Mitall Division
of KU Resources, Inc.

March 27, 2019

Mr. Gregory Bachy
Borough of Swissvale
7566 Roslyn Street
Pittsburgh, PA 15218

Swissvale Borough Building
Structural Inspection

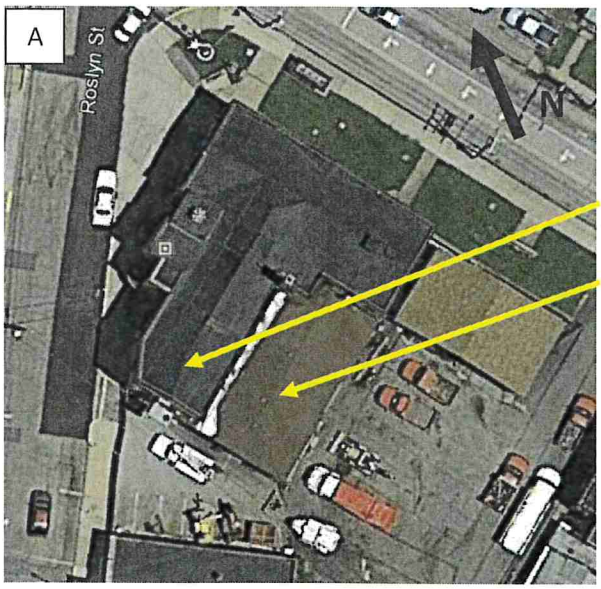
Dear Mr. Bachy,

As you requested, KU Resources has conducted a visual inspection of the Swissvale Borough Building. From our on March 12, 2019 inspection of the brick façade, we noticed the east and west walls of the council chambers deflecting outward. On March 26, 2019, we returned to observe any additional movement of the brick or structure.

Reference is made to a report detailing a previous inspection of the same areas in December 2015 by R.F. Mitall and Associates, Inc. It is attached to this letter report, as well as some photographs taken at that time to compare to photographs taken on the March inspection.

The building was originally constructed in 1906. There was an addition constructed over 80 years ago. It is in this addition where the council chambers are located on the top floor. This portion of the building has three (3) exterior walls with the brick façade that is of concern.

The purpose of these recent inspections was to observe any changes from the initial inspection to the façade and ancillary structure and to opine on the potential danger of the structure to the public and inhabitants and provide recommendations to Swissvale Borough regarding possible remedies.



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The eastern wall of the council chambers appears to be moving and unstable. The photographs from 2015 and 2019 are below. Although not taken from the same vantage point, the 2019 photograph shows significant movement in the brick façade near the scupper between the second and third window.

