP-A07** The retaining walls and planter beds on the upper level of this building around the playground have cracked and spalling brick and mortar as well as efflorescence present. All walls need to be cleaned and have the masonry repaired/replaced and the mortar repointed.
- CP-A08** The retaining wall adjacent to the loading dock has damage to the concrete cap. The drains in the wall also appear to be clogged with dirt. Damaged concrete to be patched and repaired. Mortar used in the concrete cap to be replaced with sealant. Drains need to be cleaned to allow for proper drainage at the wall. The existing grade at this retaining wall comes right to the top of the wall, in the future if this wall is replaced, it is recommended that the height of the wall be raised above grade.
- CP-A09** The loading dock roof membrane is wrinkled, and the flashing is rusted. It is recommended the loading dock roof be replaced with a new membrane roof and flashing. Roof drainage and slope should be reviewed when the roof is replaced to ensure adequate drainage is being provided.
- CP-A10** The roof had significant amounts of ponding water on most of the roof surfaces, particularly near the second story play area. Ponding water was observed a couple days after a major rain event, indicating the water is sitting on the roof for days. Drains and scuppers should be cleaned to ensure water is draining from the roof. Mold and organic growth should be cleaned from the roof. Investigation should be done to ensure the roof has proper drainage and adequate sloping to drains. Full roof replacement is recommended soon to include roofing membrane and flashing, in addition to fixing any drainage or slope issues found.
- CP-A11** At the second story floor line, the mortar at the relief angle is being pushed out of the masonry joint, along the entire perimeter of the building. The shifting mortar has potentially allowed water into the wall which has likely deteriorated the steel relief angle. It is recommended that at least three courses of masonry be removed, and the steel angle be replaced with a new galvanized steel relief angle. Flashing with a drip edge and masonry weep holes should be provided over the new steel angle to allow any future moisture in the wall to get out. New masonry and mortar should be patched back into the wall once the relief angle is replaced.
- CP-A12** Some damage to the concrete caps was observed at the retaining walls and planter beds. Many of the concrete caps also have mortar joints at the cap, which can allow moisture into the wall if cracked. The damaged concrete caps should be repaired or replaced. The mortar joints in the caps should be replaced with sealant. Concrete caps should have a slope at the top to drain water from the caps. If caps are to be replaced sloped caps should be provided.

- CP-A13** Nearly all windows had stained concrete sills and some damaged, cracking, or spalling due to water ponding on the sills. Sills need to be sloped to prevent water from sitting on the edge of the sill. Window flashing needs to be replaced at all windows and be provided with a sloped sill piece to drain water. A replacement of all windows and flashing is recommended. However, we understand the windows are the tenant's responsibility for replacement and may not be replaced all at once. An alternative option would be to provide a sloped metal sill piece at all windows that is connected to the existing windows frames now. Then in the future as the tenants replace their windows new windows and flashing should be provided.
- CP-A14** There are several stepped brick accent walls that are perpendicular to the main façade of the building. These walls have no cap or slope at the top of the brick, allowing water to pond on the top surface of the brick and/or penetrate the wall. A sloped cap should be added to the tops of these walls to allow the water to drain.
- CP-A15** The existing wood window frames are weathering, and the glass is single pane. The wood windows should be replaced with aluminum framed storefront windows with double pane glass. Window flashing should be replaced and a sloped sill pieces should be provided when windows are replaced. It is understood that windows and doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to other surfaces.
- CP-A16** The existing wood doors and frames are weathering. The doors and frames should be replaced with aluminum storefront doors and frames. It is understood that the doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to other surfaces.
- CP-A17** While assessing the site, there were several concrete walking pavers that were loose or unattached to the surface they are mounted. These pavers are 2'x2' pavers elevated over the first-floor roof of the space below, and lead to the apartment entrances at the second level. Repair and replace any broken or damaged pavers and reattach and tighten any loose walking paver to prevent future damage or injury.
- CP-A18** Existing metal mechanical louvers are damaged and dented. One louver appeared like it had been damaged while trying to access the mechanical units behind or above it. Replace metal louver to match the existing louvers adjacent on the building.

PLUMBING:

See write-up for Commercial Plaza "J" building. The systems are combined for both buildings.

MECHANICAL:

CP-M01 The building is currently served by multiple split system air conditioning units, two pipe fan coil units, and a central boiler system located in the North wing of the J Building. Individual spaces are served by two-pipe fan coil units. As the units and piping located in each space are the tenant's responsibility, those were not included in the review. The boiler is in the J Building North Wing and is discussed in that section of the report. As the existing system is a two-pipe arrangement, the system is only capable of providing heat or cooling at any given time. A system changeover is required to switch between heating and cooling and is usually done twice a year. This system type is known to be problematic in the shoulder seasons where the temperatures can fluctuate widely during any given day. It is recommended to upgrade the existing system from a 2-pipe FCU system to a 4-pipe system. See related photo of existing FCU unit and piping system conditions.

ELECTRICAL:

CP-E01 The majority of the house electrical system has been in place since the original construction, and is operating beyond its expected usual life of 30 to 40 years. The electrical service is rated 120/208V-3PH and terminates in a wiring trough that serves multiple disconnect switches for the individually-metered commercial businesses and house electrical main, as well as two distribution panelboards that serve condominium unit panels on the upper level. There is presently no emergency electrical system, as one is not required. The house electrical distribution system should be considered for upgrade based on age, capacity constraints, and periodic failures of equipment. However, since the current electrical system is functioning sufficiently, other building upgrades may be considered a higher priority and no specific electrical upgrades are recommended at this time.#

CP-E02 Data / Telephone / CATV wiring in the building does not meet current EIA/TIA standards regarding performance specifications of materials and installation methods. Upgrading the low-voltage communication systems networks to operate according to current standards is important. It is recommended the Owner provide a new main data system cabling backbone to make faster and more reliable internet communication available to retail tenants and condominium owners. It may be possible to negotiate with a local ISP to have these facilities installed at minimal initial cost.

CP-E03 Interior lighting fixtures are operating beyond their useful life and should be replaced with LED source fixtures rated for the environment. Most light fixtures have inefficient fluorescent lamps. LED light fixtures are more energy efficient reducing operation costs. Replace all interior light fixtures in landlord spaces.

CP-E04 Exterior lighting fixtures are operating beyond their useful life and should be replaced with LED source fixtures rated for the environment. Where not present, exterior lighting should be provided with battery backup for emergency egress purposes. LED light fixtures are more energy efficient reducing operation costs.

CP-E05

Correct miscellaneous National Electrical Code (NEC) violations including missing box covers, maintenance clearances, GFI protection, and proper labeling. An example of NEC safety violations is exposed wiring at one of the pathway light fixtures along the exterior of the building (see related photo).

CHIMINEY HOUSE – J BUILDING

The Chimney House – “J Building: is a two and three-story building that has commercial and residential tenants. The building is a brick masonry and concrete building with large windows and commercial spaces on the ground level with residential units above. The windows and doors throughout the building are a mix of wood and aluminum. The residences have balconies that overlook Washington Plaza and Lake Anne below. The building itself is in the shape of the letter “J” with a water fountain in the center on the plaza. Directly adjacent to “J Building” is the Chimney House Commercial Plaza building which has a loading dock that J Building also utilizes through a corridor connection from the plaza to the loading dock. Towards the center of the building is a large 2-story breezeway that connects Washington Plaza and the Chimney House Parking lot and sidewalks. There are a set of exterior stairs at each end of building that lead from the plaza up to the level of the residential entrances. Mechanical spaces are located under each set of exterior stairs. There are planter beds near each resident’s entrance with masonry retaining walls and caps surrounding the bed. The roof is a flat membrane roof that has mechanical equipment, skylights, vent and pipe penetrations, and plaza lighting equipment. Parapet walls are capped with a metal coping.

ARCHITECTURE:

- CJ-A01** The brick, mortar, and concrete throughout the building are dirty with some areas showing signs of weathering, staining, mold growth and efflorescence on the brick surface. The exterior of the entire building should be cleaned to remove debris, mold, staining, and efflorescence present on existing surfaces. Cleaning should be performed prior to any masonry or concrete repairs as further damage may be uncovered with the cleaning.
- CJ-A02** The brick appears to be in good condition overall. Minor cracks in the brick surface and deteriorating mortar were observed. In a few locations missing or spalling bricks were observed. Spalling, cracked, or damaged brick should be removed and replaced. Cracked and damaged mortar should be removed and repointed. Cracks in bricks and mortar allow water to penetrate the cavity of the wall, which over time can cause wood decay, metal, and rebar decay as well as mold growth and efflorescence.
- CJ-A03** The existing membrane roof and flashing appeared to be in good condition overall. Ponding water was observed in a couple locations on the roof. Roof drains, gutters and downspouts should be cleaned to verify water is draining from the roof. Roof slopes in area with ponding water should be checked to verify the roof has an adequate slope to drain water off the roof. Ponding water can cause roof leaks and cause potential damaged to surfaces/spaces below in the future.
- CJ-A04** There are several brick retaining walls between the building and the parking lot and planter beds outside each resident’s entrance with low brick walls. These retaining walls and planter bed walls had significant masonry damage. There were cracked and spalling bricks, cracked and deteriorating mortar, and areas of brick with efflorescence. All walls need to be cleaned and have the masonry repaired/replaced and the mortar repointed.

- CJ-A05** The planter beds and retaining walls around the building all have concrete caps, some which have been damaged. These caps had a mixture of mortar and sealant used to seal the caps. The mortar joints if cracked can allow moisture into the wall. The damaged concrete caps should be repaired or replaced. The mortar joints in the caps should be replaced with sealant. Concrete caps should have a slope at the top to drain water from the caps. If caps are to be replaced sloped caps should be provided.
- CJ-A06** The existing stair railings do not meet current building code requirements, and in some places the handrails/guardrails were loose. Handrails are not provided on both sides of every stair. Guardrails are not the correct height and do not have the correct spacing between pickets. The railings should be replaced to meet current code requirements and be installed on both sides of stairs.
- CJ-A07** The balcony railings do not meet current building code requirements and were observed to be rusted in places. Balcony railings should be replaced with a railing that meets current building code requirements.
- CJ-A08** At the time of survey it appeared that the waterproofing and flashing were being repaired/replaced at the masonry planter beds at each resident entrance. We would recommend the replacement of all waterproofing and flashing at any planter beds that have not already been completed. Remove vegetation in existing planter beds that have not been replaced. Remove all existing membrane and flashing and replace to ensure planter beds are functional and water is draining appropriately. Planter beds are over occupied space on the lower level so a tight, properly maintained waterproofing is essential to keep water from getting into the spaces below.
- CJ-A09** Some of the existing retaining walls are canting and/or failing. In most cases the wall failure appears to be the caused by tree roots pushing against existing masonry walls. Eventually this will cause the wall to break, fall, and fail. Retaining walls need to be repaired or replaced with a more substantial wall to prevent the roots from shifting the wall and/or the trees causing the damage need to be removed.
- CJ-A10** Nearly all windows had stained concrete sills and some damaged, cracking, or spalling due to water ponding on the sills. Sills need to be sloped to prevent water from sitting on the edge of the sill. Window flashing needs to be replaced at all windows and be provided with a sloped sill piece to drain water. A replacement of all windows and flashing is recommended. However, we understand the windows are the tenant's responsibility for replacement and may not be replaced all at once. An alternative option would be to provide a sloped metal sill piece at all windows that is connected to the existing windows frames now. Then in the future as the tenants replace their windows new windows and flashing should be provided. Concrete sills and lintels should be patched and repaired where damaged.

- CJ-A11** Concrete damage was visible on the large existing concrete planter boxes in the J building breezeway. One is centered in the breezeway, two stories high at the entrance of two upper residential units and the other is cantilevered from the Northern side of the J building into the breezeway. These planters should be repaired or replaced and ensure proper water drainage from the planters is provided.
- CJ-A12** The existing wood window frames are weathering, and the glass is single pane. The wood windows should be replaced with aluminum framed storefront windows with double pane glass. Window flashing should be replaced and a sloped sill pieces should be provided when windows are replaced. It is understood that windows and doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to other surfaces.
- CJ-A13** The existing wood doors and frames are weathering. The doors and frames should be replaced with aluminum storefront doors and frames. It is understood that the doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to other surfaces.
- CJ-A14** While assessing the site, there were several concrete walking pavers that were loose or unattached to the surface they are mounted. These pavers are 2'x2' pavers elevated over the first-floor roof of the space below, and lead to the apartment entrances at the second level. Repair and replace any broken or damaged pavers and reattach and tighten any loose walking paver to prevent future damage or injury.
- CJ-A15** Steel lintels at mechanical room doors at Chimney House J Building were visibly deteriorating and falling apart. This is compromising the masonry around the door opening and further damage can occur from water exposure. Remove old lintels and replace with new galvanized steel lintels. Replace door and door frame, and repair or replace any damaged masonry.
- CJ-A16** The exterior stairs between Commercial Plaza and J building have cracking/spalling on most step about 2" in. Concrete stairs on the rear of the building up to the tenant's residences show signs of cracking/spalling in some locations with exposed rebar. The stairs on the rear of the building down to a maintenance space have cracking and spalling on the surface of the stairs. Remove any loose or compromised concrete from surfaces and repair/patch to match existing. If rebar is exposed the damaged concrete needs to be chipped around the corroding rebar; the steel rebar needs to be cleaned of any rust, then new concrete can be poured.

STRUCTURAL:

There are concrete balconies on the 2nd floor that are cantilevering from the face of the building and continuous beam along the edge, parallel to the facade. Balconies on the 3rd floor were constructed with cantilevered steel angles with wood plywood decking. As seen in photograph CJ-S01-1, there two different balcony layouts:

- One has an enclosed balcony with cantilever semicircular balconies on the second floor. Some of these stacks have cantilever wood balconies.
- Other has an open balcony on the second floor spanning between outrigger beams. There are also cantilever wood balconies.

The survey team was provided access to two units in the Chimney House, one with a concrete cantilever balcony and a cantilever wood balcony. The top surface of the concrete balcony was sounded and appeared to be in fair condition with no signs of cracking or delamination. The wood balcony was reportedly replaced recently (CJ-S03-1), but during our visit, the wood was noted to be soft. The only drainage provided to this balcony was a small hole drilled through the plywood that appeared to be clogged (CJ-S03-2). This drainage hole is way too small, and we believe that these wood balconies are likely allowing water to pond on the surface, which could explain why the wood felt soft even though it was new.

During our visual survey of each balcony from the ground level, we noted that the concrete edge beams at the soffit of the 2nd floor appeared significantly degraded. Plywood boards were nailed to these beams (CJ-S01-2), likely to prevent spalling concrete from falling on pedestrians below. Although these boards obscured the concrete surface in these locations, numerous cracks were observed in the beams and slabs around them (CJ-S02-1); we believe that the concrete that is obscured by the boards has severely deteriorated. We noted that of the two balcony layouts in the building, the edge beams at the outside of the enclosed balconies were in particularly poor condition (CJ-S01-1).

Various slab soffits were also observed to be spalling (CJ-S01-3). It should be noted that the top surfaces of most of these slabs are in enclosed residential units, and concrete repairs may extend up into the units.

The plywood decking in one wood balcony was collapsing (CJ-S03-1); *this balcony is a hazard and should be closed until repairs have been performed.*

CJ-S01 Overall, the balconies were found to be in poor condition. There is a considerable amount of deterioration on all exposed concrete members. A comprehensive investigation is needed to better understand the cause of the deterioration and the quantities for the required repairs. While this visual survey provides our initial recommendations for the balconies based on limited information, the performance of destructive testing (such as obtaining cores to determine the chloride content, rate of carbonation, compressive stress, and concrete properties) and a thorough assessment of the balconies as well as the facade in accordance with ACI 364.1-19 "Guide for Assessment of Concrete Structures Before Rehabilitation" needs to be performed. As part of a comprehensive facade and balcony survey, a representative sample of the concrete surfaces should be sounded and closely observed to identify the structural issues. We recommend the performance of this comprehensive survey without delay and the preparation of a repair program by following the ACI repair guidelines. If the repairs are delayed, the deterioration is expected to increase exponentially over time,

leading to very costly repairs. It should also be considered that the repairs at the balconies may need to be extended into the unit interiors, and the erection of temporary walls may be necessary to protect the residents during construction.

CJ-S02 Perform concrete patch repairs on the balcony edge beams and slabs. The balcony edge beams in the Chimney House are in poor condition and need repairs. There are currently plywood boards in place over many beams, likely to prevent spalling concrete from falling on pedestrians below. This obscured the reinforcement and limited the assessment; however, even the portions that were exposed appeared to be in poor condition. We, therefore, expect that a large amount of repair work is required along this beam, particularly where the small semicircular balconies are located. Some spalling was also observed on the soffits of the slabs. These spalls were below enclosed residential spaces, and repairs may extend up into those units.

CJ-S03 Remove and replace the wood deck balconies with a metal deck. The exposed wood balconies were found to be soft and deteriorated. *One unit was collapsing and should be closed until repairs can be performed.* Since there is no drainage provided, we believe that moisture may be accumulating on the top surface of the wood and causing deterioration. Replacing these decks with a precast deck with adequate drainage would provide a longer-lasting balcony.

FIRE SUPPRESSION:

CJ-F01 The building is currently protected with a sprinkler system. The breezeway and loading dock are protected with a dry system. The system and piping materials are original to the building. There is a backflow preventer on the incoming fire service. Sprinkler heads are pendent, original to the building. Approximately 40% of the sprinkler heads in Chimney House have been changed to new. The remaining sprinkler heads should be replaced.

PLUMBING:

CJ-P01 Since the underground piping is not visible for assessment, it is recommended to video scope all underground sanitary sewer piping for integrity.

