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City of Rochester
Department of Environmental Services
Bureau of Architecture and Engineering
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Rochester, NY 14604

Submitted by:
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Rundel Library Exterior Façade Observation

APRIL 2019

LBA PROJECT NO. 2191056



April 12, 2019

Brian Grinnell, AIA NCARB
Architect
City of Rochester
Department of Environmental Services
Bureau of Architecture and Engineering
414 Andrews Street
Rochester, NY 14604

RE: Rundel Library Exterior Façade Observation
115 South Avenue, Rochester NY
LaBella Project No. 2191025

Dear Brian,

LaBella Associates D.P.C. (LBA) performed a visual inspection of the Rundel Library, located at 115 South Avenue in Rochester N.Y. This letter summarizes our observations, professional assessment and any recommendations.

SCOPE OF WORK

Our assessment of the building's exterior façade is based on visual observations, including drone photography, from accessible areas without destructive probing. Our scope of work does not include hands-on inspection via a man-lift or suspended scaffolding, measurement of displacement conditions, or examination of concealed conditions by means of intrusive inspection.

PROJECT BACKGROUND

The multi-story structure was built in 1934, with its west elevation directly adjacent to the Genesee River. The building consists of 3 floors, with a penthouse at the roof level and a basement.

According to existing drawings, the structure comprises of steel beams and columns, which are all encased in concrete for fire rating, and a one way structural concrete slab. The concrete foundations are shown to bear on bedrock. The exterior walls are masonry with a stone façade.

Re-roofing and flashing replacement work was completed throughout the 1970's to 1990's, however much of the original copper flashing along the parapet and roof-level façade remains.

A portion of the stone façade on the West parapet detached from the structure on February 8, 2019 and fell to a balcony below as well as into the Genesee River.

FIELD OBSERVATIONS

On March 27, 2019, two LBA structural engineers performed a visual inspection of the building from the ground and roof levels. Aerial imagery taken with a drone was used to observe and document conditions around the full exterior perimeter of the building. The drone was flown by FAA certified unmanned aircraft pilots in LaBella's civil engineering and surveying departments. Drone scans of the entire exterior of the building were used to create 3D models for reference



and measurement use. Targeted flights, directed by a structural engineer, focused on observing the building's parapet level and photographing areas of concern.

Existing Damage

On February 8, 2019 a portion of the stone façade at the raised parapet level detached from the west side of the building and fell to a balcony below and into the Genesee River.

- Six individual panels over a length of approximately 25 feet detached. [Photo 1]
- Steel hook anchors are exposed at the top of the area the façade has detached. [Photo 2]
- After immediate investigation by LaBella, 4 adjacent stone façade panels were determined to be separating from the building and subsequently braced with steel brackets installed over the parapet. [Photos 3, 4]
- Thru-bolt anchors were installed to restrain the lower stone panels from separating. [Photo 5]

Parapet Level – West Face

The west face of the building has a high parapet at its center and two lower parapets at its north and south ends. While some cracking and separation of the parapets' stone façade panels is visible from the ground level, drone imagery was able to provide closer and more useful perspectives. Select stone façade panels on the west (rear) face and the east (front) face are out-of-plane at the parapet level. Cracks and deteriorated caulk appear throughout the full perimeter. [Photos 6, 7]

- Three un-braced stone panels on the left (north) side of the west raised parapet have separated from the brick along their top edge. [Photos 8, 9]
 - These panels were immediately brought to the attention of the city and have been braced. [Photo 10]
- Cracks through the stone panels and stone eave at the northern corner of the west raised parapet have previously been sealed with caulk. The crack through the stone façade panel has widened since the caulk was installed. [Photos 11, 12, 13, 14]
- The lower stone façade panel at the south corner of the west raised parapet is cracked [Photos 15, 16]
- Caulking in joints between stone façade panels has gaps and signs of deterioration along the entire length of the parapet. [Photos 15, 17, 18, 19, 20, 21]

The parapets along the full perimeter of the building are constructed of multi-wythe brick, which is visible from the roof. The stone façade panels are anchored to this brick. From the roof, cracking is visible on the brick face of the raised west parapet. This cracking is mainly through mortar joints, but occurs through bricks as well. Caulk gaps and deterioration are visible as well.