December 2015

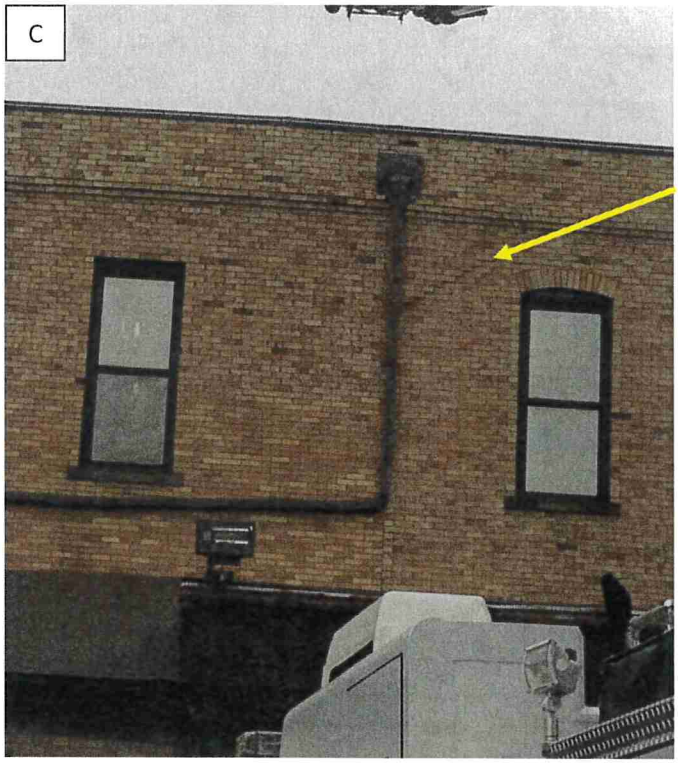
B

Scupper

Decorative ledge

December 2015

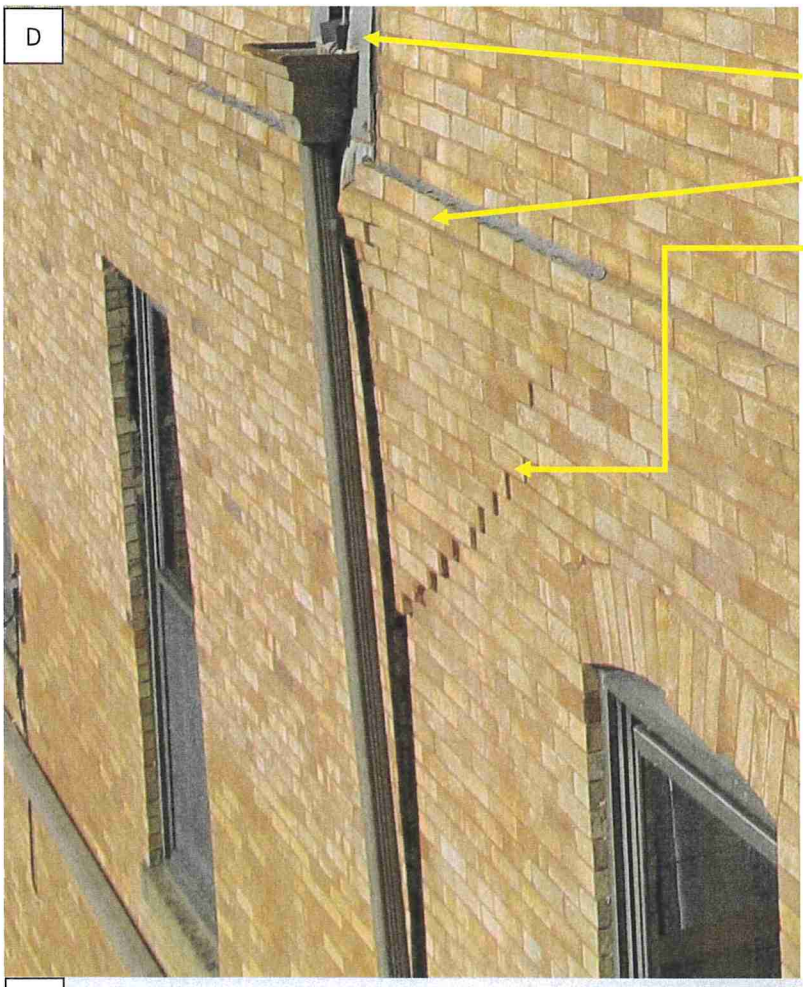
C



Diagonal cracking