CJ-P02 J Building is currently served by a 3" domestic water service that enters the main mechanical room, splits to serve the fire suppression system, then to the domestic service. The system has sufficient pressure and does not require a domestic booster system. There is no backflow prevention on the incoming service. Most of the piping system is copper with solder fittings. Add a backflow preventor to the incoming domestic water service. See related photo of water service without backflow prevention.

CJ-P03 The sanitary sewer system for J Building is a gravity system. The piping materials are a combination of copper DWV and cast iron. Sewer stacks have not been replaced. Replace sewer stacks.

The storm drain system consists of an external downspout system from collector boxes from the flat roof.

The hot water for the building is served out of a single mechanical room. There is one gas-fired water heater. The heater has an input of 500,000 BTUH. The heater has 85 gallons storage. The hot water system equipment has been replaced in the last 5 years.

The gas piping system serves the water heater and boilers. The piping is schedule 40 steel pipe with screw fittings.

All piping systems are original to the building. Only the domestic main piping that was routed underground at the breezeway has been replaced. It is recommended to replace water and sewer distribution system piping. All domestic risers and all horizontal domestic mains should also be replaced.

CJ-P04

Individual spaces include residential grade fixtures. Water closets are flush tank, countertop lavatories and residential stainless steel kitchen sinks. Faucets are residential quality. However, many of the fixtures are original to the building and will factor into any changes proposed to the plumbing systems. As the fixtures and piping located in each space is the tenant's responsibility, those were not included in the review. It is understood that fixtures within commercial or residential tenant spaces are the tenant's responsibility. Replace residential fixtures in all residences.

MECHANICAL:

CJ-M01

The building is currently served by multiple fan coil units and two different heating and chilled water plants. The chilled water is purchased from a local utility. Hot water is produced on site in two different mechanical rooms.

As the existing system is a two-pipe arrangement, the system is only capable of providing heat or cooling at any given time. A system changeover is required to switch between heating and cooling and is usually done twice a year. This system type is known to be problematic in the shoulder seasons where the temperatures can fluctuate widely during any given day.

Individual spaces are served by two-pipe fan coil units. As the units and piping located in each space is the tenant's responsibility, those were not included in the review. However, many of those units are original to the building and will factor into any changes proposed to the mechanical systems. There are exceptions where the current tenants have outfitted their spaces with additional split system DX cooling, however those were not included in the review as they are considered outside the scope of the study. Replace existing 2-pipe FCU system with 4-pipe system.

- CJ-M02** The building is separated mechanically by the small breezeway, with the spaces to the north served out of one mechanical room and the spaces to the south served out of the other one. Both boilers appear to have been installed at the same time, around 1991, and are not original to the building. The boilers are reaching the end of their useful life and should be replaced as obtaining replacement parts for the existing units has been difficult and costly. See photo of the nameplate for one of the two aging hot water boilers.
- CJ-M03** The pumps appear to be older and need replacement, many showing signs of rust. Replace chilled and hot water distribution pumps. See photo of typical aging pump motor.
- CJ-M04** There is currently no central controls system to allow for remote access or monitoring of the individual buildings from a central location. Add a central controls system for remote monitoring and alarms.
- CJ-M05** In general, both mechanical rooms do not provide the required clearances for maintenance to any of the operable equipment. Enlarging these mechanical spaces, or constructing remote mechanical room buildings, would be required to house all the required mechanical equipment to support a 4-pipe heating and cooling system and comply with the access requirements of the current mechanical code. The existing mechanical rooms can remain “as is” with the current piping system, replacing equipment in kind as it fails or reaches the end of its useful life. However, inadequate clearances within these spaces will be a persistent challenge for accomplishing these replacements and performing regular maintenance. See related photo of the existing conditions.
- CJ-M06** Replace HVAC risers as they are assessed to be original to the building.
- CJ-M07** The pipe insulation is damaged in many cases and the vapor barrier has been compromised. Much of the piping in the mechanical spaces should be replaced due to rust and age.

ELECTRICAL:

- CJ-E01** The majority of the house electrical system has been in place since the original construction, and is operating beyond its expected usual life of 30 to 40 years. The house electrical service is rated 120/208V-3PH-400A and terminates in a wiring trough that serves multiple disconnect switches. Individual businesses on the first level have individually-metered electric services with associated disconnect switches. There is presently no emergency electrical system, as one is not required. The house electrical distribution system should be considered for upgrade based on age, capacity constraints, and periodic failures of equipment. However, since the current electrical system is functioning sufficiently, other building upgrades may be considered a higher priority, and no specific electrical upgrades are recommended at this time.#

- CJ-E02** Interior lighting fixtures are operating beyond their useful life and should be replaced with LED source fixtures rated for the environment. Most light fixtures have inefficient fluorescent lamps. LED light fixtures are more energy efficient reducing operation costs. Replace all interior light fixtures in landlord spaces.
- CJ-E03** Exterior lighting fixtures are operating beyond their useful life and should be replaced with LED source fixtures rated for the environment. Where not present, exterior lighting should be provided with battery backup for emergency egress purposes. LED light fixtures are more energy efficient reducing operation costs.
- CJ-E04** Correct miscellaneous National Electrical Code (NEC) violations including missing box covers, maintenance clearances, GFI protection, and proper labeling. See photo of NEC working clearance violation condition in front of electrical panelboard.
- CJ-E05** In tenant-owned spaces, the electrical panels should be considered for replacement as they are older, do not have main breakers and their reliability is questionable. Replace tenant unit panels with new panels having main breakers
- CJ-E06** Within tenant units, GFCI type breakers or devices are not present in some locations where required by code to provide for safe operation of receptacles. Provide ground-fault protection for circuits in tenant units as required by NEC. Installing GFCI type protection is tenant responsibility.
- CJ-E07** Data / Telephone / CATV wiring in the building does not meet current EIA/TIA standards regarding performance specifications of materials and installation methods. Upgrading the low-voltage communication systems networks to operate according to current standards is important. It is recommended the Owner provide a new main data system cabling backbone to make faster and more reliable internet communication available to retail tenants and condominium owners. It may be possible to negotiate with a local ISP to have these facilities installed at minimal initial cost.

QUAYSIDE

Quayside is a two and three-story building made of concrete and brick masonry with commercial and residential occupants. The ground level is commercial tenants with residences above on the second and third levels. The lake-facing side of the building has large windows and balconies along with the tenant business entrances at ground level with a terraced patio space offsetting the building from Lake Anne. There is one breezeway towards the center of the building that connects the plaza to the parking lot and sidewalks on the perimeter of the building. The parking lot is located on the resident-entry side of the building which is composed of masonry, windows, and concrete steps leading to grouped resident entrances. The roof is a flat membrane roof with mechanical equipment, roof penetrations, and roof drains. Roof parapet walls are capped with metal coping. Masonry balcony walls are capped with masonry units.

*** The Quayside building was undergoing a hot water service system replacement at the time of our assessment that provides hot water service for Quayside residents and businesses. A complete, investigative plumbing assessment was not a part of this survey. It is noted that in-ground plumbing lines were turned off and new water lines installed above ground were not yet fully enclosed but were operational at the time of our survey. ***

ARCHITECTURE:

- QS-A01** The brick, mortar, and concrete throughout the building are dirty with some areas showing signs of weathering, staining, mold growth and efflorescence on the brick surface. The exterior of the entire building should be cleaned to remove dirt, mold, staining, and efflorescence present on existing surfaces. Concrete sills should have metal staining present removed and cleaned from surface. Cleaning should be performed prior to any masonry or concrete repairs as further damage may be uncovered with the cleaning.
- QS-A02** The brick appears to be in good condition overall. Minor cracks in the brick surface and deteriorating mortar were observed. Spalling, cracked, or damaged brick should be removed and replaced. Cracked and damaged mortar should be removed and repointed. Cracks in bricks and mortar allow water to penetrate the cavity of the wall, which over time can cause wood decay, metal and rebar decay, mold growth and efflorescence.
- QS-A03** The exterior concrete stairs on the rear of the building up to the tenant's residences show signs of cracking/spalling in some locations with exposed rebar. Remove any loose or compromised concrete from surfaces and repair/repatch to match existing. If rebar is exposed the damaged concrete needs to be chipped around the corroding rebar; the steel rebar needs to be cleaned of any rust, then new concrete can be poured.
- QS-A04** There are several brick retaining walls between the building and the parking lot and between the building and lake. These retaining walls had some masonry damage. There were cracked and spalling bricks, cracked and deteriorating mortar, and areas of brick with efflorescence. All walls need to be cleaned and have the masonry repaired/replaced and the mortar repointed.

- QS-A05** The retaining walls around the building all have concrete caps, some of which have been damaged. These caps had a mixture of mortar and sealant used to seal the caps. The mortar joints if cracked can allow moisture into the wall. The damaged concrete caps should be repaired or replaced. The mortar joints in the caps should be replaced with sealant. Concrete caps should have a slope at the top to drain water from the caps. If caps are to be replaced sloped caps should be provided.
- QS-A06** The existing membrane roof had ponding water visible on a significant portion of the roof surface. Roof drains and scuppers should be cleaned to ensure water is draining from the roof. Mold and organic growth should be cleaned from the roof and debris from drains and throughout roof surface. Further investigation should be done to ensure the roof has proper drainage and adequate sloping to drains. Ponding water can cause roof leaks and cause potential damaged to surfaces/spaces below in the future. It is recommended to replace the roof in the next few years based on its age and condition.
- QS-A07** The existing stair railings do not meet current building code requirements, and in some places the handrails/guardrails were loose. Handrails are not provided on both sides of every stair. Guardrails are not the correct height and do not have the correct spacing between pickets. Railings should be replaced with railings that meets current code requirements and be installed on both sides of stairs.
- QS-A08** Concrete cracking/spalling were observed in the breezeway slab. Concrete slab on grade should be patched and repaired to match existing.
- QS-A09** One of the existing retaining walls was canting and cracked. The wall failure appears to be the caused by tree roots pushing against the existing masonry wall. Eventually this will cause the wall to break, fall, and fail. Retaining walls need to be repaired or replaced with a more substantial wall to prevent the roots from shifting the wall and/or the trees causing the damage need to be removed.
- QS-A10** A small section of sidewalk in front of Nordic knot has settled. Portion of the sidewalk should be removed and replaced.
- QS-A11** Nearly all windows had stained concrete sills and some damaged, cracking, or spalling due to water ponding on the sills. Sills need to be sloped to prevent water from sitting on the edge of the sill. Window flashing needs to be replaced at all windows and be provided with a sloped sill piece to drain water. A replacement of all windows and flashing is recommended. However, we understand the windows are the tenant's responsibility for replacement and may not be replaced all at once. An alternative option would be to provide a sloped metal sill piece at all windows that is connected to the existing windows frames now. Then in the future as the tenants replace their windows new windows and flashing should be provided

- QS-A12** The existing wood window frames are weathering, and the glass is single pane. The wood windows should be replaced with aluminum framed storefront windows with double pane glass. Window flashing should be replaced and a sloped sill pieces should be provided when windows are replaced. It is understood that windows and doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to other surfaces.
- QS-A13** The existing wood doors and frames are weathering. The doors and frames should be replaced with aluminum storefront doors and frames. It is understood that the doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to other surfaces.
- QS-A14** The existing sliding glass balcony doors and frames appear to be weathered and reaching the end of their useable life. Doors and frames should be replaced with aluminum sliding glass doors. It is understood that the doors are the tenant's responsibility. However, weathered and deteriorating frames can allow water into the building potentially causing damage to the interior spaces and compromise the exterior wall if leaking is present over time.

STRUCTURAL:

The balconies on the 2nd and 3rd floors consist of cantilever concrete slabs and beams with masonry knee walls (QS-S01-1). Some of the balconies on the 2nd and 3rd floors were enclosed with aluminum glass windows to utilize them as interior living space as part of the original construction (QS-S01-2).

The concrete slabs for the balconies in the Quayside Building were generally noted to be in somewhat better condition than the Heron House; however, concrete cracking and spalling were observed (QS-S01-3 and QS-S02-1). Most concrete deterioration was noted along the beams at the perimeter of the balconies; however, these could not be closely observed or sounded to assess the extent of the damage accurately.

There are signs of moisture accumulation which will lead to future problems. The edge beams and masonry walls exhibit stains on the exterior surfaces, indicating that water is not properly drained (QS-S04-1, QS-S05-1). Stains were noted to be particularly worse on the north-facing surfaces, which get little sun exposure. It appears that the top surfaces of the edge beams, running perpendicular to the building face, were not properly sloped to drain water off; thus, water can accumulate, and concrete spalls were noted in these areas.

Access was gained to the interior of one unit in the Quayside Building so that the balcony could be closely observed. While the top surface of the concrete slab did not appear significantly deteriorated at this unit, other deficiencies were observed. The space between the pickets and bottom rail to the slab was measured to be greater than 4" (QS-S03-3, QS-S03-4). Furthermore, there are cracks at the precast top caps placed over the knee walls and deterioration in the brick masonry, allowing water to enter the knee walls (QS-S04-2). Cracks and deterioration were also observed around the railing connections (QS-S03-1, QS-S03-2).

- QS-S01** Overall, the balconies were found to be in poor condition. There is a considerable amount of deterioration on all exposed concrete members. A comprehensive investigation is needed to better understand the cause of the deterioration and the quantities for the required repairs. While this visual survey provides our initial recommendations for the balconies based on limited information, the performance of destructive testing (such as obtaining cores to determine the chloride content, rate of carbonation, compressive stress, and concrete properties) and a thorough assessment of the balconies as well as the facade in accordance with ACI 364.1-19 "Guide for Assessment of Concrete Structures Before Rehabilitation" needs to be performed. As part of a comprehensive facade and balcony survey, a representative sample of the concrete surfaces should be sounded and closely observed to identify the structural issues. We recommend the performance of this comprehensive survey without delay and the preparation of a repair program by following the ACI repair guidelines. If the repairs are delayed, the deterioration is expected to increase exponentially over time, leading to very costly repairs. It should also be considered that the repairs at the balconies may need to be extended into the unit interiors, and the erection of temporary walls may be necessary to protect the residents during construction.
- QS-S02** Perform concrete repairs on the balcony slabs and edge beams. Concrete spalling and deterioration were observed throughout the balconies. To address this deterioration, the damaged concrete needs to be removed and replaced.
- QS-S03** Repair or replace the guardrails. Guardrail connections were noted to be damaged and in need of repairs at both the top rails and post bases. It was also observed that the guardrails are not Code compliant due to the spacing between pickets and at the bottom rail being too large. It is recommended to replace railings with code compliant railings.
- QS-S04** Replace the top caps and add counter flashings to the flank walls at the balconies. A significant amount of staining and discoloration was observed at the tops of these walls, and we believe these are caused by water accumulation at the top of the wall. The top caps at the top of the walls do not appear to be adequately sloped to ensure water drainage. Replacing top caps with a properly sloped top cap and adding metal counter flashings are recommended.
- QS-S05** Provide a sloped concrete surface on the edge beams outside of the flank walls. The edge beams, supporting the flank walls, were noted to have flat surfaces on their top surfaces, and many exhibit significant discoloration due to water ponding. Therefore, we recommend sloping these top surfaces with a leveling mortar to prevent ponding.
- QS-S06** Clean the scuppers and ensure residents do not block them. Many of the scuppers appeared stained from prolonged exposure to moisture, and some appeared to be blocked. These scuppers help prevent water from accumulating on the balcony surface, so it is important to ensure they are functional.
- QS-S07** The survey team was told by LARCA that the Quayside building has had issues with the hot water pipes leaking under the building for many months. The residents of the building have expressed concerns that this water being pumped under the building has caused structural settlement or damage to the foundations

of the building. Due to the foundations being underground evaluating the foundations was not part of this visual inspection report. However, it is recommended that additional destructive survey be done to evaluate the foundations. Excavation of a section of the ground in front of the building where the water pipes are located should be performed to find the leaking pipe, to determine the source of the leak and determine areas of possible damage.

Testing should include the performance of ground-penetrating radar (GPR) survey of the entire slab on grade to check for voids or water below the slab on grade. If the leaking water caused cavities to occur below the slab on grade, they could be visible with the GPR equipment. Once GPR has been performed test pits should be excavated to find out the condition of the soils and the foundations. At least one test pit should be opened inside the building and one outside the building. Excavation, observation, and testing of soils should be performed at each test pit. Electrical resistivity testing should also be performed at the parking lot to check the soil saturation around the building.

FIRE SUPPRESSION:

QS-F01 The building is currently protected with a sprinkler system in certain areas only. The system and piping materials are original to the building. There is no backflow preventer on the incoming fire service. It is recommended to add backflow preventor to the fire main

QS-F02 Sprinkler heads are pendent, original to the building. All sprinkler heads should be replaced.

PLUMBING:

QS-P01 Since the underground piping is not visible for assessment, it is recommended to video scope all underground sanitary sewer piping for integrity.

QS-P02 The building is currently served by a 2" domestic water service that enters the main mechanical room. The system has sufficient pressure and does not require a domestic booster system. There is no backflow prevention on the incoming service. Most of the piping system is copper with solder fittings. It is recommended to add a backflow preventor to the incoming domestic water service. See related photo of water service without backflow prevention.

QS-P03 The sanitary sewer system is a gravity system. The piping materials are a combination of copper DWV and cast iron. Sewer stacks have not been replaced. It is recommended the sewer stacks be replaced, approximately 12 to 14 stacks.

The storm drain system consists of an internal piping system from roof drains from the flat roof.

The hot water for the building is served out of a single mechanical room. There is one gas-fired water heater. The heater has an input of 500,000 BTUH. The

heater has 120 gallons storage. The hot water system equipment has been replaced in the last 5 years.