- A small crack exists through the mortar at the south corner of the parapet at its return, for its full height. [Photos 22, 23]
- Horizontal cracks exist through mortar joints along the length of the raised west parapet. [Photos 24, 25]



- One stone parapet cap, with masonry structure behind, is raised out-of-plane from the rest with a gap in the caulk sealant between it and the original copper flashing below [Photos 26, 27]
- A large crack exists in the north corner of the raised west parapet at its return. The crack extend the full height of the parapet. [Photo 28]
 - The gap between the west face of the parapet and its return shows there has been movement of the parapet. The gap was measured as 5/16" wide on 3/27/2019. [Photo 29]
 - Remaining mortar shows 5/16" gap is separation, not mortar loss. [Photo 30]
 - Crack spreads through bricks in the parapet return wall [Photo 31]
 - Corner separation is visible in both directions of parapet and return. [Photo 32]
 - Separation is visible on exterior side of parapet corner. A gap exists between stone façade panels at the return. [Photo 33]
 - This gap is at the same location as the cracked stone façade panels and eave at the northern corner. [Photos 11, 12, 13, 14]

Parapet Level – North and South Faces

The north and south faces of the building have only short parapets without raised portions. There parapets are constructed of multi-wythe brick with a stone panel façade. Along the length of both parapets, and the full perimeter of the building, the caulking between the joints of stone façade panels is deteriorating, with visible cracking and gaps. Most caulk gaps are visible in the horizontal joint between the stone façade panels and the parapet cap. [Photos 34, 35, 36, 37, 38, 39]

Parapet Level – East Face

The east face of the building consists of 3 parapet levels – low parapets on its north and south ends, a mid-level parapet at its center, and a northern and southern high parapet at each end of the mid-level. Stone panel cracking and caulk gaps are visible from the roof, but drone imagery provided the ability to see out-of-plane panels and more extensive sealant deterioration along the length of the building.

- The center stone façade panel above the artistic stonework on the southern high east parapet appears to be out-of-plane from the other panels on this face. [Photos 40, 41]
 - This panel has since been braced with temporary steel supports in response to LaBella's immediate recommendations. [Photo 50]
- Caulk gaps and deterioration are visible in the joints between the stone façade panels of the southern high east parapet, on all 3 faces. [Photos 41, 42]
- A stone façade panel on the southern face of the southern high east parapet is cracked near its intersection with the southern low parapet. [Photo 42]
- The center stone façade panel above the artistic stonework on the northern high east parapet appears to be out-of-plane from the other panels on this face. [Photos 43, 44]
 - This panel has since been braced with temporary steel supports in response to LaBella's immediate recommendations. [Photo 50]



- Caulk gaps and deterioration are visible in the joints between the stone façade panels of the northern high east parapet, on its east and north faces. [Photos 44, 45, 46]
- Two adjacent stone façade panels, one on the north face of the northern high east parapet and the other on the northern low east parapet, are cracked. [Photos 45, 46]
- The upper half of the cracked stone façade panel on the northern high east parapet is out-of-plane from its lower half and the other adjacent panels on this face of the parapet. [Photo 47]
- Caulk gaps are visible in the joints between stone façade panels along the entire length of the east parapet. [Photos 41, 42, 44, 45, 46, 48, 49]

DISCUSSION AND RECOMMENDATIONS

It is our opinion that the majority of the parapet is in stable condition, with the exception of specific areas. Caulk deterioration was observed around the entire perimeter of the parapet, allowing for water and moisture intrusion behind the stone façade panels.

Water intrusion is the likely cause of the stone façade panel movement observed. Freezing water forces the panels away from the building and water can corrode the anchors holding those panels in place. Existing caulk should be removed from all joints around the perimeter of the parapet and replaced with new sealant. All cracked stone panels, both with existing sealant and without, should be injected with an epoxy sealant through the full length of the crack.

