CATHEDRAL COURTS

Conservation Report
2018-04-05

SEPW Architecture Inc.

Contents

1. Project Background and Objectives

The following Conservation Plan for the Cathedral Courts building, located at 3225 13th Avenue in the City of Regina has been prepared for Academy Housing by SEPW Architecture with the sub-consultant KGS for structural items.

It is the intent of Academy Housing to make an application to the City of Regina for a Heritage Incentive Grant. SEPW has been retained to provide information required to make the grant application. This includes outline drawings and specifications for the masonry work. The intent is that SEPW will also oversee the implantation of the work by the contractors involved.

At the time of writing of this plan, work to be included in the Heritage Incentive Grant application is to undertake repairs to the following:

- selective masonry repointing and repairs at the lower level of the building for approximately 2.3 metres above grade and at the top of the main entrance stairs at the entrance,

- repair of cracked stone lintels and broken sills that have been damaged by building settlement, weather or other factors,
- cornice repairs where damage has occurred to the profiled metal cladding,
- repointing of the chimney (included as a separate cost item and to be verified)
- associated site work related to mitigating deterioration of the masonry facades.

Other items that Academy Housing is intending to address, include the following:

- issues with frost and condensation at windows that have enclosed by the interior layout
- Re-painting of elements on west façade of the building and elsewhere on the building where needed
- installation of paving stones at the east side of the building (coordinated by owner)
- replacement of fluorescent lighting in hallways with new LED fixtures (coordinated by owner)
- replacement of emergency lighting with new LED fixtures (coordinated by owner)

Additional work, as recommended within this report, for improvements to the envelope that will have an impact on mitigating potential water infiltration into the building through the roof include:

- replacement of the slate roof on the Mansard roof portion of the building
- replacement of the asphalt shingle roofing on dormers
- replacement of associated flashing, underlayment and metal trim
- replacement of the low-sloped roof above the Mansard level

2. Documents Provided

We have received documentation from Academy Housing and the City of Regina for the purposes of this conservation plan. This documentation includes:

- Assorted drawings and specification book from 1924 addition by Puntin Architect
- Drawing set for renovations to convert into apartments from 1990 by Architects in Association
- Heritage Assessment from 1990 and breakdown of costs

3. Context & Heritage Significance

The Statement of Significance copied below is from the Canadian Register of Historic Places.

"DESCRIPTION OF HISTORIC PLACE

3225 – 13th Avenue is a Municipal Heritage Property occupying one city block located in the City of Regina. Situated at the south-west corner of 13th Avenue and Garnet Street, the property formerly known as Sacred Heart Academy was built in phases between 1910-1925 and is now known as Cathedral Court Condominiums. It is comprised of a 2 ½-storey, red brick structure, and is defined by a mansard roof.

HERITAGE VALUE

The heritage value of 3225-13th Avenue, formerly known as Sacred Heart Academy, is associated with its role as an important Catholic educational facility in the City of Regina. Founded in 1905 by the Sisters of Our Lady of the Missions, the academy moved to this location in 1910 and served as a boarding school for girls until its closure in 1969. The facility expanded twice during this period and became affiliated with the University of Saskatchewan in 1924. From 1924 until the 1926 opening of Sacred Heart College on Albert Street, Sacred Heart Academy was able to offer second-year, university arts classes in addition to the kindergarten to grade twelve instruction that it already provided. In addition to classrooms and dormitories for the Sisters and students, the academy featured music rooms, art rooms, chapel and a gymnasium which allowed for year round physical education. Though elementary school instruction was discontinued in the 1930s, Sacred Heart Academy remained a prominent source of secondary level education until its closure.