The gas piping system serves the water heater and boilers. The piping is schedule 40 steel pipe with screw fittings.

All piping systems are mostly original to the building. It is recommended to replace water and sewer distribution system piping since the current piping system has exceeded the expected service life.

Recently, horizontal mains for cold water, hot water, and hot water return, were replaced to move these mains from below the first floor to above the ceiling of the first floor. Upon review of this installation, there is a recommendation to make sure exposed piping to the exterior will need to be heat traced and enclosed into bulkheads, thus moving the building envelope out to the bulkhead. This is for protection from freezing. The domestic risers have not been replaced. There are approximately 12 to 14 domestic risers that should be replaced

QS-P04 Individual spaces include residential grade fixtures. Water closets are flush tank, countertop lavatories and residential stainless steel kitchen sinks. Faucets are residential quality. However, many of the fixtures are original to the building and will factor into any changes proposed to the plumbing systems. As the fixtures and piping located in each space is the tenant's responsibility, those were not included in the review. Replace residential plumbing fixtures in all spaces. It is understood that fixtures within commercial or residential tenant spaces are the tenant's responsibility.

MECHANICAL:

QS-M01 The building is currently served by multiple fan coil units and a single heating and chilled water plant. The chilled water is purchased from a local utility and the hot water is produced on site by a boiler located in the mechanical room.

As the existing system is a two-pipe arrangement, the system is only capable of providing heat or cooling to the entire building at any given time. A system changeover is required to switch between heating and cooling and is usually done twice a year. This system type is known to be problematic in the shoulder seasons where the temperatures can fluctuate widely during any given day.

Individual spaces are served by two-pipe fan coil units. As the units and piping located in each space is the tenant's responsibility, those were not included in the review. However, many of those units are original to the building and will factor into any changes proposed to the mechanical systems. There are exceptions where the current tenants have outfitted their spaces with additional split system DX cooling, however those were not included in the review as they are considered outside the scope of the study. It is recommended to replace the existing 2-pipe FCU system with a 4-pipe system.

- QS-M02** The building is served out of a single mechanical room, which was repurposed from the original laundry room. There is a single boiler, and it seems to have been installed around 1990. It is recommended to replace the boiler for Quayside as it has exceeded its service life.
- QS-M03** The chilled and hot water pump motors appear to be newer and are in satisfactory shape, however the pumps themselves are older and show signs of their age. The pipe insulation is damaged in many cases and the vapor barrier has been compromised. Much of the piping in the mechanical spaces should be replaced due to rust and age. Replace pipe and pipe insulation in all mechanical rooms. See related photo of deteriorated piping and missing insulation.
- QS-M04** There is currently no central controls system to allow for remote access or monitoring of the individual buildings from a central location. It is recommended to add a central controls system for remote monitoring and alarms for the building.
- QS-M05** In general, the mechanical room is tight and does not provide the required clearances for maintenance to much of the equipment. Relocate or modify the layout of the mechanical room to provide adequate service clearances for all equipment.
- QS-M06** The existing HVAC risers have not yet been replaced. HVAC risers should be replaced within the next couple of years. The existing horizontal mains were replaced in the last few years according to LARCA maintenance engineer.
- QS-M07** While some of the pump motors have been replaced, the pump bodies themselves are older and are approaching or have exceeded their expected life. Replace the heating and chilled water distribution pumps.

ELECTRICAL:

- QS-E01** The majority of the building electrical system has been in place since the original construction, and is operating beyond its expected usual life of 30 to 40 years. The house electrical service is rated 120/208V-3PH-600A and terminates in a main disconnect switch. Except for the brewery, all individual businesses on the first level, and condominiums on the upper level, are served from the main electric service equipment. The brewery has two (2) main electrical service panels, each rated 120/208V-1PH-200A. There is presently no emergency electrical system, as one is not required. The house electrical distribution system should be considered for upgrade based on age, capacity constraints, and periodic failures of equipment. However, since the current electrical system is functioning sufficiently, other building upgrades may be considered a higher priority, and no specific upgrades are recommended at this time.#
- QS-E02** Interior lighting fixtures have fluorescent lamps, are operating beyond their useful life, and should be replaced with LED source fixtures rated for the environment. Replace all interior light fixtures in landlord spaces.

- QS-E03** Exterior lighting fixtures are also aging and should be replaced or re-lamped with LED type bulbs with battery backup for emergency egress purposes.
- QS-E04** Correct miscellaneous NEC violations (missing box covers, maintained clearances, GFI protection, proper labeling). An example of NEC safety violations is exposed wiring above the egress door of the main mechanical room building (see related photos).
- QS-E05** In tenant-owned spaces, the electrical panels should be considered for replacement as they are older, do not have main breakers and their reliability is questionable. Replace tenant unit panels with new panels having main breakers.
- QS-E06** Within tenant units, GFCI breakers or devices are not present in some locations where required by code to provide for safe operation of receptacles. Provide ground-fault protection for circuits in tenant units as required by NEC. Installing GFCI type protection is the tenant's responsibility.
- QS-E07** There is no fire alarm system in the building. Provide a building wide fire alarm system. Although a fire alarm system is not required by code, a fire condition in any of the retail spaces on the ground level would provide no notification to residents in the tenant units above.
- QS-E08** Data / Telephone / CATV wiring in the building does not meet current EIA/TIA standards regarding performance specifications of materials and installation methods. Upgrading the low-voltage communication systems networks to operate according to current standards is important. It is recommended the Owner provide a new main data system cabling backbone to make faster and more reliable internet communication available to retail tenants and condominium owners. It may be possible to negotiate with a local ISP to have these facilities installed at minimal initial cost.

HERON HOUSE

Heron House is a 15-story residential building constructed from masonry units and concrete. The building contains an art gallery and studios on the first floor and approx. 60 separate residential units on the upper floors with a typical layout of four residences per level. Each condominium has a large balcony, large aluminum framed windows and sliding glass doors. The facades of the building are brick face masonry and cast concrete. Each balcony features a built-in concrete void at the corners of each balcony that was meant to hold plant containers.

Heron House provides 2 elevators, and 2 separate stairs that provide resident circulation up and down, and through the building. There is a central boiler and mechanical room that also houses main plumbing and sewer services, and electric panels were in an electric room.

Heron House's roof is accessed by elevator and then a roof stair. The roof is a flat membrane roof ballasted with gravel. The parapet walls are capped with metal flashing. The roof surface has walking pavers that gives you access to the roof area and existing equipment, drains, and roof vents, and penetrations. Concrete columns that originate from the base of the building continue past the roof level elevation as continuous vertical concrete elements. The building has a two main entrances, one facing the plaza at ground level and one on the first floor facing the parking lot. There are sets of exterior stairs leading from the resident parking lot to Washington Plaza.

ARCHITECTURE:

- HH-A01** The brick, mortar, and concrete throughout the building, particularly on the North and East facades, are dirty with some areas showing signs of weathering, staining, mold growth and efflorescence on the brick surface. The exterior of the entire building should be cleaned to remove dirt, mold, staining, and efflorescence present on existing surfaces. Concrete sills should have metal staining present removed and cleaned from surface. Cleaning should be performed prior to any masonry or concrete repairs as further damage may be uncovered with the cleaning.
- HH-A02** The brick appears to be in good condition overall. Minor cracks in the brick surface and deteriorating mortar were observed. Spalling, cracked, or damaged brick should be removed and replaced. Cracked and damaged mortar should be removed and repointed. Cracks in bricks and mortar allow water to penetrate the cavity of the wall, which over time can cause wood decay, metal and rebar decay, mold growth and efflorescence.
- HH-A03** The balcony railings do not meet current building code requirements and were observed to be rusted in places. Balcony railings should be replaced with railings that meets current building code requirements.
- HH-A04** The rooftop guardrails along the edge of roof were in fair condition. Some of the guardrails were not tightly fastened or mounted securely. Guardrails should be replaced with railings that meets current building code requirements.

- HH-A05** The exterior stair on the South side of Heron House connecting the plaza to the parking lot for residents of Quayside and Heron House had signs of deteriorating and spalling of concrete along the underside. Cracking and spalling were significant enough to expose rebar. Remove any loose or compromised concrete from surfaces and repair/repatch to match existing. If rebar is exposed the damaged concrete needs to be chipped around the corroding rebar; the steel rebar needs to be cleaned of any rust, then new concrete can be poured.
- HH-A06** The tops of the vertical high columns that extend above the roof were observed to have deteriorating faces of concrete. Some of the columns had evident repairs, patching, or wood coverings. It is recommended to repair columns that extend above the roof so spalling concrete does not occur. Remove any loose or compromised concrete from surfaces and repair/repatch to match existing. Remove any loose or compromised concrete from surfaces and repair/repatch to match existing.
- HH-A07** Elevators were in operational and functioning condition during assessment. However, the elevators do not meet current IBC building codes or meet ADA code requirements. The elevator system was not fully assessed or investigated as it goes beyond a visual conditions assessment. It is observed that elevator equipment should be fully assessed, repaired, and replaced as necessary to maintain safety and systems functionality. It is recommended that the elevators be replaced in the next few years to comply with current codes. One or both elevators may need to be enlarged to meet the stretcher requirement of the current codes.
- HH-A08** The existing exterior stair railings do not meet current building code requirements, and in some places the handrails/guardrails were loose. Guardrails are not the correct height and do not have the correct spacing between pickets. Handrails are not provided with the guardrail. Railings should be replaced with railings that meets current code requirements and be installed on both sides of stairs.
- HH-A09** The condition of the existing membrane roof could not be evaluated due to the pavers and gravel on top. However due to the age of the roof it is recommended that the roof be replaced in the next couple of years. When the roof is replaced the slope of the roof and number of roof drains should be evaluated to verify proper drainage is provided.
- HH-A10** Nearly all windows had stained concrete sills and some damaged, cracking, or spalling due to water ponding on the sills. Sills need to be sloped to prevent water from sitting on the edge of the sill. Window flashing needs to be replaced at all windows and be provided with a sloped sill piece to drain water. A replacement of all windows and flashing is recommended. We understand the windows are the tenant's responsibility for replacement but on the Heron house all need to be replaced at one time. When replace the window flashing should be provided with a sloped sill extension to prevent water from ponding on the sill.

STRUCTURAL:

A review of the architectural drawings for the Heron House indicates that the balconies are concrete slabs between 6½" to 7½" thick (no reinforcement information was available) (HH-S01-1). Balconies are rectangularly shaped and are typically supported by the building framing on two edges (HH-S01-2). Precast concrete planters are provided at the cantilever corners. According to the reviewed plans, the planters are attached to the balconies with a single ½" diameter steel rod grouted to the cast-in-place concrete knee walls at the cantilever corners (HH-S05-1). Some of these planters have significantly deteriorated (HH-S05-2).

The drawings indicate the top surfaces of the balconies were to be sloped away from the building, and one scupper is provided at the low point of each balcony for drainage. The drawings show the scuppers to be spliced in the middle of the columns and extend 1" out from the column to help prevent the water from running down the columns (HH-S04-1); however, this 1" overhang was not observed during our survey, and there are plenty of spalls along the columns where the water is traveling down (HH-S04-2). The drawings also show a continuous water drip edge was to be installed in the soffit of the slabs that is supposed to be 2" from the edges (HHS01-1). If the drip edges were built properly, they could have prevented water accumulation along the slab edge; however, they were installed 4-6" away from the edge. In addition, the concrete outside the drip was generally noted to be in poor condition (HH-S03-1).

Access was granted to the four units at the Heron House, where we were able to observe the slab soffits and perform sounding of the soffits. In one unit (Unit Number 1001), the owner reported that the concrete on the soffit of the balcony above had previously spalled off and dropped onto their balcony. The owner has since replaced approximately 300 lbs. of concrete in the balcony slab and reported that there are still active leaks in their ceiling after heavy rainfall.

Where possible, at the balconies, the concrete surfaces were sounded to identify the extent of deterioration. Spalling and delamination were observed throughout many of the slabs, and the deterioration was noticeably worse along the perimeter of the balconies. Although tiles covered the top surface of the slabs, when sounded with a steel chain, some of the tiles were distinctly hollow, which indicates either the tile is poorly bonded to the slab or there is a concrete spall below. Determining the extent of concrete deterioration requires the removal of the tiles.

In at least one balcony, water was observed to be ponding on the top surface along the building facade. While the original drawings indicate that the top surfaces of the balcony slabs were to be sloped away from the facade (towards the scuppers), tiles created additional low spots where the water could not be discharged away from the building facade.

From the ground level, concrete spalling was seen in many balcony slabs and edge beams throughout (HH-S06-1). The exposed steel reinforcement was noted to be rusting in these locations, and some areas appeared significantly deteriorated. In addition, many areas appeared to have already had some concrete patch repairs performed.

While we were surveying the balconies, we noted spalls at the columns adjacent to the balconies. The columns and walls adjacent to the balconies did not appear to be constructed plumb (HH-S06-1). We were able to notice the offset in the columns and walls adjacent to the balconies, at each level from the ground level, with a naked eye. It is unknown if sufficient concrete cover was provided in these members during the original construction.

We have also noted orange-colored staining in many of the balcony edges and concrete members (HH-S05-3). It is unknown whether this issue is related to organic growth or a concrete defect.

HH-S01 Remove the existing tiles on the top surface of the balconies. The presence of the tiles makes it impossible to observe the condition of the top surface of the concrete slab. It is possible that water is ponding on top of or below the tiles and allowing water to penetrate the concrete or drain into the building. We expect that a significant number of concrete repairs will be needed on the top surface of the slabs; however, it is impossible to determine the extent of deterioration with the tiles in place.

We were given access to 4 balconies and sounded the soffits on all. The damage at the top surface should be checked by removing the tiles at select areas to better understand any damage as part of a comprehensive survey. Sounding from the soffit does not allow us to understand the damage on the top surface. Once the tiles are removed, concrete repairs can be appropriately identified. In general, we do not recommend tile installation on balconies as it is very difficult to execute properly and trapped moisture initiates surface spalls unless there is a waterproofing membrane below the tiles and the deck is sloped to drain. We do not think either one is present at the Heron House.

HH-S02 Overall, the balconies found to be in poor condition. There is a considerable amount of deterioration on all exposed concrete members. A comprehensive investigation is needed to better understand the cause of the deterioration and the quantities for the required repairs. While this visual survey provides our initial recommendations for the balconies based on limited information, the performance of destructive testing (such as obtaining cores to determine the chloride content, rate of carbonation, compressive stress, and concrete properties) and a thorough assessment of the balconies as well as the facade in accordance with ACI 364.1-19 "Guide for Assessment of Concrete Structures Before Rehabilitation" needs to be performed. Petrographic testing should also be performed to determine if the orange staining is a concrete defect. As part of a comprehensive facade and balcony survey, a representative sample of the concrete surfaces should be sounded and closely observed to identify the structural issues. We recommend the performance of this comprehensive survey without delay and the preparation of a repair program by following the ACI repair guidelines. If the repairs are delayed, the deterioration is expected to increase exponentially over time, leading to very costly repairs. It should also be considered that the repairs at the balconies may need to be extended into the unit interiors, and the erection of temporary walls may be necessary to protect the residents during construction.

HH-S03 Perform concrete patch repairs on the balcony slabs, edge beams, and columns. A significant amount of concrete spalling and deterioration was observed throughout the building's balconies. To address this deterioration, the damaged concrete needs to be chipped around the corroding rebar; the steel rebar needs to be cleaned of any rust, then new concrete can be poured. The extent of the concrete deterioration needs to be determined by sounding the accessible concrete surfaces and investigating the top surfaces of the balconies by removing the tiles where they are found to be hollow.

- HH-S04** Investigate and address any active leaks into the building. It was brought to the attention of the survey team by several residents that water is actively leaking into their units from the balcony after heavy rainfall. These leaks were not observed at the time of our survey. However, these leaks could be damaging the structural members inside the building, and it is important to address these leaks as soon as possible when they occur. The leaks could be the result of cracks on the balcony slab, so removing the existing tiles will provide insight into the cause of the leaks.
- HH-S05** Remove all precast planters. Existing planters that are connected to the existing structure with a single dowel may become a safety hazard. Some of the planters are exhibiting concrete corrosion. These planters should be removed without delay. Provide new precast concrete planters, matching existing in place. The new planters would be appropriately connected to the balconies with structural steel bolts. New planters will have to be manufactured by making a mold from an existing one.
- HH-S06** Further investigation needs to be performed to understand the condition of the columns where the balcony drains are going through them to discharge water from the balconies (HH-S01-2). As part of a comprehensive survey, the drains should be accessed with the aid of a swing stage for close-up investigation, and the columns should be sounded to understand their condition, and confirm sufficient concrete cover was provided in these members during the original construction as the existing columns are not plumb.

FIRE SUPPRESSION:

- HH-F01** The building is currently protected with a standpipe system. The system is supplied by a horizontal split case, electric driven fire pump, 20 HP, 500 GPM. The system and piping materials are original to the building. There is no backflow preventer on the incoming fire service. Sprinkler heads are pendent type, original to the building. Add backflow preventer to the fire main. See related photos of fire pump and controller that have exceeded their expected service life.
- HH-F02** The fire pump and controller are reaching the end of their useable life and need to be replaced. Replace the fire pump and fire pump controller.

PLUMBING:

- HH-P01** Since the underground piping is not visible for assessment, it is recommended to video scope all underground sanitary sewer piping for integrity.
- HH-P02** The building is currently served by a 3" domestic water service that enters the main mechanical room. The system has sufficient pressure and does not require a domestic booster system. There is no backflow prevention on the incoming service. Most of the piping system is copper with solder fittings. A back flow preventor should be added to the incoming domestic water service. See related photo of water service without backflow prevention.