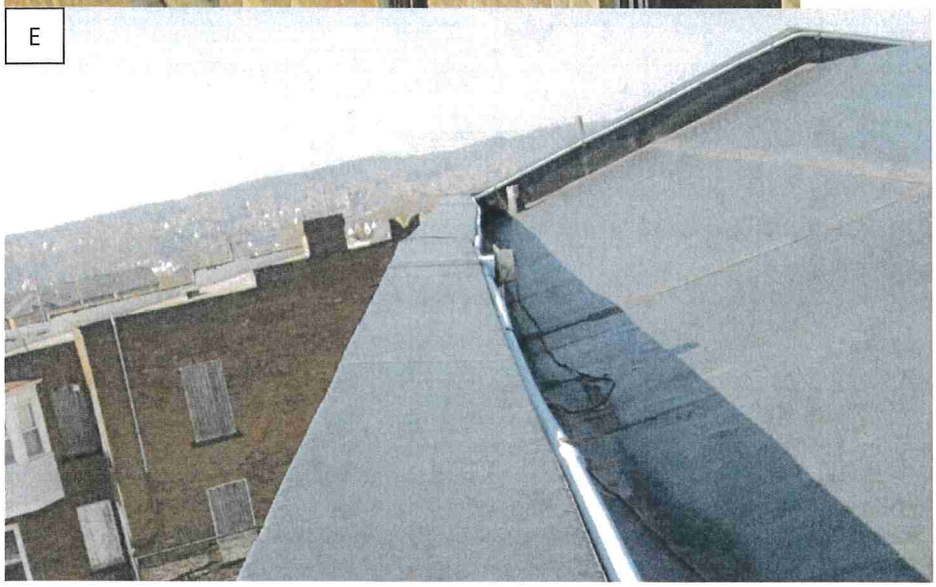
March 2019

D

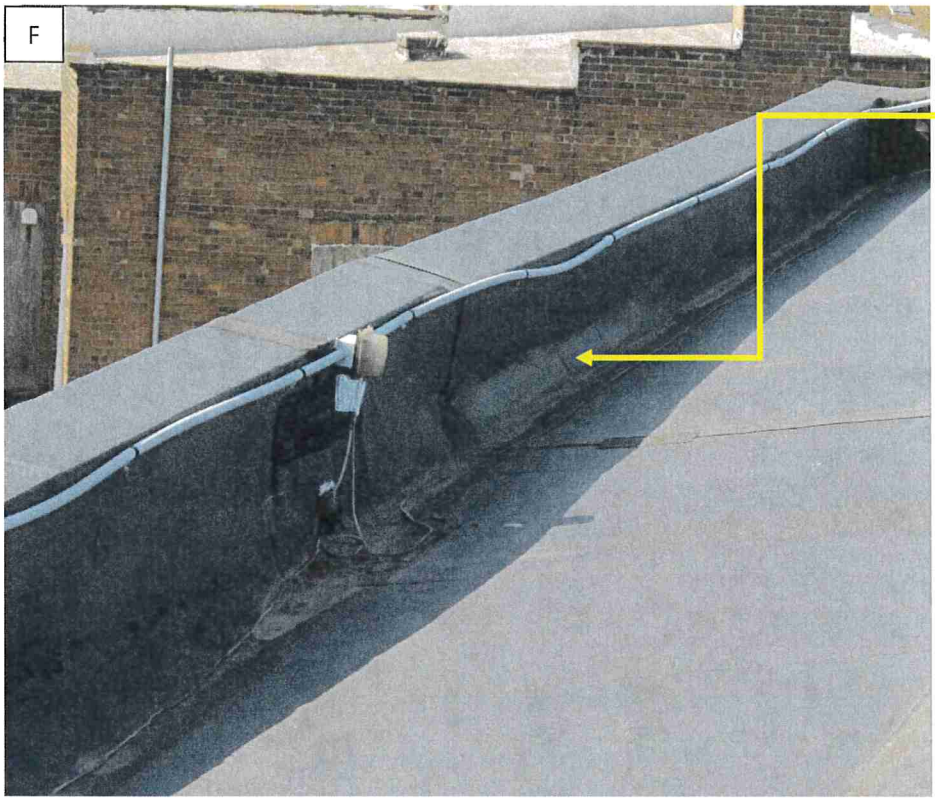


It appears the leaning of the brick façade is now combined with the movement of the parapet.