The heritage value of 3225-13th Avenue is also associated with its architecture. Characteristic of institutional buildings in western Canada affiliated with the Catholic Church, the design of Sacred Heart Academy is dominated by a mansard roof, and displays Classically inspired detailing. Built in three sections that date from 1910, 1914 and 1924, the structure is united by the continuity of the slate mansard roof, similar materials, and the Classical detailing. Part of the 1914 extension contains the building's front entrance which is marked by a portico with classical supports. The highlight of the 1924 addition, designed by J.H Puntin, remains the chapel with its Georgian-style interior incorporating a coffered, barrel vaulted ceiling, curved balustrades and period stained glass windows imported from France. Enclosed porches with panel detailing terminate the east end of the original building, and the structure's west end. The property's broad front lawn, mature landscaping and wrought iron fence create an attractive setting for the former academy.
Source: City of Regina Bylaw No. 9110

CHARACTER DEFINING ELEMENTS

The heritage value of 3225-13th Avenue resides in the following character-defining elements:

- *those elements that recall the property's historic use as a Catholic academic institution, such as the cross that tops the buildings frontispiece; the chapel with Georgian style interior, plaster barrel vaulted and coffered ceiling, curved balustrades and choir loft;*
- *those elements which contribute to its architectural significance, including its 2 ½-storey, 'L' shape plan;*
- *slate mansard roof with gable roof dormer windows;*
- *red brick exterior with rough-dressed sandstone and Tyndall Stone sills and lintels and detailing;*
- *Classical-inspired detailing, such as the sheet metal, block modillion cornice, and pedimented frontispiece, Tuscan columned portico, and a Doric frieze with triglyph ornament; stained glass chapel windows framed within a Palladian style arrangement;*
- *enclosed end porches with panelled detailing; front entrance with wooden double doors, single-pane glazing and a multi-pane transom light;*
- *landscape elements such as broad front lawn with mature plantings and wrought iron fence"*

Figure 1 North main entrance portion circa 1914 illustrating classic detailing and mansard roof

Figure 2 West elevation of the building circa 1924. Chapel can be seen to far right

Figure 3 – North façade along 13th Avenue showing line of mature spruce. 1909 portion on left side of photo.