HH-P03

The sanitary sewer system is a gravity system. The piping materials are a combination of copper DWV and cast iron. The basement drainage system is collected in a below floor sump and pumped to the sewer main. To date, sewer stack 04 is the only sewer stack that has been replaced per LARCA staff. There are approximately 10 other sewer stacks that should be replaced. See related photos of sewer piping in rough shape.

The storm drain system consists of an internal piping system from roof drains from the flat roof.

The hot water service for the building is served out of a single mechanical room. There are three gas-fired water heaters and two storage tanks. Each heater has an input of 1,100,000 BTUH and are 80% efficient. Hot water is being stored in two-200-gallon storage tanks. The hot water system equipment has been replaced in the last 5 years.

The gas piping system serves the water heaters, boilers, and dryers. The piping is schedule 40 steel pipe with screw fittings.

All piping systems are original to the building. Only one domestic riser, Kitchen 03, has been replaced. There are approximately 10 other domestic risers that should be replaced. It is recommended to replace water and sewer distribution system piping for the building since it has exceeded its expected service life.

HH-P04

Individual spaces include residential grade fixtures. Water closets are flush tank, countertop lavatories and residential stainless steel kitchen sinks. Faucets are residential quality. However, many of the fixtures are original to the building and will factor into any changes proposed to the plumbing systems. As the fixtures and piping located in each space is the tenant's responsibility, those were not included in the review. Replace residential fixtures in all spaces. It is understood that fixtures within commercial or residential tenant spaces are the tenant's responsibility.

MECHANICAL:**HH-M01**

The building is served out of a single mechanical room which contains, a single central air handler, and the heating and chilled water plants. The chilled water is purchased from a local utility and the hot water is produced on site by two boilers located in the mechanical room. According to their nameplates, the two boilers, were installed around 2003. It is recommended that the existing boilers be replaced as they have been used beyond their expected service life. The existing HVAC risers have been replaced. See photo of existing boiler in service.

- HH-M02** The single air handler located in the mechanical room serves the corridors and common spaces and was not operating at the time of our investigation. The air handler drain pan has catastrophically failed and partially floods the mechanical room whenever the air handler is operating in cooling mode. The air handler replacement should be prioritized to maintain adequate ventilation and space conditioning in the common areas of the building. In addition, while a project was completed to assist in maintaining temperature control in the main lobby, there is insufficient cooling from the air handler system. See photo of existing rusted out air-handling unit.
- HH-M03** It was observed the existing fan coil unit system is a two-pipe arrangement and the system is only capable of providing heat or cooling to the entire building at any given time. A system changeover is required to switch between heating and cooling and is usually done twice a year. This system type is known to be problematic in the shoulder seasons where the temperatures can fluctuate widely during any given day. Replace existing 2-pipe FCU system with 4-pipe system. Individual spaces are served by two-pipe fan coil units. However, many of those units are original to the building and will factor into any changes proposed to the mechanical systems. As the units and piping located in each space is the tenant's responsibility, those were not included in the review.
- HH-M04** The chilled and hot water pump motors appear to be a mix of old and newer motors and are in satisfactory shape. However, the pumps themselves should be replaced within the next 10 years. The pipe insulation, where visible, is in satisfactory shape in much of the space.
- HH-M05** There is currently no central controls system to allow for remote access or monitoring of the individual buildings from a central location. It is recommended to add a central controls system for remote monitoring and alarms.
- HH-M06** Insufficient cooling is provided to the lobby. Supplemental cooling and heating should be added to the main entrance lobby. See photo of large open lobby that is challenging to heat and cool with current HVAC system in place.

ELECTRICAL:

- HH-E01** The majority of the building electrical system has been in place since the original construction, and is operating beyond its expected usual life of 30 to 40 years. The exception is a couple of branch circuit electrical panels added more recently in the main electrical room to serve additional miscellaneous house electrical loads. The two (2) electrical services are rated 120/208Volt-3Phase, and terminate in a 600 amp disconnect switch serving house loads and a 1200 amp disconnect switch that serves the condominium unit panels on each floor. There is a 200 amp disconnect switch ahead of these two mains that serves the 20 hp building fire pump. The electrical distribution system should be considered for upgrade based on age, capacity constraints, and periodic failures of equipment. However, since the current system is functioning sufficiently, other building upgrades may be considered a higher priority.#

There is presently no emergency electrical system. It is recommended that an on-site emergency power source be provided to power life safety and important optional standby electrical loads, including the fire pump, at least one elevator, elevator lobby exhaust air systems, building communication system(s), egress lighting, etc. When an emergency power system is provided, it would be prudent at that time to replace the house electrical service entrance equipment, including the main breaker panels serving the condominium units. Other house electrical distribution equipment and building wiring replacements or upgrades could be deferred to a later time, as long as these components continue to provide reasonable service.

- HH-E02** Interior lighting fixtures have fluorescent lamps, are operating beyond their useful life, and should be replaced with LED source fixtures rated for the environment. Most of these light fixtures operate 24/7, so energy efficiency is important. Replace all interior light fixtures in landlord spaces. See photo of representative example of inefficient fluorescent lighting.
- HH-E03** Exterior lighting fixtures are also aging, but in most cases have been re-lamped with LED bulbs. Replace exterior light fixtures with LED sourced fixtures
- HH-E04** Correct miscellaneous NEC violations (missing box covers, maintained clearances, GFI protection, proper labeling). An example of NEC safety violations is non-GFCI protected receptacle with no cover on roof of the building (see related photo).
- HH-E05** In tenant-owned spaces, the electrical panels should be considered for replacement as they are older, do not have main breakers and reliability is questionable. It is recommended to replace tenant unit panels with new panels having main breakers. See photo of representative example.
- HH-E06** Ground fault (GFCI) type receptacles are not present in some locations as required by the NEC. Provide ground-fault protection for circuits in tenant units as required by NEC. See photo of representative example. Installing GFCI type protection is tenant responsibility.
- HH-E07** Provide emergency generator to power fire pump and other life safety loads.
- HH-E08** Replace inoperable LED exit signs.
- HH-E09** Exit lighting in place is LED type with battery backup; however, the battery function on some units is not functioning properly. Battery back up on non-functional units should be replaced. Where not present, exterior lighting should be provided with battery backup for emergency egress purposes.

HH-E10 The building's fire alarm system is an out-of-date zoned system by Edwards that is not ADA compliant and does not meet current fire alarm system standards (NFPA 72). There is no alarm notification in the tenant units, smoke detectors in common areas are not supervised by the fire alarm system, and other deficiencies are present. It is recommended to replace building fire alarm system with addressable, ADA compliant, voice fire alarm system. See photo of representative example of manual pull station installed above ADA accessible height.

HH-E11 Data / Telephone / CATV wiring in the building does not meet current EIA/TIA standards regarding performance specifications of materials and installation methods. Upgrading the low-voltage communication systems networks to operate according to current standards is important. It is recommended the Owner provide a new main data system cabling backbone to make faster and more reliable internet communication available to retail tenants and condominium owners. It may be possible to negotiate with a local ISP to have these facilities installed at minimal initial cost.

Washington Plaza

Washington Plaza is a large public plaza space that is wrapping around the Northern side of Lake Anne of Reston and is the focal point of the Lake Anne community as it connects the residences, the businesses, and the public. The plaza has brick pavers throughout the plaza area and a large concrete retaining wall that borders the boundary of the lake with several seating areas, concrete sculpture pieces, and a water feature fountain. Washington Plaza itself is an element that is part of the National Registry of Historic places as of Lake Anne as of 2017.

ARCHITECTURE:

- WP-A01** There were many places within the plaza where changes in elevation were observed without fall-protection, such as the raised plaza area in between the Quayside building and the lake. A 42" high guardrail should be provided to prevent anyone from falling from the upper portion of the plaza to the sidewalk below.
- WP-A02** The walking surface in the plaza is a mix of brick pavers and concrete and was in good condition overall. There were some evident signs of paver and masonry damage where existing tree roots had moved paver units or damaged them over time. There were many places throughout that the concrete has cracked. There were also areas of water accumulation where water is ponding or potentially water seeping up from below. Debris, dirt, mold, and efflorescence was present in areas of prolonged shade or up against retaining walls and structures. Plaza should be cleaned to remove dirt, mold, and efflorescence present on the surface. Cracked and damaged pavers should be replaced. Cracked concrete should be repaired or replaced. Areas where tree roots have uprooted pavers the pavers should be removed around the tree to allow the roots to grow.
- WP-A03** The large concrete retaining wall that contains the perimeter of Lake Anne was in overall good condition for the visible portions of the wall. Due to the nature of this survey the wall below the surface of the water was not surveyed. There were some areas where concrete has cracked or chipped away from the wall. The top of the retaining wall has a notch cut into the concrete every few feet. The concrete at this notch is cracking in many locations exposing the rebar in the wall. The sloped concrete panels that make up this wall have shifted overtime but appear to be in sound condition. Weeds are growing between the panels and should be removed. Damaged concrete areas of the wall should be patched to match the existing.
- WP-A04** The large plaza steps that lead from the plaza level down to the surface of the water are in fair condition. Signs of water damage is present on the surface of the concrete steps. Wood mounted to edge of concrete for protection is deteriorating and need of replacement to protect concrete from further damage. It is recommended to resurface and repair the plaza steps.

PLUMBING:

WP-P01 The central fountain feature is no longer in service. The feature consists of four pumps for 4 zones of the fountain. Each pump should be replaced with equipment of equivalent capacity. All fountain nozzles should be evaluated based on desired flow patterns. Drainage should be assessed for circulation. See related photo of pumps that have exceeded their expected service life.

ELECTRICAL:

WP-E01 Plaza post light fixtures are in fair operating condition and should be replaced with similar period style fixtures, or other fixture type as determined by the Owner, with LED sources. Existing fixtures in place have been retrofitted with energy saving screw-in type LED lamps to conserve energy.

WP-E02 At various locations on the property, there are exposed conduit and boxes that are deteriorating, and in some cases, there are NEC safety issues with the existing conditions that should be addressed (i.e., exposed wiring, missing box covers, etc.).

WP-E03 Each post light fixture is fitted with a screw-in combination receptacle/lamp holder. The receptacle is a two-pronged outlet without ground. This arrangement is a potentially dangerous condition as most of the post lights are near water and someone could be easily injured through electrical contact. It is recommended these receptacles be removed from service. See photo of representative example.

PARKING LOTS

PUBLIC PARKING:

The public parking lot is located between the Market-Deli building and Chimney House off North Shore drive with two main entrances/exits. The public parking lot is for public use for the plaza, stores, and restaurants at Lake Anne and Washington Plaza. The main loading dock for the plaza's commercial deliveries is placed in this lot.

- PP-01** Public parking lot was in poor condition with extensive cracking, potholes, water damage and the surface of the parking lot has exceeded it's expected use. It is recommended to mill and overlay entire parking Lot and address all grading, surface water, and stormwater issues present.
- PP-02** A portion of the parking lot near where commercial plaza building and Washington plaza meet had standing water due to inappropriate sloping. This area of the parking lot needs to be regraded to drain the water away from the plaza and to the parking lot drains.
- PP-03** It was observed that several locations near the loading dock and throughout the parking lot had minor but notable concrete curb damage. Repair and replace concrete curbs where damage is present to maintain integrity of the curb and gutter system as designed.

CHIMNEY HOUSE PARKING:

Chimney House Parking is a private resident-only parking lot at the time of the conditions assessment. It is located between North Shore drive and Chimney House – J Building. The parking area wraps around the Chimney House J Building. This parking lot had some notable foot-traffic with public walking trails nearby leading through the parking lot to the large breezeway of J building into Washington Plaza.

- CP-01** Chimney House Road (resident) parking lot was observed to be in poor condition with visible weathering and deterioration of parking surface. Cracking is extensive throughout with some potholes and grading issues from North Shore Drive and the driveway leading to the parking lot. It is recommended to mill and overlay entire parking Lot and address all grading, surface water, and stormwater issues present.
- CP-02** Near the entrance/exit of the parking lot, along the drive to the lot from North Shore Drive are signs of significant curb damage and grading issues from surface and storm water running along this area. It is recommended to regrade the driveway and assess existing curb and gutter system for stormwater management. There is an adjacent walking path with a significant elevation change nearby which may be causing the grading issues.

CP-03 Several curbs within the resident parking area and along the parking lot driveway to North Shore Drive had minor concrete curb damage observed. It is recommended to repair curbs in parking lot. All markings and paint on curbs and parking surface should be repainted and replaced where required.

CP-04 On the East side of the resident parking lot for Chimney House, facing away from Chimney House, the hill is slowly starting to fall towards the lower parking lot surface. A portion of the parking lot curb has been buried by the earth. It is recommended to build a retaining wall at the edge of the parking lot to protect the parking space below. Locations that already have a retaining wall it is recommended to raise the wall above the existing grade.

QUAYSIDE/HERON HOUSE PARKING:

The Quayside/Heron House Parking lot is a large residential use lot that extends to the boundary of adjacent buildings from North Shore Drive to the Heron House and Quayside building entrances. There was a small loading/unloading zone marked off near the Heron House. The parking lot had one main entrance/exit from North Shore Drive.

QP-01 Parking lot was in poor condition with visible weathering and deterioration of parking surface. There is cracking throughout with some potholes. It is recommended to mill and overlay entire parking Lot and address all grading, surface water, and stormwater issues present.

QP-02 There were signs of poor water drainage in areas where standing water can be seen or where surface of parking lot has been damaged by the presence of water and movement of existing curb and gutters over time. It is recommended to regrade areas of the parking lot with insufficient sloping to drains.

QP-03 Overall the curbs throughout the parking lot were in good condition. Instances of minor concrete curb damage were identified. Areas with damaged curb should be repaired or replaced. All markings and paint on curbs should be repainted and replaced where required.

QP-04 There is a long retaining wall that separates the parking lot from the 11484 Washington Plaza building that connects a sidewalk to the backside of Quayside. This wall is in poor condition and should be repaired or replaced. Concrete steps were also in poor condition and should be repaired or replaced. Guardrails and railings along this pathway and at various stairs along its path do not meet current building codes and in places were loose. The guardrail and handrails should be repaired to tighten any loose rails, or they should be replaced. When the railings are replaced, they should be replaced with railings that meet current building codes.

APPENDIX A

RECOMMENDATION LIST

MARKET/DELI

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
MD-A01	3	Dirt and mold present on masonry surface	Clean exterior building and retailing wall	\$2,990	
MD-A02	2	Damaged/cracked brick and mortar	Repair/replace damaged brick	\$11,530	
	2		Repoint damaged mortar	\$9,327	
MD-A03	5	Damaged metal coping	Replace damaged coping	\$2,018	
MD-A04	4	Non compliant handrail at side entry	Replace/Provide handrail	\$1,616	
MD-A05	1	Missing guardrail at side entry	Install Guardrail	\$2,096	
MD-A06	2	Damaged/cracked brick, mortar, and cap at the retaining wall	Repair/replace damaged brick	\$8,309	
	2		Repoint damaged mortar	Included in above	
	2		Replace retaining wall cap	\$10,404	
MD-A07	3	Deteriorating wood window frames	Replace wood windows with aluminum windows with double pane glass		\$37,454
MD-A08	2	Mold and ponding water observed on roof	Replace Roof	\$85,717	
MD-A09	3	Sealant cracking at scuppers	Replace sealant	\$5,891	
MD-P01	1	Piping could not be observed	Video scope all underground sanitary sewer piping	\$4,284	
MD-M01	2	Split System Units exceeded their expected life	Provide new HVAC system	\$54,713	
MD-E01	2	Existing electrical in working order	Provide electrical infrastructure to serve any new mechanical equipment	\$25,341	
MD-E02	4	Outdated light fixtures	Replace interior light fixtures with LED sourced fixtures	\$2,295	
MD-E03	4	Outdated light fixtures	Replace exterior light fixtures with LED sourced fixtures	\$36,108	
	2		Provide battery backup for exterior egress lighting	Included in above	
MD-E04	1	National Electrical Code violations	Correct miscellaneous NEC violations	\$5,355	

* Costs include a 53% mark-up to cover general conditions, GC overhead and profit, bonds, insurance, contingencies, and escalation until March 2023

CHIMNEY HOUSE - COMMERCIAL PLAZA

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
CP-A01	3	Dirt and mold present on masonry and concrete surfaces	Clean exterior building, retaining walls, and planter beds	\$19,604	
CP-A02	2	Damaged/Cracked/Spalling brick and mortar	Repair/replace damaged brick	\$75,619	
	2		Repoint damaged mortar	\$61,172	
CP-A03	5	Concrete cracking & Spalling	Patched damaged concrete	\$35,573	
CP-A04	4	Railings rusted and do not comply with	Replace guardrails	\$1,579	
CP-A05	1	Concrete Steps are cracking extensively	Replace Stair Railing	\$1,316	
	1		Replace concrete steps	\$25,888	
CP-A06	1	Retaining walls canting	Repair/Replace retaining walls	\$93,569	
CP-A07	2	Retaining wall masonry and mortar damaged	Repair/replace damaged brick	\$2,076	
	2		Repoint damaged mortar	\$4,201	
CP-A08	2	Damaged concrete cap and clogged drains at retaining wall by loading dock	Repair damaged concrete and provide sealant at joints	\$17,213	
	1		Clean clogged drains	\$861	
CP-A09	1	Damaged roof membrane and flashing at loading dock roof	Replace roof and flashing	\$20,273	
CP-A10	1	Ponding water on roof	Roof Replacement	\$222,670	
CP-A11	1	Mortar being pushed out of masonry wall at	Replace steel angle	\$21,057	
CP-A12	2	Damaged masonry caps	Masonry Cap Repair/Replacement	\$23,409	
	2		Provide sealant	\$448	
CP-A13	3	Concrete Sills stained from ponding water	Option 1: Replace windows and flashing		\$298,509
	1		Option 2: Add sloped sill flashing to windows	\$29,405	
CP-A14	3	Stepped brick walls have no cap	Provide a sloped cap at the stepped brick	\$3,902	
CP-A15	3	Existing wood window frames are weathered and deteriorated	Replace wood windows and flashing		\$74,627
CP-A16	3	Existing wood doors and frames are weathered and deteriorated	Replace wood doors and frames	\$122,131	
CP-A17	5	Concrete paver walking surface is unstable	Repair/Tighten Concrete Pavers	\$7,033	
CP-A18	5	Metal louver at mechanical room is dented	Replace metal louver	\$1,175	