Three stone façade panels on the west parapet and two on the east parapet were areas of immediate concern, and were brought to the attention of the City directly after completing the visual inspection. These panels have all since been braced with the addition of steel brackets, similar to those previously installed on the panels adjacent to those that fell in February.

While a steel anchor was visible at the location where stone panels detached and fell, no details are available on the existing drawings provided to LaBella [Figure A] and no other anchorage was visible during inspection. Permanent anchorage for the loose panels, as well as for the replacement of panels that have fallen, should be designed by a structural engineer. These panels, as well as the full perimeter of the parapet should be regularly monitored for additional movement by a structural engineer until fully repaired.

The brick separation at the norther corner of the raised west parapet should be monitored by a structural engineer to determine if the crack is active or inactive. The engineer can then determine whether the parapet needs to be reinforced or braced. All gaps in mortar and caulking should be filled and sealed to prevent water and moisture intrusion.

Respectfully submitted,

LABELLA ASSOCIATES, D.P.C.

Andrew Karlson, PE, Assoc. AIA
Structural Engineer | Buildings Engineering



APPENDIX A – PHOTOGRAPHS

Appendix A



Structural Observation Photographs







Rundel Library – Front (East) Face







Rundel Library – Rear (West) Face



Photo	Description	Photos
1	<p>West parapet where 6 stone panels have detached and fallen</p> <p>Emergency repair brackets on adjacent separating panels</p>	
2	<p>Steel hook anchor visible where stone façade has fallen from</p> <p>Copper flashing visible below parapet cap</p>	



<p>3</p>	<p>Steel brackets installed over parapet to restrain separating panels</p> <p>Remains of fallen stone panels visible on balcony below</p>	
<p>4</p>	<p>Stone panel separation from side (photo taken with camera over top of parapet)</p>	

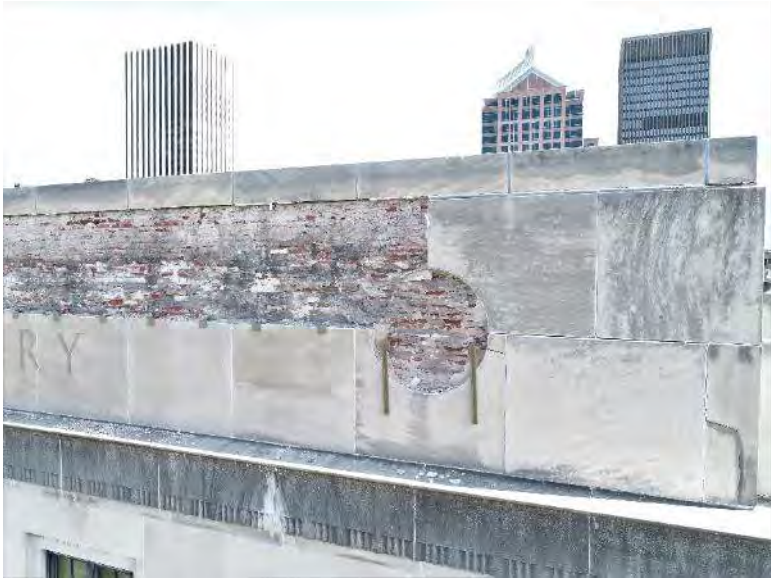

5	Thru-bolted anchors restraining lower stone panels	
6	Out-of-plane stone panel on west face of parapet (photo taken from ground)	



7	<p>Cracking and deteriorating caulk visible on the north side of the right bump-out at the front of the building</p> <p>(photo taken from ground)</p>	 A close-up photograph of a stone building corner. The image shows a light-colored stone facade with a prominent vertical crack running down the corner. The caulk at the top of the crack is dark and appears to be deteriorating or missing. The sky is visible in the background.
8	<p>3 stone façade panels separating from west parapet</p>	 A photograph of a stone parapet wall. The wall is made of large, light-colored stone blocks. Three panels of the wall are shown separating from the main structure, creating a gap. The wall is situated next to a body of water, and a bridge is visible in the background.