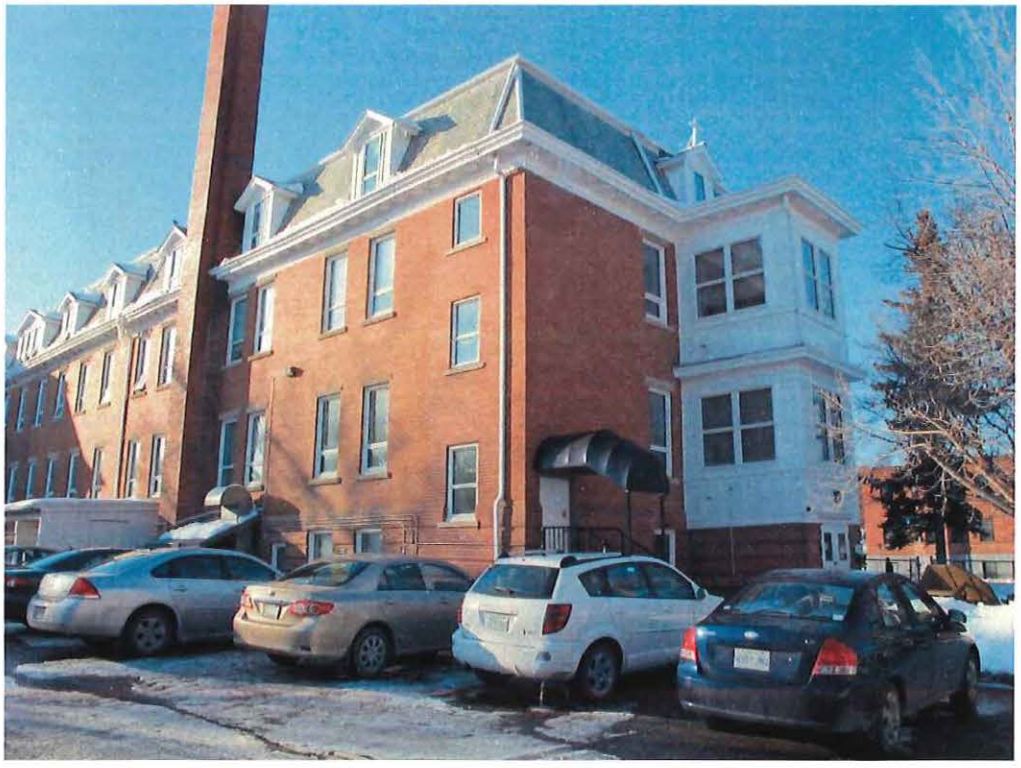

Figure 4 – South facade. 1909 portion

Figure 5 – South façade. 1924 portion – chapel with arched windows

Figure 5 – East façade. 1909 portion. Showing enclosed porch at this end

We should add the heritage defining characteristics of this building, the tooled mortar joint profile. Although this is a small thing it has a impact on the appearance of any repointing work, or repair work to the masonry wall. The original mortar joints on the building are tooled using a slightly "weathered" joint. This type of mortar joint leaves a slight recess at the top of the joint then slopes slightly outward to meet the top edge of the brick below the joint. It was also noted that the mortar joints of the 1909 and 1914 portions of the building are slightly narrower than typical modern joints are.

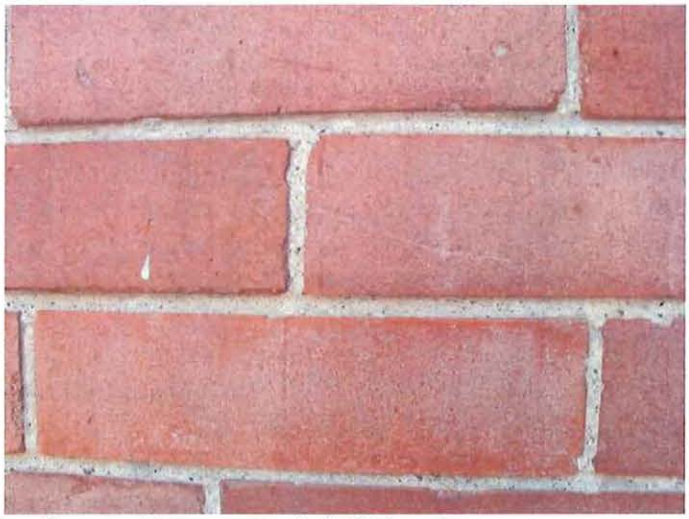

Figure 5a – "Weathered" mortar joint on east wall of 1909 portion.

4. Observations

4.1. Site in General

The site is generally flat with large spruce trees in the front lawn area. The building is set back about 58 feet from the north property line along 13th Avenue and about 30 feet from Athol Street. There is hard landscape surfacing on the east and south sides of the building. There are numerous large spruce trees in the front yard. A few are very close to the building. Large trees like this, in close proximity to the building can negatively impact the stability of the foundations by drawing moisture out of the soils. These trees are also causing the grade to slope back towards the building, creating an undesirable condition especially considering that the exposed brick masonry on the building carries right down to grade. Additionally, they drop needles and cones onto the roof that can plug drainage paths. They can also provide easy access for pests, such as squirrels, to gain access onto the roof and potentially get inside the attic or soffit areas.

There does not appear to be any storm drainage off the site, apart from surface drainage. Due to the flat nature of the site it may be beneficial to add some storm drainage within the front of the site (north side) so that water can be collected and drained off the site. This could also be

beneficial on the south side of the site, as there does not appear to be anywhere for water to drain away from the building.

There is an area at the west end of the north façade that has had loose stone material installed adjacent to the building. We believe this was done in conjunction with some re-grading to slope the ground away from the face of the building. We were not able to observe the condition of the wall below this rock due to the ground being frozen.

Hard surfacing and lack of positive grading along the south side of the building is contributing to wetting of the bricks through splashing of rain and melting snow, and wicking up of moisture into the brick masonry wall, evidenced by the staining pattern below windows on this façade.