CP-M01	5	HVAC system outdated	Replace existing 2-pipe FCU system with 4-Pipe system	\$1,023,331	
CP-E01	3	No Emergency Electrical	Provide emergency electrical system in the future when systems are upgraded	\$133,110	
CP-E02	4	Wiring does not meet EIA/TIA standards	Upgrade the low voltage communication systems networks	\$71,065	
CP-E03	4	Outdated light fixtures	Replace interior light fixtures with LED sourced fixtures	\$4,590	
CP-E04	4	Outdated light fixtures	Replace exterior light fixtures with LED sourced fixtures	\$108,324	
	1		Provide battery backup for exterior egress lighting	Included in above	
CP-E05	1	National Electrical Code Violations	Correct miscellaneous NEC violations	\$53,550	

** Costs include a 53% mark-up to cover general conditions, GC overhead and profit, bonds, insurance, contingencies, and escalation until March 2023

CHIMNEY HOUSE - J BUILDING

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
CJ-A01	3	Dirt and mold present on masonry and concrete surfaces	Clean exterior building, retaining walls, and planter beds	\$45,805	
CJ-A02	2	Damaged/Cracked/Spalling brick and mortar	Repair/replace damaged brick	\$176,686	
	2		Repoint damaged mortar	\$178,664	
CJ-A03	5	Ponding water on roof	Clean drains and verify roof slope is sufficient	\$35,955	
CJ-A04	2	Retaining wall and planter bed masonry and mortar damaged	Repair/replace damaged brick	\$36,356	
	2		Repoint damaged mortar	\$14,705	
CJ-A05	2	Damaged masonry caps	Masonry Cap Repair/Replacement	\$13,504	
	2		Provide sealant	\$2,263	
CJ-A06	4	Stair railings do not comply with current codes	Replace handrails and guardrails	\$78,948	
CJ-A07	4	Balcony railings rusted and do not comply with current codes	Replace guardrails	\$85,417	
CJ-A08	1	Planter beds flashing and waterproofing have deteriorated	Replace waterproofing and flashing	\$19,512	
CJ-A09	1	Retaining walls failing	Retaining Wall Repair/Replacement	\$88,333	
CJ-A10	3	Concrete Sills stained from ponding water	Option 1: Replace windows and flashing		\$1,253,390
	1		Option 2: Add sloped sill flashing to windows	\$20,095	
	1		Repair concrete sills and lintels	\$94,386	
CJ-A11	1	Concrete cracking/spalling on planter boxes	Repair/Replace planter boxes	\$9,371	
CJ-A12	3	Existing wood window frames are weathered and deteriorated	Replace wood windows and flashing		\$376,017
CJ-A13	3	Existing wood doors and frames are weathered and deteriorated	Replace wood doors and frames		\$118,881
CJ-A14	5	Concrete paver walking surface is unstable	Repair/Tighten Concrete Pavers	\$14,067	

CJ-A15	1	Steel Lintels at mechanical room doors are failing	Replace lintels	\$3,066	
CJ-A16	2	Concrete cracking/spalling on exterior stairs	Repair concrete	\$4,131	
CJ-S01	1	Concrete edge beams at 2nd floor soffit deteriorated, cracking and spalling in concrete edge beam and slab soffits	Comprehensive Investigation of balconies and facades	\$84,150	
	1		Destructive testing (obtaining cores) to determine the chloride content and rate of Carbonation, compressive stress and concrete properties.	Included in above	
			Perform concrete patch repairs on the balcony edge beams and slabs	\$334,611	
CJ-S02	1				
CJ-S03	1	Wood balconies deteriorating	Replace wood balconies with a precast concrete deck with drainage	\$34,425	
CJ-F01	1	Sprinkler system original to building	Replace sprinkler heads that have not already been replaced	\$24,475	
CJ-P01	1	Underground piping not visible	Video scope all underground sanitary sewer piping for integrity.	\$9,180	
CJ-P02	1	No backflow preventer on the incoming service	Add a backflow preventor to the incoming domestic water service	\$14,252	
CJ-P03	2	All piping systems are original to the building.	Replace water and sewer distribution system piping	\$1,638,300	
	2		Replace all domestic risers and all horizontal domestic mains	\$294,054	
	2		Replace sewer stacks	\$546,100	
CJ-P04	2	Fixtures original to building	Replace residential fixtures in residential spaces		\$596,509
CJ-M01	5	2-pipe FCU system outdated	Replace existing 2-pipe FCU system with 4-Pipe system	\$4,536,829	
CJ-M02	1	Boilers beyond expected lifespan	Replace existing boilers	\$105,019	
CJ-M03	3	Motors near end of life	Replace chilled and hot water distribution pumps	\$79,814	
CJ-M04	4	No central controls system	Add a central controls system for remote monitoring and alarms	\$630,115	

CJ-M05	4	Mechanical room tight	Relocate mechanical room to provide adequate service clearance for all equipment.	\$840,154	
CJ-M06	1	Risers have exceeded lifespan	Replace HVAC Risers	\$86,535	
CJ-M07	2	Pipe insulation damaged	Replace pipe and pipe insulation in all mechanical rooms	\$63,012	
CJ-E01	3	No Emergency Electrical	Provide emergency electrical system in the future when systems are upgraded	\$133,110	
CJ-E02	4	Light fixtures operating beyond their useful life	Replace interior light fixtures with LED sourced fixtures	\$4,590	
CJ-E03	4	Light fixtures operating beyond their useful life	Replace exterior light fixtures with LED sourced fixtures	\$108,324	
	1		Provide battery backup for exterior egress lighting	Included in above	
CJ-E04	1	National Electrical Code violations	Correct miscellaneous NEC violations	\$53,550	
CJ-E05	2	Outdated panels	Replace tenant unit panels with new panels having main breakers		\$171,360
CJ-E06	1	No ground-fault protection for circuits	Provide ground-fault protection for circuits in tenant units as required by NEC		\$48,195
CJ-E07	4	Wiring does not meet EIA/TIA standards	Upgrade the low voltage communication systems networks	\$315,058	

** Costs include a 53% mark-up to cover general conditions, GC overhead and profit, bonds, insurance, contingencies, and escalation until March 2023

QUAYSIDE

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
QS-A01	3	Dirt and mold present on masonry and concrete surfaces	Clean exterior building, retaining walls, and planter beds	\$26,928	
QS-A02	2	Damaged/Cracked/Spalling brick and mortar	Repair/replace damaged brick	\$103,872	
	2		Repoint damaged mortar	\$63,021	
QS-A03	5	Concrete cracking/spalling on exterior stairs	Repair concrete	\$4,131	
QS-04	2	Retaining wall masonry and mortar damaged	Repair/replace damaged brick	\$2,804	
	2		Repoint damaged mortar	\$11,319	
QS-05	2	Damaged masonry caps	Masonry Cap Repair/Replacement	\$623	
	2		Provide sealant	\$298	
QS-A06	2	Roof has ponding water present over several days; curbing and flashing is worn	Roof Repair & Replacement	\$269,663	
QS-A07	4	Stair railings do not comply with current codes	Replace handrails and guardrails	\$31,212	
QS-A08	2	Concrete cracking in breezeway	Repair concrete slab	\$49,572	
QS-A09	1	Masonry retaining wall has shifted and is damaged	Retaining Wall Repair/Replacement	\$10,387	
QS-A10	2	Settlement in sidewalk	Repair sidewalk	\$1,652	
QS-A11	3	Concrete Sills stained from ponding water	Option 1: Replace windows and flashing		\$541,253
	1		Option 2: Add sloped sill flashing to windows	\$33,323	
QS-A12	3	Existing wood window frames are weathered and deteriorated	Replace wood windows and flashing		\$162,376
QS-A13	3	Existing wood doors and frames are weathered and deteriorated	Replace wood doors and frames		\$50,949
QS-A14	3	Aged sliding doors	Replace sliding doors		\$52,326

QS-S01	1	Concrete edge beams and slabs spalling and deteriorating	Comprehensive Investigation of balconies and facades	\$84,150	
	1		Destructive testing (obtaining cores) to determine the chloride content and rate of Carbonation, compressive stress and concrete properties.	Included in above	
QS-S02	1		Perform concrete patch repairs on the balcony edge beams and slabs	\$334,611	
QS-S03	4	Railings cracking and deteriorating around railing connection	Replace guardrails to meet current building code, height and picket spacing	\$15,790	
QS-S04	2	Water getting into flank walls	Provide sloped precast concrete caps and add counter flashing	\$2,601	
QS-S05	2	Ponding water on edge beams	Provide sloped concrete surface	\$6,610	
QS-S06	1	Clogged scuppers	Clean the scuppers	\$689	
QS-S07	1	Concerns of structural settlement	Perform destructive survey and testing	\$275,400	
QS-F01	1	No backflow preventer on the incoming fire service	Add backflow preventor to the fire main	\$17,312	
QS-F02	2	Sprinkler heads original to the building	Replace all Sprinkler heads	\$6,680	
QS-P01	1	Underground piping not visible	Video scope all underground sanitary sewer piping for integrity.	\$4,284	
QS-P02	1	No backflow preventer on the incoming service	Add a backflow preventor to the incoming domestic water service	\$14,252	
QS-P03	2	All piping original to the building	Replace water and sewer distribution system piping	\$194,468	
	2		Replace domestic risers	\$38,894	
	2		Replace sewer stacks	\$72,231	
QS-P04	2	Fixtures original to building	Replace residential fixtures in residential spaces		\$52,598
QS-M01	5	2-pipe FCU system outdated	Replace existing 2-pipe FCU system with 4-Pipe system	\$600,069	
QS-M02	1	Boilers have exceeded lifespan	Replace existing boiler	\$13,891	
QS-M03	2	Damaged pipe insulation and the vapor barrier is compromised	Replace pipe and pipe insulation in all mechanical rooms	\$10,557	

QS-M04	4	No Central Controls system	Add a central controls system for remote monitoring and alarms	\$55,562	
QS-M05	4	Mechanical room tight	Relocate mechanical room to provide adequate service clearance for all equipment.	\$111,124	
QS-M06	1	Risers reaching end of lifespan	Replace HVAC Risers	\$11,446	
QS-M07	3	Pumps Exceeding lifespan	Replace chilled and hot water distribution pumps	\$10,557	
QS-E01	2	Electrical system outdated	Replace electrical service equipment (disconnects and panels), and house panelboards serving mechanical equipment	\$50,683	
	3		Provide emergency electrical system in the future when systems are upgraded	\$133,110	
QS-E02	4	Light fixtures operating beyond their useful life	Replace interior light fixtures with LED sourced fixtures	\$5,355	
QS-E03	4	Light fixtures operating beyond their useful life	Replace exterior light fixtures with LED sourced fixtures	\$36,108	
	1		Provide battery backup for exterior egress lighting	Included in above	
QS-E04	1	National Electrical Code violations	Correct miscellaneous NEC violations	\$38,250	
QS-E05	2	Outdated panels	Replace tenant unit panels with new panels having main breakers		\$73,440
QS-E06	1	No ground-fault protection for circuits	Provide ground-fault protection for circuits in tenant units as required by NEC		\$20,655
QS-E07	2	No fire alarm system	Provide a building wide fire alarm system	\$63,896	
QS-E08	4	Wiring does not meet EIA/TIA standards	Upgrade the low voltage communication systems networks	\$41,671	

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HERON HOUSE

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
HH-A01	3	Dirt and mold present on masonry and	Clean exterior building	\$358,802	
HH-A02	2	Damaged/Cracked/Spalling brick and mortar	Repair/replace damaged brick	\$461,345	
	2		Repoint damaged mortar	\$186,605	
HH-A03	5	Balcony railings rusted and do not comply with current codes	Replace guardrails	\$181,695	
HH-A04	4	Roof railings deteriorating and do not meet current code	Replace guardrails	\$26,928	
HH-A05	2	Cracks in exterior concrete stair	Repair cracking concrete	\$4,743	
HH-A06	2	Rooftop Concrete Columns tops are spalling/deteriorating	Repair cracking concrete	\$9,486	
HH-A07	2	Elevators reaching end of life	Replace elevators	\$2,867,220	
HH-A08	4	Stair railings rusted and do not comply with current codes	Replace guardrails	\$10,526	
HH-A09	2	Roof reaching end of life	Replace Roof	\$265,073	
HH-A10	3	Window sill stained	Replace all windows and flashing		\$2,838,686
HH-S01	1	Tiles at balcony causing drainage issues	Remove existing tiles to determine concrete damage to slab	\$88,518	
	1		Repair/patch concrete slabs and appropriately slope to the drains	\$200,331	
HH-S02	1	Concrete Balconies have spalling and delimitation at slabs and edge beams, exposing steel reinforcement which is rusting	Comprehensive Investigation of balconies and facades	\$191,250	
	1		Destructive testing (obtaining cores) to determine the chloride content and rate of Carbonation, compressive stress and concrete properties.	Included in above	
HH-S03	1		Repair/patch damaged concrete	\$72,213	
HH-S04	2	Leaks in the building	Investigate and address any active leaks	\$890,211	
HH-S05	1	Damaged planters at balconies	Remove precast balcony planters	\$5,516	
	2		Provide new precast concrete balcony planters, to match existing	\$48,195	

HH-S06	1	Spalling at concrete columns. Existing columns not constructed plumb.	Investigation into the condition of the columns at the balcony drains.	\$735,165	
HH-F01	1	No backflow preventer	Add backflow preventer to the fire main	\$17,312	
HH-F02	1	Fire pump outdated	Replace Fire pump	\$124,438	
	1		Replace Fire pump controller	Included in above	
HH-P01	1	Underground piping not visible	Video Scope all underground sanitary sewer piping for integrity.	\$4,284	
HH-P02	1	No backflow preventer on the incoming service	Add a backflow preventor to the incoming domestic water service	\$28,504	
HH-P03	2	All piping systems are original to the building.	Replace water and sewer distribution system piping	\$2,056,722	
	2		Replace Domestic Risers	\$411,345	
	2		Replace sewer stacks	\$763,926	
HH-P04	2	Fixtures original to building	Replace residential fixtures in residential		\$834,442
HH-M01	1	Boilers beyond expected lifespan	Replace existing boilers	\$146,909	
HH-M02	1	Drain pan has failed	Replace Air Handler	\$605,263	
HH-M03	5	2-pipe FCU system outdated	Replace existing 2-pipe FCU system with 4-Pipe system	\$6,346,455	
HH-M04	3	Pumps near end of life	Replace chilled and hot water distribution	\$111,650	
HH-M05	4	No central controls system	Add a central controls system for remote monitoring and alarms	\$587,635	
HH-M06	1	Insufficient cooling from the air handler system	Add supplemental cooling and heating to the main entrance lobby	\$14,535	
HH-E01	2	No emergency electrical	Provide emergency electrical system in the future when systems are upgraded	\$399,330	
HH-E02	4	Light fixtures operating beyond their useful life	Replace interior light fixtures with LED sourced fixtures	\$137,654	
HH-E03	4	Light fixtures operating beyond their useful life	Replace exterior light fixtures with LED sourced fixtures	\$20,808	
HH-E04	1	National Electrical Code violations	Correct miscellaneous NEC violations	\$38,250	
HH-E05	3	Electrical system original to the building	Replace tenant unit panels with new panels having main breakers		\$367,200

HH-E06	1	No ground-fault protection for circuits	Provide ground-fault protection for circuits in tenant units as required by NEC		\$103,275
HH-E07	2	No emergency generator	Provide emergency generator to power fire pump and other life safety loads	\$133,110	
HH-E08	1	Non functioning exit signs	Replace inoperable LED Exit Signs	\$45,900	
HH-E09	1	Battery backups not functioning properly	Provide battery backup for exterior egress lighting	\$30,600	
HH-E10	1	Existing fire alarm system outdated	Replace building fire alarm system with addressable, ADA compliant, voice fire alarm system	\$781,555	
HH-E11	4	Wiring does not meet EIA/TIA standards	Upgrade the low voltage communication systems networks	\$440,726	

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WASHINGTON PLAZA

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
WP-A01	2	No fall protection a raised plaza area	Provide guardrail	\$104,805	
WP-A02	5	Brick pavers have dirt and mold present, some damaged pavers	Clean pavers from debris, dirt, moss/mold	\$12,263	
	5		Repair/replace damaged pavers and	\$21,599	
WP-A03	5	Damaged concrete retaining wall	Patch concrete	\$34,425	
WP-A04	3	Concrete steps cracking/spalling	Repair/resurface steps	\$55,080	
WP-P01	3	Fountain not functioning	Replace all fountain pumps and nozzles	\$68,850	
WP-E01	2	Outdated fixtures	Replace post light fixtures with LED sourced fixtures	\$83,232	
WP-E02	1	National Electrical Code Violations	Correct miscellaneous NEC violations (missing box covers, maintained clearances, GFI protection, proper labeling)	\$38,250	
WP-E03	1	Combination receptacle/lamp holders not safe	Remove receptacles	\$18,360	