9	3 stone façade panels separating from west parapet	
10	Braces installed at 3 stone panels after LaBella's inspection	



11	<p>Cracking in stone façade panel and stone eave at northern corner of west raised parapet</p>	 <p>A photograph showing the northern corner of a west raised parapet. The stone facade panel and the stone eave below it exhibit visible cracking. A circular vent is visible on the right side of the parapet. In the background, other city buildings are visible under a clear sky.</p>
12	<p>Cracking in stone façade panel and stone eave at northern corner of west raised parapet</p> <p>Caulk separation and large gap show the crack through the stone façade panel has gotten wider since being sealed</p>	 <p>A close-up photograph of the crack and caulk separation in the stone parapet. The crack is clearly visible running through the stone facade panel and the stone eave. The caulk has separated, creating a large gap that indicates the crack has widened since it was sealed.</p>



13	<p>Previously caulked stone eave crack at northern corner of raised west parapet</p> <p>Separation between caulk and stone shows crack has gotten wider, or caulk has deteriorated</p> <p>(Photo taken from roof)</p>	
14	<p>Stone façade corner panel at northern corner of raised west parapet is cracked and shifted out-of-plane</p> <p>(Photo taken from roof)</p>	



<p>15</p>	<p>Lower stone façade panel at south corner of west parapet is cracked</p> <p>Caulk gaps and deterioration are visible throughout joints in stone panels</p>	
<p>16</p>	<p>Stone eave at southern corner of raised west parapet is cracked</p> <p>(Photo taken from Roof)</p>	



17	Caulk gaps and deterioration are visible throughout joints in stone panels	
18	Caulk gaps and deterioration are visible throughout joints in stone panels	



19	Caulk gaps and deterioration are visible throughout joints in stone panels	
20	Caulk gaps and deterioration are visible throughout joints in stone panels	



21	<p>Caulk gaps and deterioration are visible throughout joints in stone panels</p> <p>(Photo taken from roof)</p>	
22	<p>Crack through mortar down height of south corner of west raised parapet</p> <p>(Photo taken from roof)</p>	



23	<p>Crack through mortar down height of south corner of west raised parapet</p> <p>(Photo taken from roof)</p>	
24	<p>Horizontal cracks in mortar joints on back side of raised west parapet</p> <p>(Photo taken from roof)</p>	



<p>25</p>	<p>Horizontal cracks in mortar joints on back side of raised west parapet</p> <p>(Photo taken from roof)</p>	
<p>26</p>	<p>Stone parapet cap on raised west parapet out-of-plane from others</p> <p>(Photo taken from roof)</p>	



27	<p>Raised stone cap on west parapet with masonry structure behind. Gap is shown between cap and original copper flashing below. Caulk is deteriorating</p> <p>(Photo taken from roof)</p>	
28	<p>Northern corner of raised west parapet at return. Location of large crack</p>	



29	<p>Gap between raised west parapet and its return at its norther corner</p>	
30	<p>Gap between raised west parapet and its return at its norther corner</p> <p>Separation occurs where loose mortar has been lost and where mortar remains, indicating movement.</p>	



<p>31</p>	<p>Gap between raised west parapet and its return at its norther corner</p> <p>Crack spreads down through bricks in parapet return</p>	
<p>32</p>	<p>Gap between raised west parapet and its return at its norther corner</p> <p>Separation is visible in both directions or parapet and return. The bricks forming the return are shifted from the existing mortar line</p>	



<p>33</p>	<p>Gap between raised west parapet and its return at its norther corner</p> <p>Gap visible at brick-face interior corner of parapet is coupled by gaps between stone façade panels on the exterior side</p>	
<p>34</p>	<p>South Parapet Corner</p>	