E

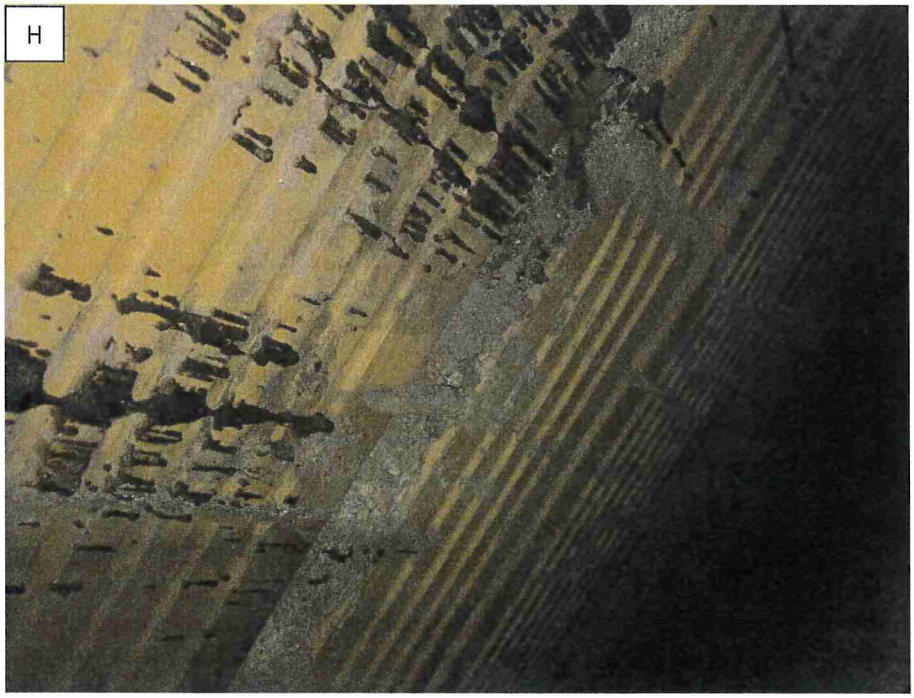


F



Roof membrane stretched due to parapet movement

H



This is a photograph of the back side of the clay tile structural wall. The tar from the roof repair (approximately 20 years ago) can be seen as well as deteriorating mortar. This clay tile was installed approximately more than 80 years ago. Moisture and lack of ventilation expose this material to moisture. As researched from (next page)

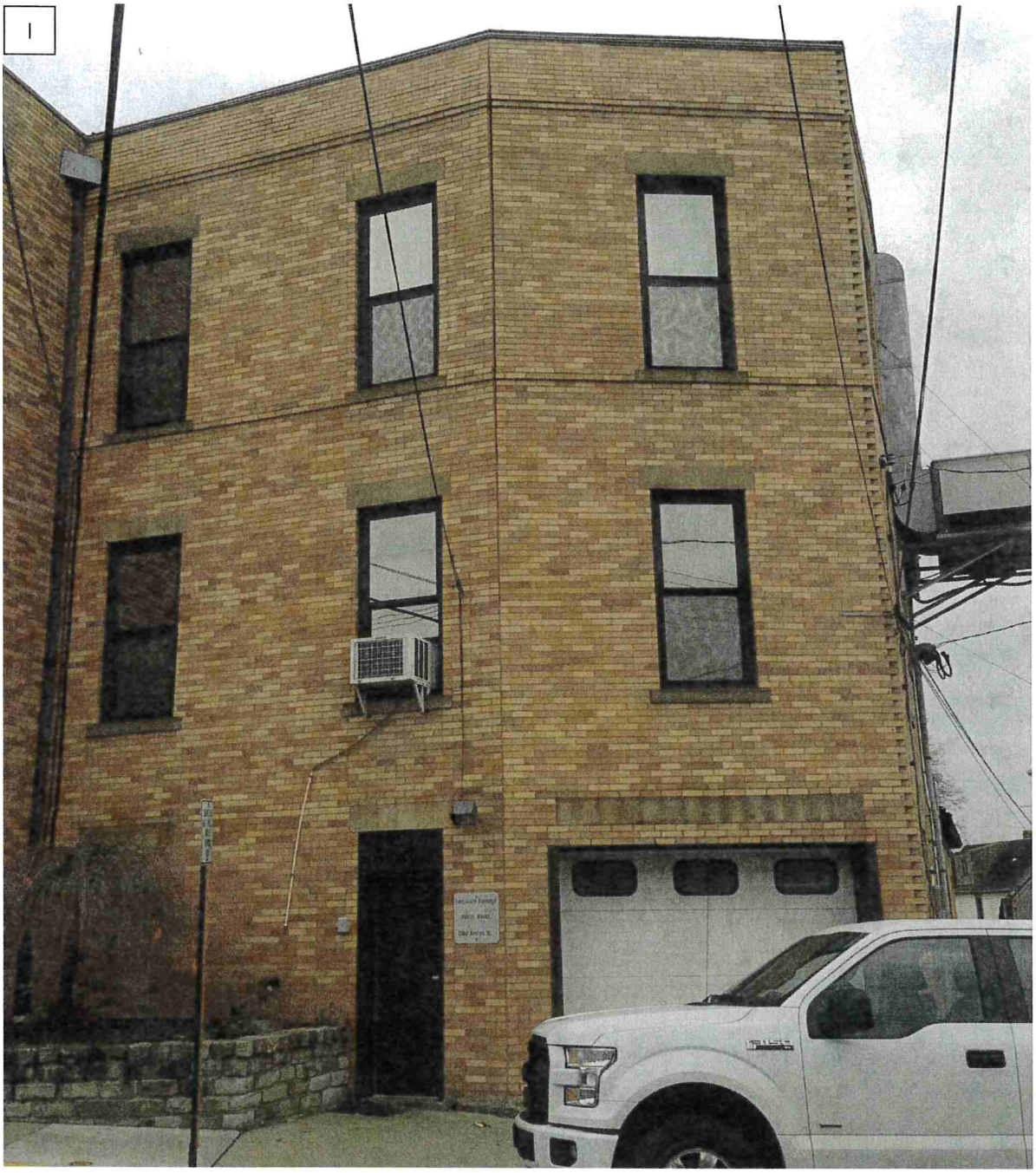
http://historicbldgs.com/terra_cotta.htm. "Also known as hollow structural tile, hollow tile block, hollow building tile, structural clay tile and structural clay load-bearing wall tile. Structural terra cotta is made from natural clay, or clay produced from pulverized shale, that is extruded through a die (like Play-Doh® spaghetti). Then, like brick, it's fired in a kiln to create a hard building block. The hollow interior is divided into "cells" by a "web", which gives it strength. The grooves, or ribbing, is on four sides of the "shell" to help mortar, plaster and stucco adhere to the surface. When used above grade, the interior has plaster directly applied and the exterior is often coated with stucco. These are not vitrified or glazed. If exposed to the weather, they can deteriorate. "