** Costs include a 53% mark-up to cover general conditions, GC overhead and profit, bonds, insurance, contingencies, and escalation until March 2023

PARKING LOTS

<u>BLDG</u>	<u>CODE</u>	<u>OBSERVATIONS</u>	<u>RECOMMENDATIONS</u>	<u>COST</u>	<u>TENANT COST</u>
Public Parking Lot					
PP-01	2	Extensive cracking and potholes	Mill and Overlay entire parking lot	\$438,484	
PP-02	2	Parking area not sloped to drains	Regrade a portion of the parking lot	\$27,540	
PP-03	5	Curb damage	Repair curb	\$2,601	
Chimney House Parking Lot					
CP-01	2	Cracking and potholes	Mill and Overlay entire parking lot	\$133,875	
CP-02	2	Grading issues at parking lot entrance	Regrade a portion of the parking lot	\$137,700	
CP-03	2	Curb damage	Repair curb	\$2,601	
CP-04	2	Hill above parking lot eroding	Provide a retaining wall	\$68,850	
Quayside/Heron House Parking Lot					
QP-01	2	Cracking and potholes	Mill and Overlay entire parking lot	\$426,510	
QP-02	2	Parking area not sloped to drains	Regrade a portion of the parking lot	\$27,540	
QP-03	2	Curb damage	Repair curb	\$2,601	
QP-04	2	Retaining wall, stairs, and railing Damaged	Replace retaining wall, stairs, and railing	\$42,458	

** Costs include a 53% mark-up to cover general conditions, GC overhead and profit, bonds, insurance, contingencies, and escalation until March 2023

APPENDIX B

COST ESTIMATES

Revision 2

Report: Progress Cost Report
Project: Lake Anne Facility Assessment
Location: Reston, VA
Documents Dated: July 19, 2021

*Prepared by: Downey & Scott, LLC
6799 Kennedy Road, Suite F
Warrenton, Virginia 20187
Ph 540.347.5001 Fax 540.347.5021
www.downeyscott.com*

Status: Design Development
Client: Samaha
Submission: 7/29/2021
Run Date: See footer
Revision Date: 8/26/2021
PM: dr
Checked by: dd/ja
Job no: 2021095

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY

Market / Deli improvements	\$305,636
Chimney House - Commercial Plaza	\$2,558,855
Chimney House - J Building	\$13,429,542
Quayside Building	\$3,814,999
Heron House	\$24,009,120
Washington Plaza	\$437,134
Parking Lots	\$1,311,565

Individual work items should be marked up 53% for contingencies, general conditions, OH/P and bonds.

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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
---------	------------------	---------------	----------	-----	-----------	-----------

PROJECT HARD CONSTRUCTION COST SUMMARY - Market / Deli

HARD COSTS	Market / Deli	Carried forward				\$250,727
HARD COSTS						
HARD COSTS	Subtotal					\$250,727
HARD COSTS	Escalation to 18 Months			6.00%		\$15,044
HARD COSTS	Subtotal					\$265,771
HARD COSTS	Design Contingency			15.00%		\$39,866
HARD COSTS	Subtotal					\$305,636
HARD COSTS	Construction Contingency	<i>Assumes this is carried by owner in Soft Costs</i>		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$305,636</u>

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Status: Design Development PM: dr
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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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Market / Deli	A01	Clean all masonry	2,220.00 SF		0.88	1,953.60
Market / Deli	A02	Replace damaged/cracked brick (5% allowance)	111.00 SF		67.89	7,535.79
Market / Deli	A02	Masonry Repoint and repair joints (20% allowance)	444.00 SF		13.73	6,096.12
Market / Deli	A03	Replace roof coping	20.00 LF		65.97	1,319.40
Market / Deli	A04	Replace single railing	8.00 LF		132.00	1,056.00
Market / Deli	A05	Install guardrail at retaining wall	10.00 LF		137.00	1,370.00
Market / Deli	A06	Retaining Wall damaged/cracked brick (5% allowance)	80.00 SF		67.89	5,431.20
Market / Deli	A06	Retaining wall cap replacement	40.00 LF		170.00	6,800.00
Market / Deli	A07	Demo wood framed windows and replace with storefront	360.00 SF		68.00	24,480.00
Market / Deli	A08	Replace Built up roof and tapered insulation	2,384.00 SF		23.50	56,024.00
Market / Deli	A09	Replace sealant at scuppers	1.00 LS		3,850.00	3,850.00
Market / Deli	P01	Video scope all underground sanitary pipe	1.00 LS		2,800.00	2,800.00
Market / Deli	M01	Provide new HVAC system	2,384.00 SF		15.00	35,760.00
Market / Deli	E01	Provide new electric service panels	1.00 LS		16,563.00	16,563.00
Market / Deli	E02	Replace interior lights with LED fixtures	150.00 SF		10.00	1,500.00
Market / Deli	E03	Replace exterior lights with LED fixtures	10.00 EA		2,360.00	23,600.00
Market / Deli	E04	Correct misc NEC violations (allowance)	1.00 LS		3,500.00	3,500.00
Market / Deli						
Market / Deli						
Market / Deli	MARK-UPS					
Market / Deli		Subtotal				199,639.11
Market / Deli		General Conditions	12.00%			23,956.69
Market / Deli		Subtotal				223,595.80
Market / Deli		GC OH / Profit & Fee	10.00%			22,359.58
Market / Deli		Subtotal				245,955.38
Market / Deli		Bonds & insurance	1.94%			4,771.53
Market / Deli		Subtotal				250,726.92
Market / Deli						
Market / Deli		Subtotal				250,726.92

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Status: Design Development
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Revision Date: 8/26/2021
PM: dr
Checked by: dd/ja
Job no: 2021095

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY - Chimney House Commercial Plaza

HARD COSTS	Chimney House Commercial Plaza	Carried forward				\$2,099,143
HARD COSTS						
HARD COSTS	Subtotal					\$2,099,143
HARD COSTS	Escalation to 18 Months			6.00%		\$125,949
HARD COSTS	Subtotal					\$2,225,091
HARD COSTS	Design Contingency			15.00%		\$333,764
HARD COSTS	Subtotal					\$2,558,855
HARD COSTS	Construction Contingency	<i>Assumes this is carried by owner in Soft Costs</i>		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$2,558,855</u>

Revision 2

Report: Progress Cost Report
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Status: Design Development PM: dr
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 Submission: 7/29/2021 Job no: 2021095
 Run Date: See footer
 Revision Date 8/26/2021

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Chimney House	A01	Clean all masonry	14,560.00 SF		0.88	12,812.80
Chimney House	A02	Masonry Repoint and repair joints (20% allowance)	2,912.00 SF		13.73	39,981.76
Chimney House	A02	Replace damaged brick (5% allowance)	728.00 SF		67.89	49,423.92
Chimney House	A03	Concrete cracking and spalling repair (Allowance)	150.00 SF		155.00	23,250.00
Chimney House	A04	Replace balcony rail (straight picket fence)	12.00 LF		86.00	1,032.00
Chimney House	A05	Replace stair rail (straight picket fence)	10.00 LF		86.00	860.00
Chimney House	A05	Replace concrete steps 5'x5'; 4 steps (open below stairs)	45.00 SF		376.00	16,920.00
Chimney House	A06	Retaining wall repair / replacement	400.00 SF		67.89	27,156.00
Chimney House	A06	Retaining wall cap replacement	200.00 LF		170.00	34,000.00
Chimney House	A07	Retaining wall masonry Repoint and repair joints	200.00 SF		13.73	2,746.00
Chimney House	A07	Retaining wall replace damaged brick (5% allowance)	20.00 SF		67.89	1,357.80
Chimney House	A08	Repair retaining wall by loading dock	75.00 LF		150.00	11,250.00
Chimney House	A08	Clean clogged drains at loading dock	75.00 LF		7.50	562.50
Chimney House	A09	Replace roof and flashing at loading dock	500.00 SF		26.50	13,250.00
Chimney House	A10	Replace Built up roof and tapered insulation	6,193.00 SF		23.50	145,535.50
Chimney House	A11	Repair relief angle at 2nd story	520.00 SF		26.47	13,763.36
Chimney House	A12	Retaining wall cap replacement	90.00 LF		170.00	15,300.00
Chimney House	A12	Replace sealant on retaining wall	90.00 LF		3.25	292.50
Chimney House	A13	Replace all windows (Allowance)	2,912.00 SF		67.00	195,104.00
Chimney House	A13	Add sloped sill flashing to windows	582.40 LF		33.00	19,219.20
Chimney House	A14	Provide a sloped cap at the stepped brick walls	15.00 LF		170.00	2,550.00
Chimney House	A15	Replace wood windows (Allowance)	728.00 SF		67.00	48,776.00
Chimney House	A16	Replace storefront door leaf (Allowance)	24.00 EA		3,326.00	79,824.00
Chimney House	A17	Reset existing pavers (Allowance)	100.00 SF		45.97	4,597.00
Chimney House	A18	Metal louver replacement	8.00 SF		96.00	768.00
Chimney House	M01	Replace existing 2 pipe FCU system with 4 pipe system	12,386.00 SF		54.00	668,844.00
Chimney House	E01	Provide 80KW generator to power emergency electric	1.00 LS		87,000.00	87,000.00
Chimney House	E02	Upgrade low voltage communication systems	12,386.00 SF		3.75	46,447.50
Chimney House	E03	Replace interior lights with LED fixtures	300.00 SF		10.00	3,000.00
Chimney House	E04	Replace exterior lights with LED fixtures (Allowance)	30.00 EA		2,360.00	70,800.00
Chimney House	E05	Correct misc NEC violations (Allowance)	1.00 LS		35,000.00	35,000.00

Revision 2

Report: Progress Cost Report
Project: Lake Anne Facility Assessment
Location: Reston, VA
Documents Dated: July 19, 2021

Prepared by: Downey & Scott, LLC
6799 Kennedy Road, Suite F
Warrenton, Virginia 20187
Ph 540.347.5001 Fax 540.347.5021
www.downeyscott.com

Status: Design Development
Client: Samaha
Submission: 7/29/2021
Run Date: See footer
Revision Date: 8/26/2021
PM: dr
Checked by: dd/ja
Job no: 2021095

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
---------	------------------	---------------	----------	-----	-----------	-----------

Chimney House

MARK-UPS

Chimney House

Subtotal

1,671,423.84

Chimney House

General Conditions

12.00%

200,570.86

Chimney House

Subtotal

1,871,994.70

Chimney House

GC OH / Profit & Fee

10.00%

187,199.47

Chimney House

Subtotal

2,059,194.17

Chimney House

Bonds & insurance

1.94%

39,948.37

Chimney House

Subtotal

2,099,142.54

Chimney House

Subtotal

2,099,142.54

Revision 2

Report: Progress Cost Report
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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY - Chimney House J Building

HARD COSTS	Chimney House J Building	Carried forward				\$11,016,851
HARD COSTS						
HARD COSTS	Subtotal					\$11,016,851
HARD COSTS	Escalation to 18 Months			6.00%		\$661,011
HARD COSTS	Subtotal					\$11,677,862
HARD COSTS	Design Contingency			15.00%		\$1,751,679
HARD COSTS	Subtotal					\$13,429,542
HARD COSTS	Construction Contingency	<i>Assumes this is carried by owner in Soft Costs</i>		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$13,429,542</u>

Revision 2

Report: Progress Cost Report
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 Documents Dated: July 19, 2021

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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Chimney House	A01	Clean all masonry	34,020.00	SF	0.88	29,937.60
Chimney House	A02	Masonry Repoint and repair joints (25% allowance)	8,505.00	SF	13.73	116,773.65
Chimney House	A02	Replace damaged brick (5% allowance)	1,701.00	SF	67.89	115,480.89
Chimney House	A03	Replace damaged roof and tapered insulation	1,000.00	SF	23.50	23,500.00
Chimney House	A04	Retaining Wall masonry repoint and repair joints (50% allowance)	700.00	SF	13.73	9,611.00
Chimney House	A04	Retaining Wall replace damaged brick (25% allowance)	350.00	SF	67.89	23,761.50
Chimney House	A05	Retaining wall brick cap replacement	130.00	LF	67.89	8,825.70
Chimney House	A05	Provide sealant on retaining wall	455.00	LF	3.25	1,478.75
Chimney House	A06	Replace stair rail (straight picket fence)	600.00	LF	86.00	51,600.00
Chimney House	A07	Replace balcony rail (straight picket fence)	182.00	LF	86.00	15,652.00
Chimney House	A07	Replace balcony rail (semi circle picket fence)	216.00	LF	186.00	40,176.00
Chimney House	A08	Planter bed waterproofing and flashing replacement, 150sf each	5.00	EA	2,435.00	12,175.00
Chimney House	A08	Remove and replace planter dirt	8.89	CY	65.00	577.78
Chimney House	A09	Retaining wall repair / replacement	600.00	SF	67.89	40,734.00
Chimney House	A09	Retaining wall cap replacement	100.00	LF	170.00	17,000.00
Chimney House	A10	Replace all Storefront and Windows	12,227.00	SF	67.00	819,209.00
Chimney House	A10	Add sloped sill flashing to windows	398.00	LF	33.00	13,134.00
Chimney House	A10	Concrete cracking and spalling repair	398.00	SF	155.00	61,690.00
Chimney House	A11	Repair or replace concrete planter boxes	35.00	EA	175.00	6,125.00
Chimney House	A12	Replace wood windows and flashing	3,668.10	SF	67.00	245,762.70
Chimney House	A13	Replace doors and flashing	42.00	EA	1,850.00	77,700.00
Chimney House	A14	Reset existing pavers (Allowance)	200.00	SF	45.97	9,194.00
Chimney House	A15	Replace galvanized steel lintels	12.00	LF	167.00	2,004.00
Chimney House	A16	Repair concrete steps	75.00	SF	36.00	2,700.00
Chimney House	S01	Structural testing on balconies and facades (Allowance)	1.00	LS	55,000.00	55,000.00
Chimney House	S02	Structural concrete repairs on balcony and edge beams	972.00	SF	225.00	218,700.00
Chimney House	S03	Replace wood balcony with precast concrete deck	5.00	EA	4,500.00	22,500.00
Chimney House	F01	Replace sprinkler heads in building	491.00	EA	32.58	15,996.78

Revision 2

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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Chimney House	P01	Video scope all underground sanitary pipe	1.00	LS	6,000.00	6,000.00
Chimney House	P02	Add backflow preventor to domestic water 3"	1.00	LS	9,315.00	9,315.00
Chimney House	P03	Replace water and sewer piping within building	54,912.00	SF	13.50	741,312.00
Chimney House	P03	Replace all domestic risers	54,912.00	SF	3.50	192,192.00
Chimney House	P03	Replace all sewer stacks	54,912.00	SF	6.50	356,928.00
Chimney House	P03	Drywall repair for piping within building (Allowance)	54,912.00	LS	6.00	329,472.00
Chimney House	P04	Replace residential fixtures in apartments	54,912.00	SF	7.10	389,875.20
Chimney House	M01	Replace existing 2 pipe FCU system with 4 pipe system	54,912.00	SF	54.00	2,965,248.00
Chimney House	M02	Replace existing boilers	54,912.00	SF	1.25	68,640.00
Chimney House	M03	Replace chilled and hot water distribution pumps	54,912.00	SF	0.95	52,166.40
Chimney House	M04	Add a central controls system for remote monitoring	54,912.00	SF	7.50	411,840.00
Chimney House	M05	Relocate mechanical room to provide equipment clearance	54,912.00	SF	10.00	549,120.00
Chimney House	M06	Replace HVAC risers	54,912.00	SF	1.03	56,559.36
Chimney House	M07	Replace pipe and insulation in mechanical rooms	54,912.00	SF	0.75	41,184.00
Chimney House	E01	Provide 80KW generator to power emergency electric	1.00	LS	87,000.00	87,000.00
Chimney House	E02	Replace interior lights with LED fixtures	300.00	SF	10.00	3,000.00
Chimney House	E03	Replace exterior lights with LED fixtures (Allowance)	30.00	EA	2,360.00	70,800.00
Chimney House	E04	Correct misc NEC violations (Allowance)	1.00	LS	35,000.00	35,000.00
Chimney House	E05	Replace tenant unit panel	28.00	EA	4,000.00	112,000.00
Chimney House	E06	Install ground fault protection for circuits in tenant units	140.00	EA	225.00	31,500.00
Chimney House	E07	Upgrade low voltage communication systems	54,912.00	SF	3.75	205,920.00
Chimney House						
Chimney House	MARK-UPS	Subtotal				8,772,071.31
Chimney House		General Conditions	12.00%			1,052,648.56
Chimney House		Subtotal				9,824,719.86
Chimney House		GC OH / Profit & Fee	10.00%			982,471.99
Chimney House		Subtotal				10,807,191.85
Chimney House		Bonds & insurance	1.94%			209,659.52
Chimney House		Subtotal				11,016,851.37
Chimney House						
Chimney House		Subtotal				11,016,851.37

Revision 2

Report: Progress Cost Report
Project: Lake Anne Facility Assessment
Location: Reston, VA
Documents Dated: July 19, 2021

Prepared by: Downey & Scott, LLC
6799 Kennedy Road, Suite F
Warrenton, Virginia 20187
Ph 540.347.5001 Fax 540.347.5021
www.downeyscott.com

Status: Design Development
Client: Samaha
Submission: 7/29/2021
Run Date: See footer
Revision Date: 8/26/2021
PM: dr
Checked by: dd/ja
Job no: 2021095