We believe the foundations of the building are masonry, however this was not verified through any destructive testing. The 1924 addition specification notes that the foundation walls are to be constructed of brick masonry, parged on the exterior and coated with bituminous dampproofing. This appears to be substantiated by visual observations at the northwest corner of the building where the parged foundation is visible and there is evidence of brick carrying below the grade level.

The 1990 renovation drawings show a new weeping tile system installed on the inside of the foundation footing throughout the basement.

Figure 6 – Aerial image from Google Earth

4.2. Brick Masonry Above Grade

Our review and assessment of the masonry has focussed on the lower portion of the wall up to approximately 2.3m above grade. This coincides with the height of the rusticated brick work on

the lower portion of the wall. On the 1924 portion of the building this terminates at a dressed Tyndall Stone belt course. On the remainder of the building this terminates at double projecting brick courses. In general this area of the wall has experienced deterioration due to weathering, rising damp, movement, and moisture from deteriorated mortar joints at the top, projecting brick courses.

The bottom of the exposed face brick on the building generally coincides with the finish grade level around all sides of the building. Above the rusticated lower level, based on our visual observations while on site, the brick masonry appears to be in fairly good condition, with the exception of the brick on the large chimney on the south side of the building.

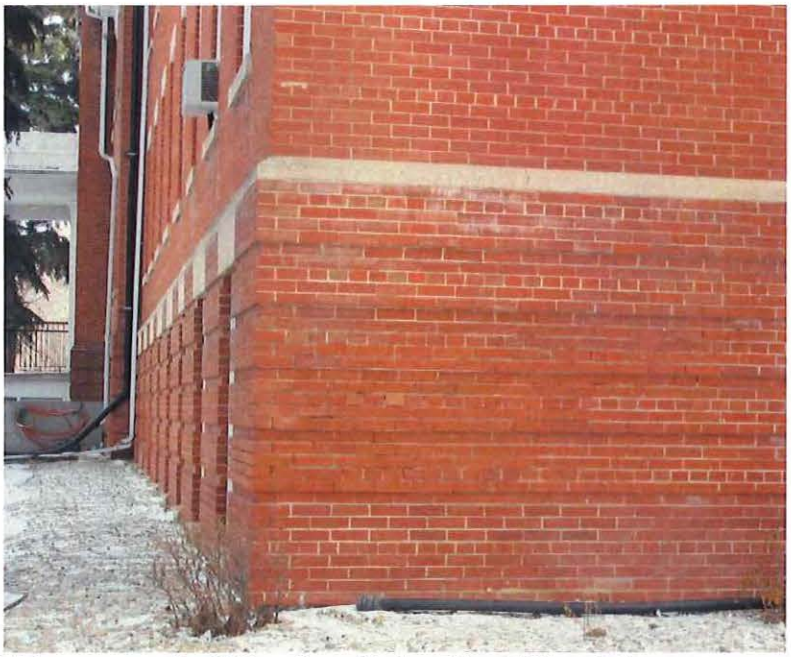

Figure 7 – Rusticated brick masonry on the 1924 portion with sloped Tyndall Stone belt course

Figure 8 – double projecting brick courses at top of rustication on 1909 and 1914 portions

North Façade

At some point in the past all except one of the brick arches of the lower windows of the 1909 portion was replaced with running bond brick supported on a steel lintel. There is still one arched brick opening just to the east of the main entrance projection. The brick arches still exist west of the main entrance on the 1914 portion.

Mortar has been replaced at some time in the past at various locations along this façade, generally along the lower bands of rustication. Currently, the mortar joints on this façade have quite a bit of deterioration. Conditions observed include:

- Weathered vertical joints, especially along the top two stepped brick courses
- Deteriorated joints with a high degree of weathering both horizontal and vertical
- Localized areas of missing horizontal and vertical joints
- Very soft mortar (powder) localized in areas west of the main entrance
- Localized areas at the west end of the facade that has been previously raked out but mortar not replaced (appear to have been ground out as some damaged bricks noticed)
- Staining of brick between windows below stepped brick courses