35	<p>Caulk gaps between stone façade panels and cap of parapet along south face of building</p>	
36	<p>Caulk gaps between stone façade panels and cap of parapet along south face of building</p> <p>(Photo taken from roof)</p>	



37	Caulk gaps between stone façade panels and cap of parapet along north face of building	
38	Caulk gaps between stone façade panels and cap of parapet along north face of building	



39	<p>Caulk gaps between stone façade panels and cap of parapet along north face of building</p>	
40	<p>Southern East High Parapet</p> <p>Middle stone façade panel appears out-of-plane from others</p>	

<p>41</p>	<p>Southern East High Parapet</p> <p>Middle stone façade panel appears out-of-plane from others</p> <p>Caulk gaps are visible in joints between stone façade panels</p>	
<p>42</p>	<p>Southern East High Parapet</p> <p>Caulk gaps are visible in joints between stone façade panels</p> <p>Stone Façade panel adjacent to the lower parapet is cracked</p>	

<p>43</p>	<p>Northern East High Parapet</p> <p>Middle stone façade panel appears out-of-plane from others</p>	
<p>44</p>	<p>Northern East High Parapet</p> <p>Middle stone façade panel appears out-of-plane from others</p> <p>Caulk gaps are visible in joints between stone façade panels on east face and northern return side</p>	

<p>45</p>	<p>Northern East High Parapet</p> <p>Caulk gaps and missing caulk is visible in joints between stone façade panels on east face and northern return side</p> <p>Two stone façade panels in this corner are cracked</p>	
<p>46</p>	<p>Northern East High Parapet</p> <p>Caulk gaps and missing caulk is visible in joints between stone façade panels on northern return side</p> <p>Lower stone façade panel is cracked</p>	

47	<p>Northern East High Parapet</p> <p>Top portion of cracked lower stone façade panel is out-of-plane from the bottom half and other panels on this face</p>	
48	<p>Caulk gaps in joints between stone façade panels along east parapet</p>	

49	Caulk gaps in joints between stone façade panels along east parapet	
50	Temporary steel brackets installed at raised east parapets to restrain out-of-plane stone façade panels	

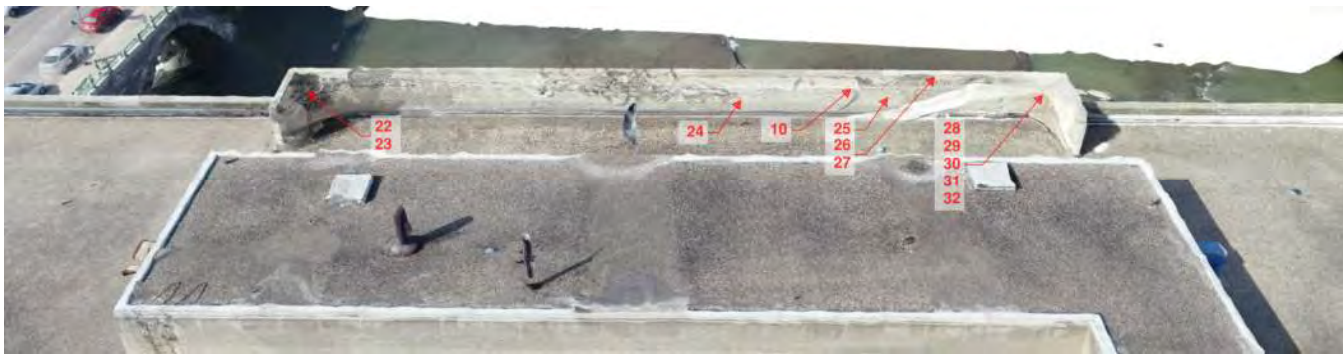


APPENDIX B – KEYPLANS

Appendix B - Keyplans



East Face



East Face – Back Side of High Parapet



South Face



North Face



East Face



APPENDIX C – FIGURES

Appendix C - Figures

Figure A - Existing 1934 Drawing detailing wall sections at parapets