Due to the movement and cracking of the upper levels of the building facade, it no longer provides protection against water infiltration. During the inspections, evidence of water infiltration was noted in multiple locations throughout the building. Introducing moisture into the area of the structural tile is a potentially serious issue that could affect the structural integrity of the building.

It is plausible that given a large enough wind gust or severe weather, a large section of this façade could fall through the roof below. It is recommended that the portion of the Public Works Garage under this roof be not used until the façade is made safe. Additionally, vehicles should not be parked or worked on in the garage below this roof. To help minimize damage to the garage roof below, it is recommended that ¾ inch plywood panels be laid on the top of the roof in the "fall area" of the brick facade. This will not completely protect the roof from catastrophic damage, but may mitigate damage.

December 2015

1



This photograph shows the west side of the building during the 2015 Inspection. Note that parapet appears to be slightly bulging out at the decorative ledge. Swissvale Borough had a wall anchor service install a series of plates and tie backs (photo prior to their installation). There is also a separation of the brick joint vertically with the widest portion at the decorative ledge.

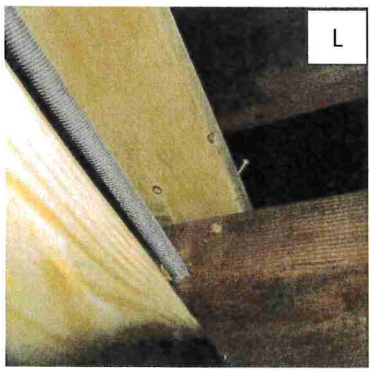
J

This photograph shows the vertical separation during the March 2019 inspection. The wall anchors were loose at the time of this inspection. Additionally, the decorative ledge on the parapet is considerably worse than in 2015.

K

The brick was drilled and an all-thread rod connects the outer plate with the inner plate. This was installed in 2017 by a wall anchor company.