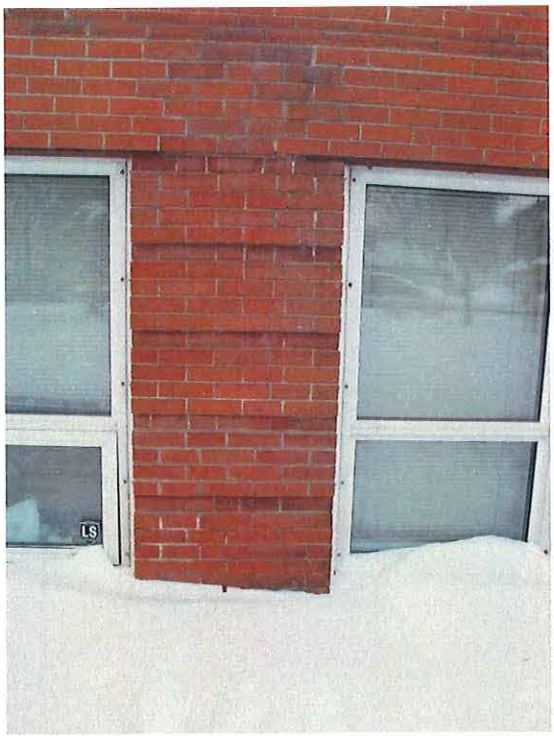

Figure 9 – running bond on steel lintels (replaced brick arch lintel)