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY - Quayside Building

HARD COSTS	Quayside Building	Carried forward				\$3,129,614
HARD COSTS						
HARD COSTS	Subtotal					\$3,129,614
HARD COSTS	Escalation to 18 Months			6.00%		\$187,777
HARD COSTS	Subtotal					\$3,317,391
HARD COSTS	Design Contingency			15.00%		\$497,609
HARD COSTS	Subtotal					\$3,814,999
HARD COSTS	Construction Contingency	Assumes this is carried by owner in Soft Costs		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$3,814,999</u>

Revision 2

Report: Progress Cost Report
 Project: Lake Anne Facility Assessment
 Location: Reston, VA
 Documents Dated: July 19, 2021

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 Warrenton, Virginia 20187
 Ph 540.347.5001 Fax 540.347.5021
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Status: Design Development PM: dr
 Client: Samaha Checked by: dd/ja
 Submission: 7/29/2021 Job no: 2021095
 Run Date: See footer
 Revision Date: 8/26/2021

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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Quayside	A01	21,000.00 Clean all masonry	20,000.00	SF	0.88	17,600.00
Quayside	A02	Masonry Repoint and repair joints (15% allowance)	3,000.00	SF	13.73	41,190.00
Quayside	A02	Replace damaged brick (5% allowance)	1,000.00	SF	67.89	67,890.00
Quayside	A03	Repair concrete on exterior stairs	75.00	SF	36.00	2,700.00
Quayside	A04	Retaining wall repoint and repair joints (20% allowance)	54.00	SF	137.00	7,398.00
Quayside	A04	Retaining wall replace damaged brick (10% allowance)	27.00	SF	67.89	1,833.03
Quayside	A05	Retaining wall brick cap replacement	6.00	LF	67.89	407.34
Quayside	A05	Provide sealant on retaining wall	60.00	LF	3.25	195.00
Quayside	A06	Replace Built up roof and tapered insulation	7,500.00	SF	23.50	176,250.00
Quayside	A07	Repair stair hand rail	150.00	LF	50.00	7,500.00
Quayside	A07	Replace stair guard rail	150.00	LF	86.00	12,900.00
Quayside	A08	Masonry and concrete repair in Breezeways	900.00	SF	36.00	32,400.00
Quayside	A09	Retaining wall repair / replacement	100.00	SF	67.89	6,789.00
Quayside	A10	Sidewalk settlement repair	30.00	SF	36.00	1,080.00
Quayside	A11	Replace all Storefront and Windows	5,280.00	SF	67.00	353,760.00
Quayside	A11	Add sloped sill flashing to windows	660.00	LF	33.00	21,780.00
Quayside	A12	Replace wood windows and flashing	1,584.00	SF	67.00	106,128.00
Quayside	A13	Replace doors and flashing	18.00	EA	1,850.00	33,300.00
Quayside	A14	Replace sliding doors and flashing	12.00	EA	2,850.00	34,200.00
Quayside	S01	Structural testing on balconies and facades (Allowance)	1.00	LS	55,000.00	55,000.00
Quayside	S02	Structural concrete repairs on balcony and edge beams	972	SF	225.00	218,700.00
Quayside	S03	Replace balcony rail (straight picket fence)	120.00	LF	86.00	10,320.00
Quayside	S04	Replace retaining wall caps with precast concrete and flashir	10.00	LF	170.00	1,700.00
Quayside	S05	Provide sloped concrete surface	120.00	SF	36.00	4,320.00
Quayside	S06	Clean Scuppers	1.00	LS	450.00	450.00
Quayside	S07	Perform destructive survey and settlement testing	1.00	LS	180,000.00	180,000.00
Quayside	F01	Add backflow preventor to fireline 6"	1.00	EA	11,315.00	11,315.00
Quayside	F02	Replace sprinkler heads in building	134.00	EA	32.58	4,365.72

Revision 2

Report: Progress Cost Report
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 Documents Dated: July 19, 2021

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 Ph 540.347.5001 Fax 540.347.5021
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Status: Design Development PM: dr
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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Quayside	P01	Video scope all underground sanitary pipe	1.00	LS	2,800.00	2,800.00
Quayside	P02	Add backflow preventor to domestic water 3"	1.00	LS	9,315.00	9,315.00
Quayside	P03	Replace water and sewer piping within building	7,263.00	SF	13.50	98,050.50
Quayside	P03	Replace all domestic risers	7,263.00	SF	3.50	25,420.50
Quayside	P03	Replace all sewer stacks	7,263.00	SF	6.50	47,209.50
Quayside	P03	Drywall repair for piping within building (Allowance)	7,263.00	SF	4.00	29,052.00
Quayside	P04	Replace residential fixtures in apartments	4,842.00	SF	7.10	34,378.20
Quayside	M01	Replace existing 2 pipe FCU system with 4 pipe system	7,263.00	SF	54.00	392,202.00
Quayside	M02	Replace existing boilers	7,263.00	SF	1.25	9,078.75
Quayside	M03	Replace pipe and pipe insulation in all mech rooms	7,263.00	SF	0.95	6,899.85
Quayside	M04	Add a central controls system for remote monitoring	7,263.00	SF	5.00	36,315.00
Quayside	M05	Relocate mechanical room to provide equipment clearance	7,263.00	SF	10.00	72,630.00
Quayside	M06	Replace HVAC risers	7,263.00	SF	1.03	7,480.89
Quayside	M07	Replace chilled and hot water distribution pumps	7,263.00	SF	0.95	6,899.85
Quayside	E01	Provide new electric service panels	1.00	LS	33,126.00	33,126.00
Quayside	E01	Provide 80KW generator to power emergency electric	1.00	LS	87,000.00	87,000.00
Quayside	E02	Replace interior lights with LED fixtures	350.00	SF	10.00	3,500.00
Quayside	E03	Replace exterior lights with LED fixtures (Allowance)	10.00	EA	2,360.00	23,600.00
Quayside	E04	Correct misc NEC violations (Allowance)	1.00	LS	25,000.00	25,000.00
Quayside	E05	Replace tenant unit panel	12.00	EA	4,000.00	48,000.00
Quayside	E06	Install ground fault protection for circuits in tenant units	60.00	EA	225.00	13,500.00
Quayside	E07	Provide building fire alarm system	7,263.00	SF	5.75	41,762.25
Quayside	E08	Upgrade low voltage communication systems	7,263.00	SF	3.75	27,236.25
Quayside						
Quayside	MARK-UPS					
Quayside		Subtotal				2,491,927.63
Quayside		General Conditions	12.00%			299,031.32
Quayside		Subtotal				2,790,958.95
Quayside		GC OH / Profit & Fee	10.00%			279,095.89
Quayside		Subtotal				3,070,054.84
Quayside		Bonds & insurance	1.94%			59,559.06
Quayside		Subtotal				3,129,613.90
Quayside						
Quayside		Subtotal				3,129,613.90

Revision 2

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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY - Heron House

HARD COSTS	Heron House	Carried forward				\$19,695,751
HARD COSTS						
HARD COSTS	Subtotal					\$19,695,751
HARD COSTS	Escalation to 18 Months			6.00%		\$1,181,745
HARD COSTS	Subtotal					\$20,877,496
HARD COSTS	Design Contingency			15.00%		\$3,131,624
HARD COSTS	Subtotal					\$24,009,120
HARD COSTS	Construction Contingency	Assumes this is carried by owner in Soft Costs		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$24,009,120</u>

Revision 2

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 Submission: 7/29/2021 Job no: 2021095
 Run Date: See footer
 Revision Date 8/26/2021

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Heron House	A01	Clean all masonry	88,830.00	SF	2.64	234,511.20
Heron House	A02	Masonry Repoint and repair joints (10% allowance)	8,883.00	SF	13.73	121,963.59
Heron House	A02	Replace damaged brick (5% allowance)	4,441.50	SF	67.89	301,533.44
Heron House	A03	Replace balcony rail (straight picket fence)	1,218.00	LF	97.50	118,755.00
Heron House	A04	Install guardrail on roof	128.00	LF	137.50	17,600.00
Heron House	A05	Concrete stairs cracking and spalling repair (Allowance)	20.00	SF	155.00	3,100.00
Heron House	A06	Rooftop concrete columns repair (Allowance)	40.00	SF	155.00	6,200.00
Heron House	A07	Replace 14 story elevator	2.00	EA	937,000.00	1,874,000.00
Heron House	A08	Replace guardrails on stairs	80.00	LF	86.00	6,880.00
Heron House	A09	Replace roof	4,500.00	SF	38.50	173,250.00
Heron House	A10	Replace all windows	19,530.00	SF	95.00	1,855,350.00
Heron House	S01	Remove balcony tile	6,090.00	SF	9.50	57,855.00
Heron House	S01	Repair concrete floor and slope to drains	6,090.00	SF	21.50	130,935.00
Heron House	S02	Structural testing on balconies and facades (Allowance)	1.00	LS	125,000.00	125,000.00
Heron House	S03	Repair and patch damaged concrete on balconies 5%	304.50	SF	155.00	47,197.50
Heron House	S04	Investigate and address any active leaks	88,830.00	SF	6.55	581,836.50
Heron House	S05	Remove balcony precast planters	70.00	EA	51.50	3,605.00
Heron House	S05	Replace balcony precast planters	70.00	EA	450.00	31,500.00
Heron House	S06	Repair and patch damaged concrete on columns 5%	3,100.00	SF	155.00	480,500.00
Heron House	F01	Add backflow preventor to fireline 6"	1.00	EA	11,315.00	11,315.00
Heron House	F02	Replace fire pump and controller	1.00	EA	81,331.50	81,331.50
Heron House	P01	Video scope all underground sanitary pipe	1.00	LS	2,800.00	2,800.00
Heron House	P02	Add backflow preventor to domestic water 6"	1.00	LS	18,630.00	18,630.00
Heron House	P03	Replace water and sewer piping within building	76,815.00	SF	13.50	1,037,002.50
Heron House	P03	Replace all domestic risers	76,815.00	SF	3.50	268,852.50
Heron House	P03	Replace all sewer stacks	76,815.00	SF	6.50	499,297.50
Heron House	P03	Drywall repair for piping within building (Allowance)	76,815.00	SF	4.00	307,260.00
Heron House	P04	Replace residential fixtures in apartments	76,815.00	SF	7.10	545,386.50

Revision 2

Report: Progress Cost Report
Project: Lake Anne Facility Assessment
Location: Reston, VA
Documents Dated: July 19, 2021

Prepared by: Downey & Scott, LLC
6799 Kennedy Road, Suite F
Warrenton, Virginia 20187
Ph 540.347.5001 Fax 540.347.5021
www.downeyscott.com

Status: Design Development
Client: Samaha
Submission: 7/29/2021
Run Date: See footer
Revision Date: 8/26/2021

PM: dr
Checked by: dd/ja
Job no: 2021095

LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Heron House	M01	Replace existing boilers	76,815.00	SF	1.25	96,018.75
Heron House	M02	Replace Air handlers	76,815.00	SF	5.15	395,597.25
Heron House	M03	Replace existing 2 pipe FCU system with 4 pipe system	76,815.00	SF	54.00	4,148,010.00
Heron House	M04	Replace chilled and hot water distribution pumps	76,815.00	SF	0.95	72,974.25
Heron House	M05	Add a central controls system for remote monitoring	76,815.00	SF	5.00	384,075.00
Heron House	M06	Supplemental cooling and heating to the main lobby	1.00	LS	9,500.00	9,500.00
Heron House	E01	Provide 80KW generator to power emergency electric	1.00	LS	261,000.00	261,000.00
Heron House	E02	Replace interior lights with LED fixtures	8,997.00	SF	10.00	89,970.00
Heron House	E03	Replace exterior lights with LED fixtures (Allowance)	10.00	EA	1,360.00	13,600.00
Heron House	E04	Correct misc NEC violations (Allowance)	1.00	LS	25,000.00	25,000.00
Heron House	E05	Replace tenant unit panel	60.00	EA	4,000.00	240,000.00
Heron House	E06	Install ground fault protection for circuits in tenant units	300.00	EA	225.00	67,500.00
Heron House	E07	Provide 80KW generator to power fire pump and alarm	1.00	LS	87,000.00	87,000.00
Heron House	E08	Replace inoperable LED exit sign	1.00	LS	30,000.00	30,000.00
Heron House	E09	Provide battery backup for exterior egress lighting	1.00	LS	20,000.00	20,000.00
Heron House	E10	Replace fire alarm system	76,815.00	SF	6.65	510,819.75
Heron House	E11	Upgrade low voltage communication systems	76,815.00	SF	3.75	288,056.25
Heron House						
Heron House	MARK-UPS					
Heron House		Subtotal				15,682,568.98
Heron House		General Conditions	12.00%			1,881,908.28
Heron House		Subtotal				17,564,477.25
Heron House		GC OH / Profit & Fee	10.00%			1,756,447.73
Heron House		Subtotal				19,320,924.98
Heron House		Bonds & insurance	1.94%			374,825.94
Heron House		Subtotal				19,695,750.92
Heron House						
Heron House		Subtotal				19,695,750.92

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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY - Washington Plaza

HARD COSTS	Washington Plaza	Carried forward				\$358,600
HARD COSTS						
HARD COSTS	Subtotal					\$358,600
HARD COSTS	Escalation to 18 Months			6.00%		\$21,516
HARD COSTS	Subtotal					\$380,116
HARD COSTS	Design Contingency			15.00%		\$57,017
HARD COSTS	Subtotal					\$437,134
HARD COSTS	Construction Contingency	<i>Assumes this is carried by owner in Soft Costs</i>		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$437,134</u>

Revision 2

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LOC REF		UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
---------	--	------------------	---------------	----------	-----	-----------	-----------

Washington Plaza	A01		Install guardrail at retaining wall	500.00	LF	137.00	68,500.00
Washington Plaza	A02		Clean pavers	9,108.00	SF	0.88	8,015.04
Washington Plaza	A02		Replace pavers (Allowance 5%)	455.40	SF	31.00	14,117.40
Washington Plaza	A03		Repair concrete retaining wall	500.00	LF	45.00	22,500.00
Washington Plaza	A04		Repair and resurface steps	1,000.00	SF	36.00	36,000.00
Washington Plaza	P01		Entire fountain system replacement (4 pumps)	1.00	LS	45,000.00	45,000.00
Washington Plaza	E01		Replace exterior lights with LED fixtures (Allowance)	40.00	EA	1,360.00	54,400.00
Washington Plaza	E02		Correct misc NEC violations (Allowance)	1.00	LS	25,000.00	25,000.00
Washington Plaza	E03		Remove receptacles from receptacle/lamp holders	1.00	LS	12,000.00	12,000.00
Washington Plaza							
Washington Plaza		MARK-UPS					
Washington Plaza			Subtotal				285,532.44
Washington Plaza			General Conditions	12.00%			34,263.89
Washington Plaza			Subtotal				319,796.33
Washington Plaza			GC OH / Profit & Fee	10.00%			31,979.63
Washington Plaza			Subtotal				351,775.97
Washington Plaza			Bonds & insurance	1.94%			6,824.45
Washington Plaza			Subtotal				358,600.42
Washington Plaza							
Washington Plaza			Subtotal				358,600.42

Revision 2

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LOC REF	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
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PROJECT HARD CONSTRUCTION COST SUMMARY - Washington Plaza

HARD COSTS	Parking Lots	Carried forward				\$1,075,935
HARD COSTS						
HARD COSTS	Subtotal					\$1,075,935
HARD COSTS	Escalation to 18 Months			6.00%		\$64,556
HARD COSTS	Subtotal					\$1,140,491
HARD COSTS	Design Contingency			15.00%		\$171,074
HARD COSTS	Subtotal					\$1,311,565
HARD COSTS	Construction Contingency	Assumes this is carried by owner in Soft Costs		0.00%		\$0
HARD COSTS						
HARD COSTS	Total Hard Construction Costs					<u>\$1,311,565</u>

Revision 2

Report: Progress Cost Report
Project: Lake Anne Facility Assessment
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Documents Dated: July 19, 2021

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Revision Date 8/26/2021

PM: dr
Checked by: dd/ja
Job no: 2021095

LOC REF		UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
---------	--	------------------	---------------	----------	-----	-----------	-----------

Public Parking Lot	PP-01		Mill & Overlay entire parking lot	81,883.00	SF	3.50	286,590.50
Public Parking Lot	PP-02		Regrade parking surface to eliminate standing water	1,000.00	SF	18.00	18,000.00
Public Parking Lot	PP-03		Curb repair	35.00	LF	48.56	1,699.60
Chimney House Lot	PP-01		Mill & Overlay entire parking lot	25,000.00	SF	3.50	87,500.00
Chimney House Lot	PP-02		Regrade parking surface to eliminate standing water	5,000.00	SF	18.00	90,000.00
Chimney House Lot	PP-03		Curb repair	35.00	LF	48.56	1,699.60
Chimney House Lot	PP-04		Provide retaining wall	200.00	LF	225.00	45,000.00
Quayside/Heron Lot	PP-01		Mill & Overlay entire parking lot	79,647.00	SF	3.50	278,764.50
Quayside/Heron Lot	PP-02		Regrade parking surface to eliminate standing water	1,000.00	SF	18.00	18,000.00
Quayside/Heron Lot	PP-03		Curb repair	35.00	LF	48.56	1,699.60
Quayside/Heron Lot	PP-04		Replace retaining wall, stairs and railing	75.00	LF	370.00	27,750.00

MARK-UPS

Subtotal							856,703.80
General Conditions				12.00%			102,804.46
Subtotal							959,508.26
GC OH / Profit & Fee				10.00%			95,950.83
Subtotal							1,055,459.08
Bonds & insurance				1.94%			20,475.91
Subtotal							1,075,934.99
Subtotal							1,075,934.99

APPENDIX C

SUMMARY OF COSTS BY PRIORITY RATING

SUMMARY OF COST BY PRIORITY RATING

** Costs include a 53% mark-up to cover general conditions, GC overhead and profit, bonds, insurance, contingencies, and escalation until March 2023.