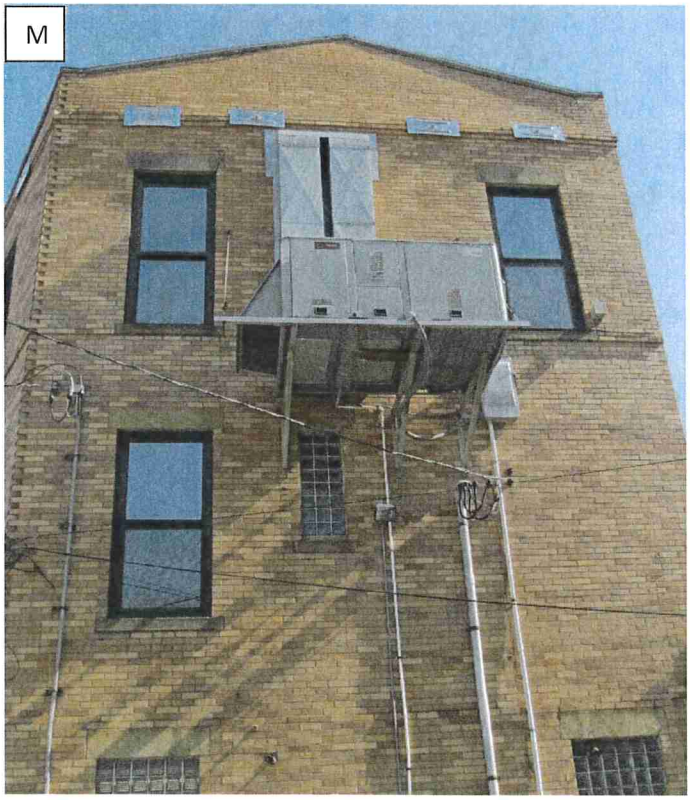
L



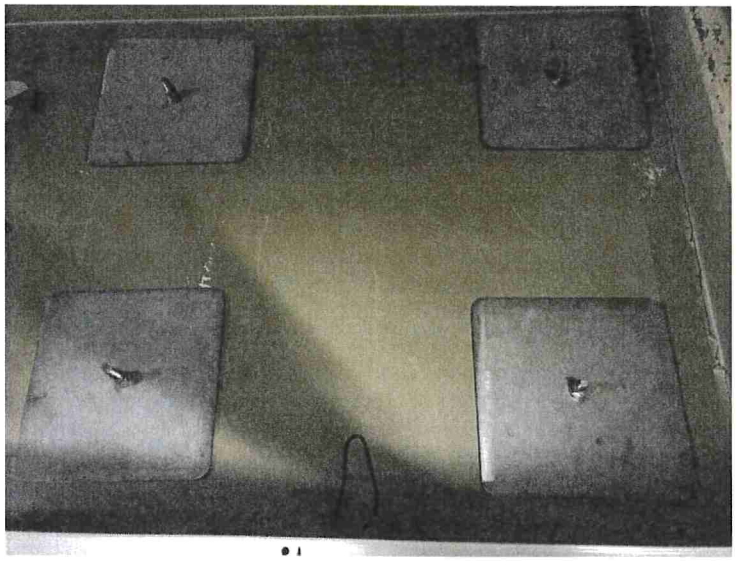
The threaded rod passes through four (4) roof joists that are attached to each other with two (2) 2x6 wood members. Although all four members share the lateral load applied by the rod tension, there is a propensity for wood members under constant stress to slowly "creep" and move in the direction of the forces applied. It should also be noted that there are three (3) additional anchors and rods applied to these same four joists. At the time of the 2019 inspection, the bolt on the rod shown above was loose and was able to be hand tightened for approximately two (2) revolutions. The bolt may have been worked loose by lateral movement of the façade and/or roof wood members.

It is recommended that the wall anchor company return and tighten these rods. The bolts should not be tightened as to pull the façade inward, but just to reaffirm the support. The dangers relating to this condition are slightly less than that of the east wall. Given the fact that the anchor plates are in place, the parapet and façade is not likely to fall in large sections. Any failure and falling bricks would be more likely localized and not protrude as far away from the building. That being said, the sidewalk and parking lane in this area along Roslyn Street should be barricaded off.