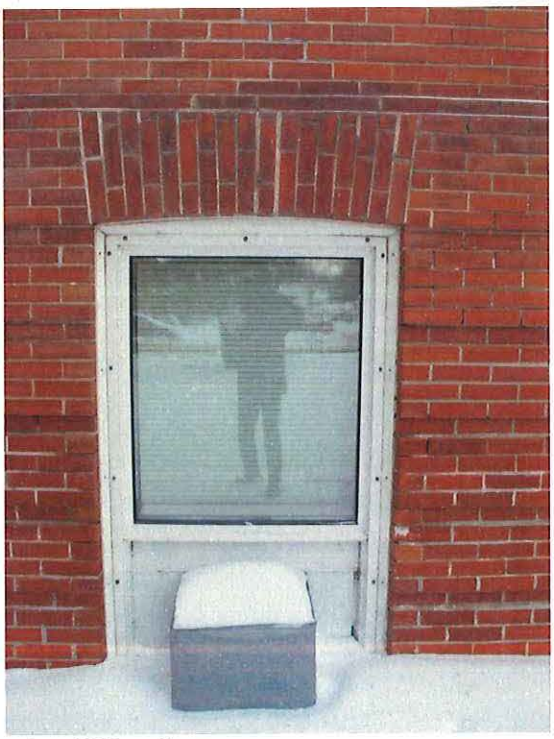

Figure 10 – remaining brick arch lintel on 1909 portion

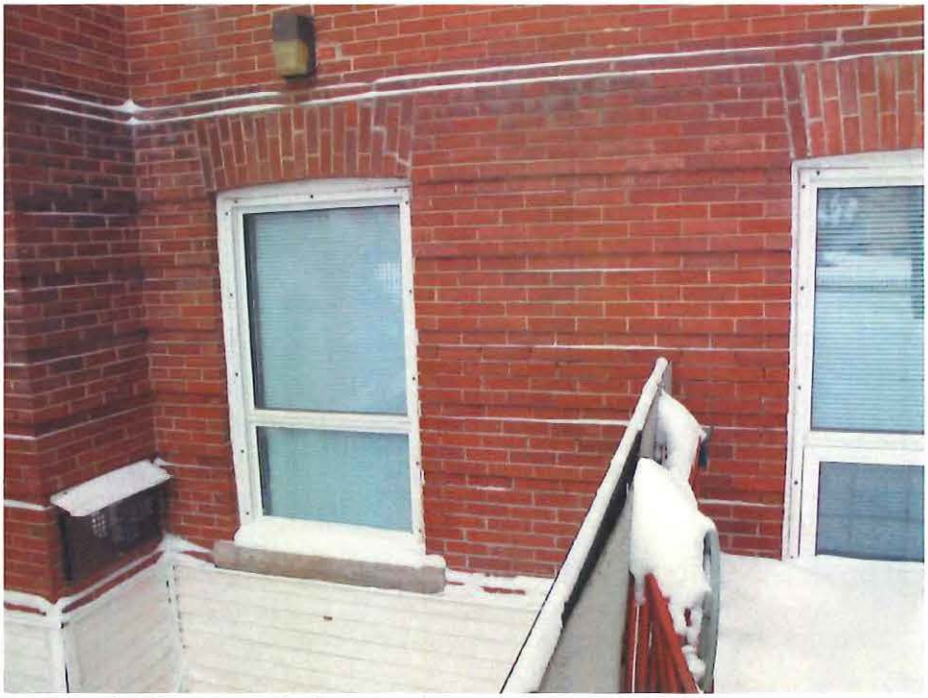

Figure 11 – Area of 1914 portion with deteriorated mortar joints

Figure 12 – Area of 1914 portion with deteriorated mortar joints (note dark staining at stepped bricks)

Note the headers in bond courses (below), typical in the 1924 portion but not in the 1909 or 1914 portions of the building (above). The 1909 and 1914 portions will likely rely on metal brick ties to

bond the face brick to the back up wall. The condition of the brick ties should be reviewed when the opportunity presents itself to determine if any remedial work needs to be done.

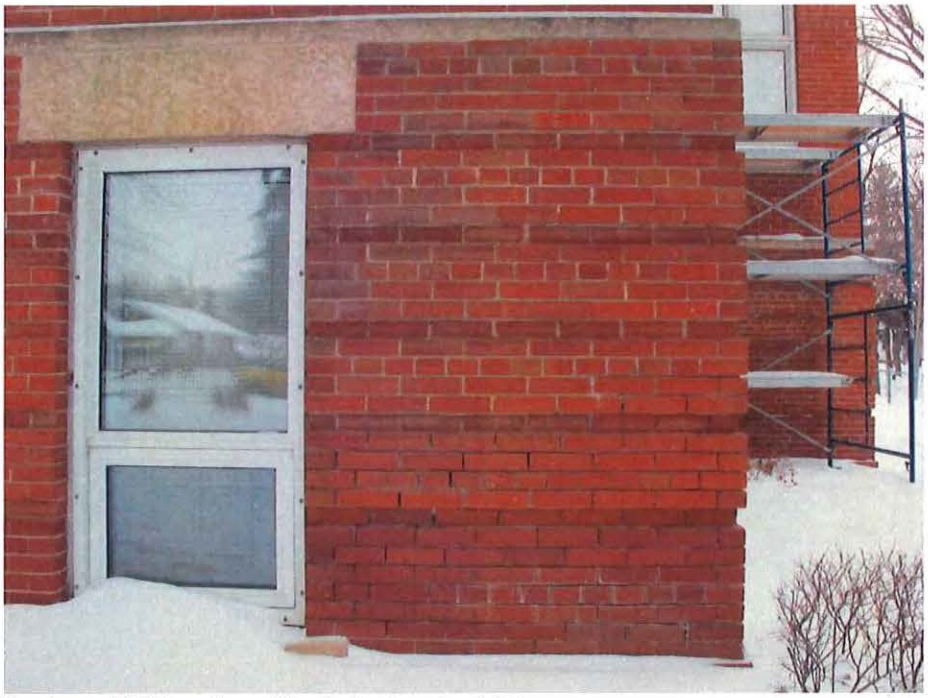

Figure 13 – Area of 1924 portion with raked out mortar joints

There are areas around the main entrance on the North side of the building where the brick has broken and fallen out, likely due to the differential movement between the stair structure and the masonry wall. Some areas of brick appear to have been replaced at some time in the past, such as at the west side of the stair, possibly when the ramp was installed. The pilasters on the east side of the stair are damaged. The small pedestals at the bottom of the stair need repointing below the stone cap.