** Cost shown in the charts below include only the landlord's costs. Tenant costs shown on the recommendation list are not included.

<u>MARKET/DELI</u>	
CODE 1	\$11,735
CODE 2	\$205,341
CODE 3	\$8,880
CODE 4	\$40,019
CODE 5	\$2,018
TOTAL	\$267,993

<u>CHIMNEY HOUSE COMMERCIAL BUILDING</u>	
CODE 1	\$468,589
CODE 2	\$184,139
CODE 3	\$278,746
CODE 4	\$185,558
CODE 5	\$1,067,112
TOTAL	\$2,184,144

<u>CHIMNEY HOUSE J BUILDING</u>	
CODE 1	\$980,961
CODE 2	\$2,967,773
CODE 3	\$258,729
CODE 4	\$2,062,605
CODE 5	\$4,586,851
TOTAL	\$10,856,920

<u>QUAYSIDE</u>	
CODE 1	\$837,995
CODE 2	\$949,443
CODE 3	\$170,595
CODE 4	\$296,822
CODE 5	\$604,200
TOTAL	\$2,859,054

<u>HERON HOUSE</u>	
CODE 1	\$3,130,542
CODE 2	\$8,497,311
CODE 3	\$470,452
CODE 4	\$1,224,277
CODE 5	\$6,528,150
TOTAL	\$19,850,733

<u>WASHINGTON PLAZA</u>	
CODE 1	\$56,610
CODE 2	\$188,037
CODE 3	\$123,930
CODE 4	\$0
CODE 5	\$68,287
TOTAL	\$436,864

<u>PARKING LOTS</u>	
CODE 1	\$0
CODE 2	\$1,308,159
CODE 3	\$0
CODE 4	\$0
CODE 5	\$2,601
TOTAL	\$1,310,760

<u>TOTAL COSTS BY PRIORITY RATING</u>		
CODE 1	HIGH PRIORITY	\$5,486,432
CODE 2		\$14,300,203
CODE 3	MEDIUM PRIORITY	\$1,311,332
CODE 4		\$3,809,281
CODE 5	LOWER PRIORITY	\$12,859,220
TOTAL ASSESSMENT COSTS		\$37,766,468

APPENDIX D

PHOTOGRAPHS

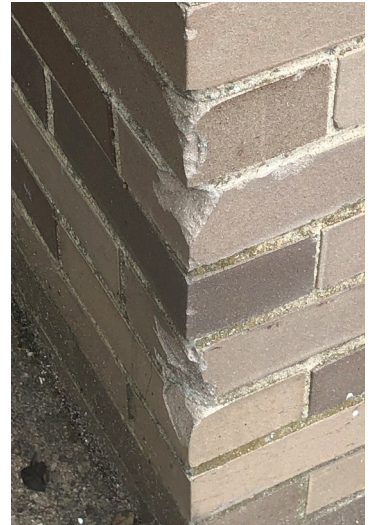
MARKET - DELI



MD-A01



MD-A02



MD-A02



MD-A03



MD-A04



MD-A05



MD-A06



MD-A06

MARKET - DELI



MD-A06



MD-A07



MD-A08



MD-A09



MD-M01



MD-E04

CHIMNEY HOUSE - COMMERCIAL PLAZA



CP-A01



CP-A02



CP-A02



CP-A03



CP-A04



CP-A05

CHIMNEY HOUSE - COMMERCIAL PLAZA



CP-A06



CP-A07



CP-A07



CP-A08



CP-A09



CP-A10

CHIMNEY HOUSE - COMMERCIAL PLAZA



CP-A11



CP-A12



CP-A13



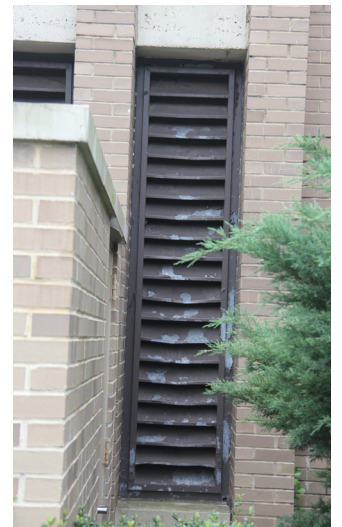
CP-A14



CP-A15



CP-A17



CP-A18

CHIMNEY HOUSE - COMMERCIAL PLAZA



CP-M01



CP-E01



CP-E05

CHIMNEY HOUSE - J BUILDING



CJ-A01



CJ-A01



CJ-A03



CJ-A04



CJ-A05



CJ-A05

CHIMNEY HOUSE - J BUILDING



CJ-A07



CJ-A08



CJ-A09



CJ-A09



CJ-A10



CJ-A11

CHIMNEY HOUSE - J BUILDING



CJ-A12



CJ-A13



CJ-A14



CJ-A15



CJ-A16



CJ-S01-1

CHIMNEY HOUSE - J BUILDING



CJ-S01-2



CJ-S01-3



CJ-S02-1



CJ-S02-2



CJ-S03-1

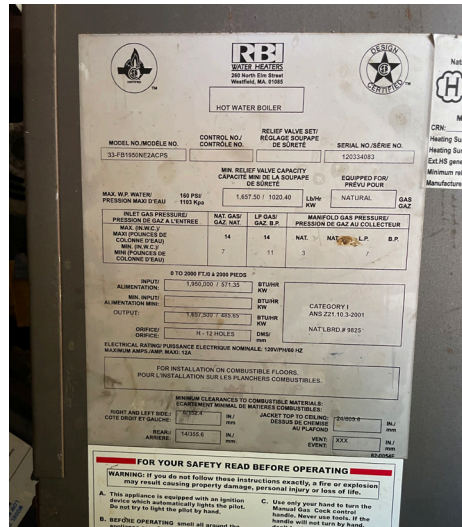


CJ-S03-2

CHIMNEY HOUSE - J BUILDING



CJ-P02



CJ-M02



CJ-M03



CJ-M05



CJ-E04

QUAYSIDE



QS-A01



QS-A02



QS-A03



QS-A03



QS-A05



QS-A05

QUAYSIDE



QS-A06



QS-A06



QS-A08



QS-A10



QS-A11



QS-A12

QUAYSIDE



QS-S01-1



QS-S01-2



QS-S01-3



QS-S02-1



QS-S03-1



QS-S03-2



QS-S03-3



QS-S03-4

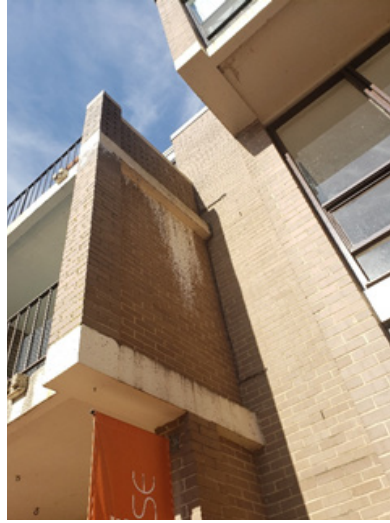


QS-S04-1

QUAYSIDE



QS-S04-2



QS-S05-1



QS-P02



QS-M03



QS-E01



QS-E04

HERON HOUSE



HH-A01



HH-A02



HH-A03



HH-A04



HH-A05



HH-A05

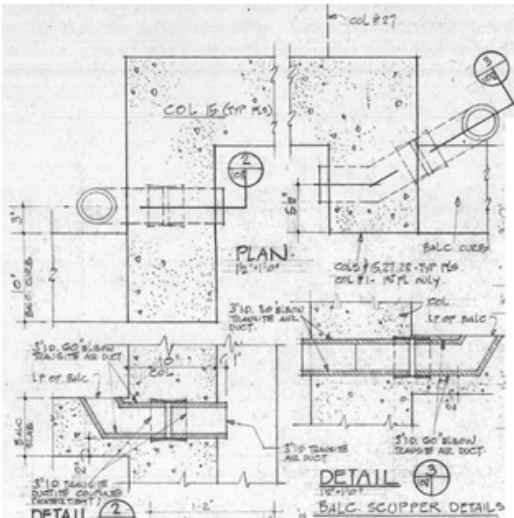
HERON HOUSE



HH-S03-1



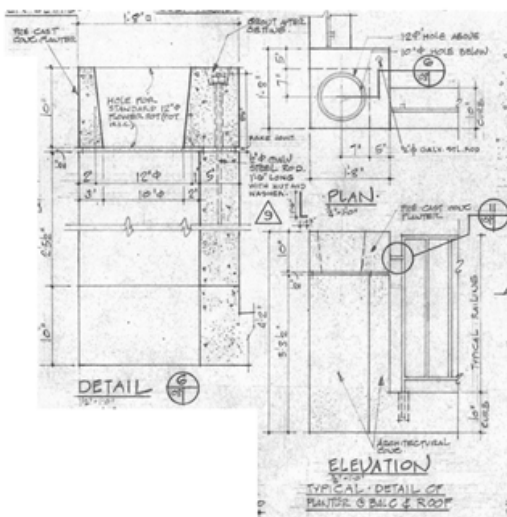
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HH-S04-1



HH-S04-2



HH-S05-1



HH-S05-2

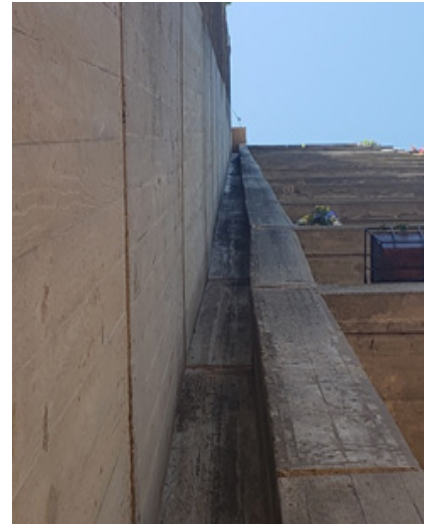
HERON HOUSE



HH-S05-3



HH-S06-1



HH-S06-1



HH-F02



HH-F02



HH-P03

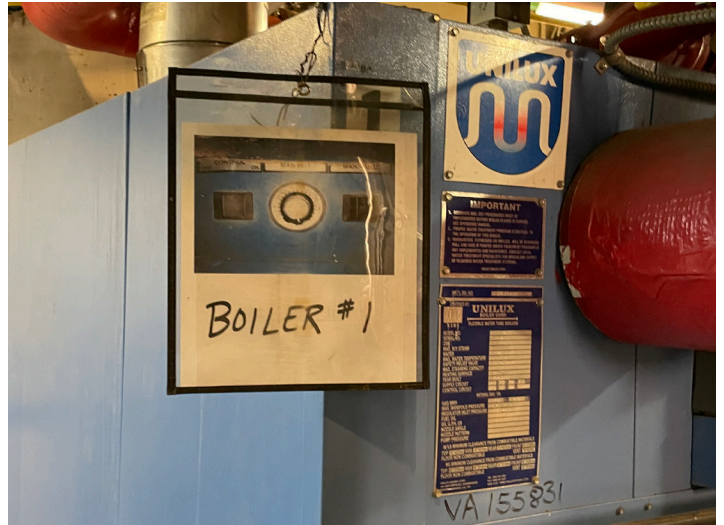


HH-P03

HERON HOUSE



HH-P03



HH-M01



HH-M02



HH-M06

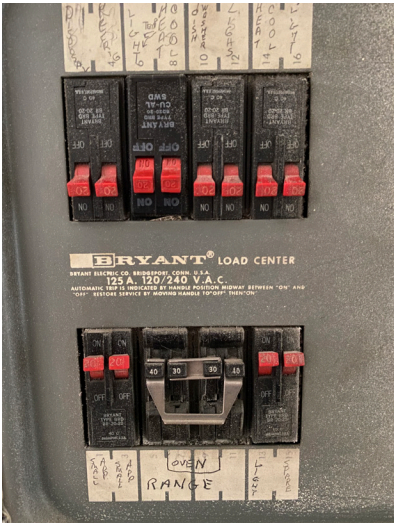


HH-E02



HH-E04

HERON HOUSE



HH-E05



HH-E06



HH-E10

WASHINGTON PLAZA



WP-A01



WP-A01



WP-A01



WP-A02



WP-A02



WP-A02

WASHINGTON PLAZA



WP-A02



WP-A02



WP-A03



WP-A03



WP-A03



WP-A03

WASHINGTON PLAZA



WP-A03



WP-A03



WP-A03



WP-A04



WP-P01



WP-P01

WASHINGTON PLAZA



WP-E03



WP-E03

PUBLIC PARKING



PP-01



PP-01



PP-01



PP-02



PP-02



PP-03

CHIMNEY HOUSE PARKING



CP-01



CP-01



CP-02



CP-03



CP-04



CP-04

QUAYSIDE & HERON HOUSE PARKING



QP-01



QP-01



QP-02



QP-03



QP-04



QP-04

APPENDIX E

STRUCTURAL NOTES:

SUMMARY AND OBSERVATIONS

The purpose of our visit was to perform a limited condition assessment of the concrete balconies at the 3-story townhouses and the 14-story residential building that are a part of the Lake Anne Condominiums. This report contains a brief description of the balconies, observations from our visit, and our repair recommendations.

The subject buildings are a part of a condo association that consists of three buildings adjacent to the Lake Anne reservoir in Reston, VA. The Heron House is a 14-story residential building with approximately 60 units, each with its own concrete balcony. The Quayside building is a 3-story building with commercial space on the 1st floor and residential space on the floors above. There are approximately 12 residential units, each with a concrete balcony, and the 3rd-floor units have an additional enclosed balcony where the soffits were visually observed during our visit. Lastly, the Chimney House is a 3-story building with commercial space on the 1st floor and residential units on the floors above. There are approximately 23 concrete balconies on the 2nd floor and 15 wood balconies on the 3rd floor.

All the balconies in the three buildings were visually observed from the ground level as a part of this assessment. In addition, access was granted to the interior of 4 units in the Heron House, 1 unit in the Quayside building, and 2 units in the Chimney House. This allowed for the top and bottom surfaces of the concrete balconies to be sounded to gain an understanding of the concrete deterioration. Sounding is the process of striking the concrete surface with a solid object; a metal rod was used during our visit to identify concrete deterioration and delaminating areas. If the concrete is solid and in good condition, the sound will be solid. However, where concrete has delaminated, a distinctly hollow sound is heard, indicating cracks within the concrete that could eventually lead to spalling. It should be noted that the sounding of the concrete at the Heron House was limited to the soffits of the units where we were given access. Due to the presence of tile flooring on top of the balconies, concrete could not be sounded.

The buildings are believed to have been constructed in the 1960s, and the limited existing drawings provided for the three buildings are dated between 1963 and 1964. Drawings provided for the Heron House include typical architectural elevations, floor plans, and balcony and exterior wall details. A brief review of these drawings is discussed in the following section. Drawings provided for the Quayside building only include mechanical and electrical floorplans, while drawings for the Chimney house only include architectural elevations, so little information regarding those balconies could be obtained.

DISCUSSION:

Concrete on its own is inherently brittle and has very low tensile capacity. To account for this, steel reinforcing bars are placed within the concrete to form reinforced concrete which is much stronger and ductile than concrete alone. An unfortunate side effect of this is that steel is subject to corrosion. When steel corrodes, it forms rust which is larger by volume than steel. This expansion can cause the surrounding concrete to crack. Although small amounts of cracking

are acceptable, once cracks open, reinforcing steel becomes more exposed and the rate of deterioration increases. Reinforcing steel will continue to corrode and expand, which will eventually cause the concrete to completely break/spall off.

The high alkaline environment of concrete ($\text{pH} > 12.5$) generally protects reinforcing steel from corrosion by forming a passive film that prevents metal atoms from dissolving. The high pH environment in concrete can become compromised through a process called carbonation which causes the pH of the concrete to decrease and its composition to become more porous. This then allows moisture to penetrate the concrete and corrode the reinforcement more easily. We suspect that carbonation is one contributor to the deterioration of concrete observed during our visit. If desired, carbonation can be tested by the application of a phenolphthalein solution.

Ultimately, the steel reinforcement can corrode whenever it is in contact with water and oxygen. While cracking, carbonation and chlorides can make it easier for water to get in contact with the steel, moisture control plays a vital role in protecting the reinforcement and ensuring the longevity of the concrete. When water can accumulate on the concrete surface, it will eventually lead to corrosion, so ensuring proper drainage is provided for exterior structures is essential. It is also important to address signs of deterioration, such as concrete cracking or staining from water, as soon as possible. If structural members are allowed to continue to deteriorate, repairs will rapidly become more costly and could compromise the member's structural integrity.

LIMITATIONS:

The scope of services is limited to visual observation of isolated building elements only. The actual sizes, strength and reinforcement of each structural element were not determined, and no analysis or calculations have been made to determine the adequacy of any of the existing structural members. Portions of the building and building systems are finished with materials which make them inaccessible and unobservable. In these areas, latent problems may exist which will not be identified.

This report has been prepared solely and exclusively for the client to assist in the evaluation and rehabilitation of this project. It is not intended for use by others or for other than the stated purpose. The conditions reported are as visually observed on the denoted timeframes.

EB has strived to perform services under this agreement in a manner consistent with that level of care and skill ordinarily exercised by members of the architectural/engineering profession currently practicing in the same locality under similar conditions. No other representation, express or implied, and no warranty or guarantee is included or intended in this report.