A large HVAC unit is attached to the south wall with three (3) supports underneath and two (2) cables above at a 45^{0} angle to the wall. As shown below, the façade above the anchors is distorted and leaning in several directions. It is not known at this time exactly how this structure was anchored to the building. It is not clear whether the HVAC unit is impacting the façade given what can be visually seen, therefore the conditions of this structure are questionable. Although the area below is not open to the public, valuable equipment and employees should not be allowed on this side of the building.



This photograph depicts the lower bracket attachment method of the HVAC unit supports. The attachment points appear to be stable, however the size of the bolts may or may not be sufficient for the shear forces at the joint. The method for the upper attachment points for the cables is not known for certain. Assuming the methods used are the same as for the lower brackets shown here, structural calculations would need to be conducted to determine the capacity of the attachment point. This unit is still a concern and should be further inspected if the Engineering Drawings for its installation are not available for review.



This photograph depicts the ceiling of the jail cells located on the floor below the Council Chambers. It appears the condition was caused by water intrusion; however it is not clear where the source of the water is. With the exception of the portion of the ceiling lath hanging down, it appears to be aesthetic. That being said, if the roof is sagging, additional inspections would be necessary. This condition should be monitored over time for signs of further damage.

Conclusions and Recommendations

As already stated herein, the conditions of the building façade pose an immediate danger to the surroundings outside the building. The interior conditions of the Council Chambers and the wood roof members did not show signs of instability. All windows however, were not able to be opened. The use of the Council Chambers may continue to be used in its current capacity unless there are any further structural movement.

The removal and replacement of the brick appears to be the most effective solution. It is recommended that Swissvale contact a number of specialty masonry restoration companies for quotes on replacement. The Solicitor should be consulted to determine that if this becomes an emergency Swissvale Borough can forgo the public bidding process because of time constraints. Although the true extent of area that needs to be replaced is not known at this time, it is estimated that it would be in excess of $150,000 to address the façade issue. Given the conditions of the rest of the building, there are many additional issues that will need to be addressed.

When remediating this dangerous condition, additional areas of the building will need to be addressed. There are areas that contain potential asbestos materials. These include but are not limited to the flooring throughout the building, the duct insulation for the HVAC system in the basement, plaster and other building materials used at a time when asbestos material was allowed. Furthermore, there is a very good possibility that lead paint and lead based materials are present in the building. As a part of any remediation or renovation of the building, these issues must be taken into account and handled as required by current environmental hazard regulations.

Incorporating the environmental hazards, and structural improvements, the extent of the cost of bringing this building to a safe condition is not known at this time, the immediate cost of bringing this building to comply with current safety and structural standards may be well over $450,000 in construction and consultant fees. The areas around this building within the fall zone of the brick façade are extremely dangerous. It is not known how soon a catastrophic failure could occur, however given the rate of deterioration, immediate action should be taken for the safety of the public and those inside the building.

It is recommended that the following actions be immediately taken:

1. Place ¾" thick external grade plywood on the roof of the Public Works Garage to minimize on damage in the event of a failure to the east façade.
2. Do not allow valuable equipment or people in the Public Works Garage under the roof below the east façade as well as in the area to the south of the building.

Close off access to the sidewalk and parking area below the west façade (Roslyn Street).

3. Have the wall anchor company address the rods and bolts as described herein.
4. Consult with a masonry restoration specialist for ultimate repairs.
5. Remediate any hazardous materials.

Conclusions drawn in this report are based on observations and on information available, known and declared at the date of inspection and/or the time of preparation of this report and are made under sound engineering principles. Should additional information be uncovered or made available, we retain the right to revise or supplement our report accordingly. This report is furnished as privileged and confidential to the addressee. Release to any other company, concern, or individual is solely the responsibility of the addressee.

Sincerely,
Mitall Division of KU Resources, Inc.

George J. Anderson III, PE

CC: Clyde Wilhelm, Swissvale Borough Manager
Ronald Carrola, KU Resources, Inc.