Figure 14 – Damaged masonry at both sides of the main entrance doors at top of stairs

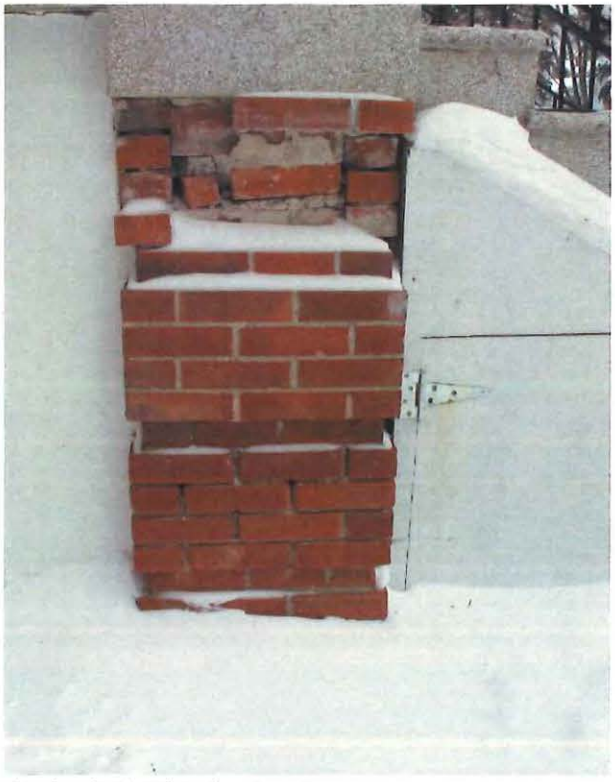

Figure 15 (left) – West side of stair – similar damage at landing both sides of main entrance
Figure 16 (right) – East side of stair – bricks missing on pilaster of main entrance

West Façade

The mortar joints on the West façade were found to be weathered to varying degrees. Some areas, such as around the southwest corner were in fairly good condition.

Conditions observed include:

- Mortar in some areas was in fairly good condition
- Localized areas of missing horizontal and vertical joints
- Areas where up to 50% of the mortar requires repointing due to weathering

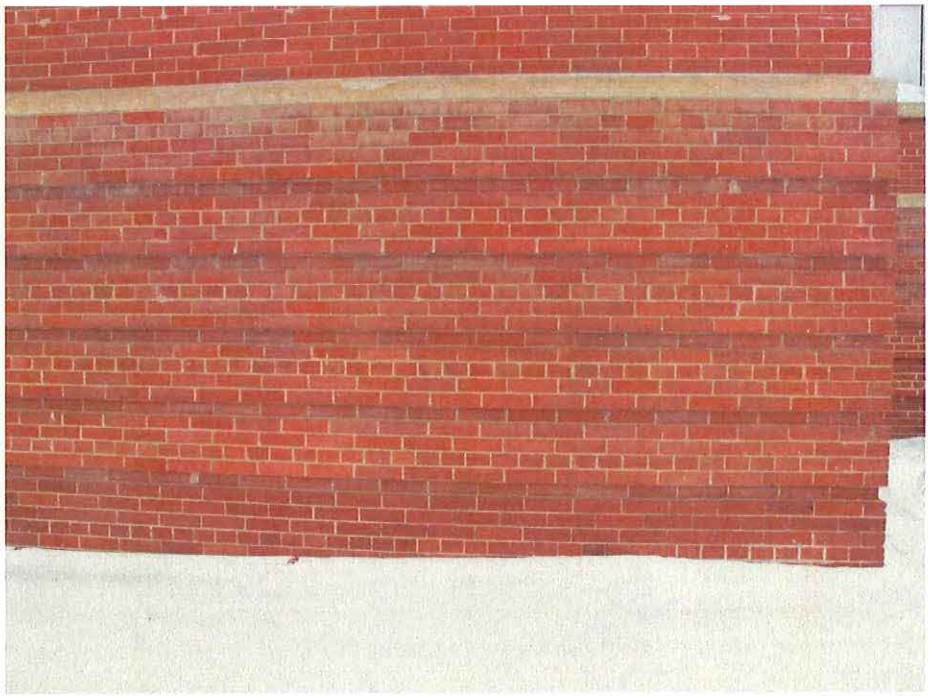

Figure 17 – Southwest corner of West façade – generally in good condition

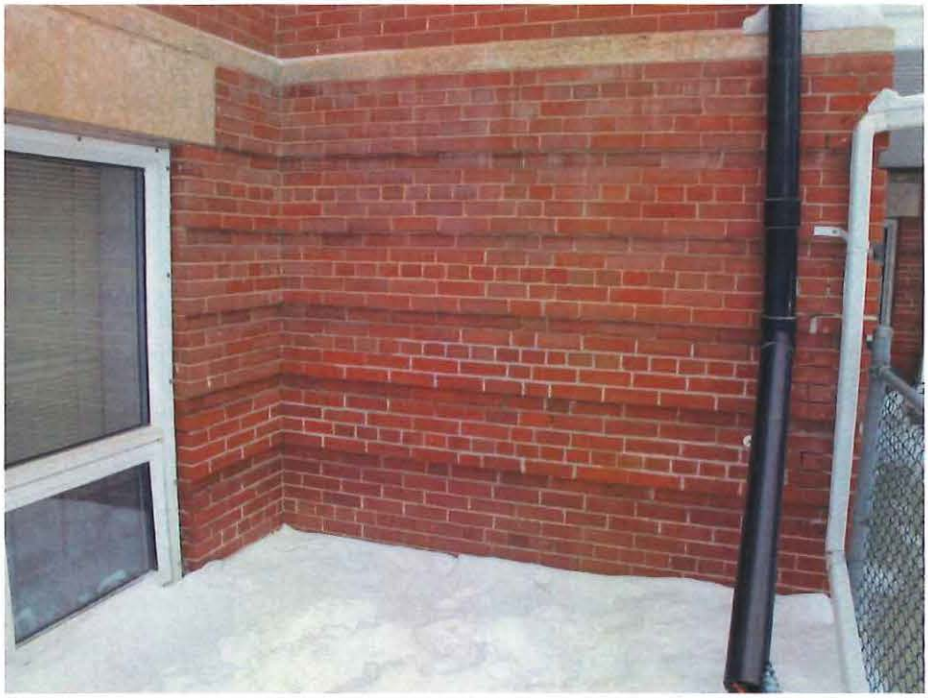

Figure 18 – Southwest corner of West façade – areas where more deterioration was noticed

South Façade

The South façade varies in condition. The area right around the west where the building begins to step back is in a similar condition as the west porch and surrounding faces. Where the building extends south (the 'L' shape created by the chapel) there is an area where the lower portion of the wall has had the masonry completely replaced at some point in the past. The bricks used in this area are more modern bricks, with harder Portland cement mortar used in the masonry. No header, bond course has been installed, rather all brick are laid in a running bond pattern. A vertical crack has appeared through the brick masonry below on of the arched windows. The vertical crack is likely caused by expansion and contraction of the harder masonry without any built in control joints. We do not know the reason why the masonry was replaced in this area of the wall.

The area bounded by the courtyard on the South, at the 1914 and 1909 portions of the building, appears to have a hard surface built right up to the building. There was noticeable splash up on windows at this location, and the brick was wet at the lower level, wicking moisture up from the ground. It should also be noted that the eaves of the cornice in this location are in poor condition, allowing water to drip off of the roof from three storeys above.

Generally, however, the mortar along the south façade appeared to be in fairly good condition. Likely due to the drying out nature of the south exposure towards the sun. The east façade of the chapel that is exposed to this courtyard is also in fairly good condition.

The vertical joints of the stepped upper two courses of brick of the rusticated masonry are severely weathered in many areas.
Conditions observed include:

- Mortar in most areas was in fairly good condition
- Localized areas of missing horizontal and vertical joints
- Vertical crack through brick and mortar in area where modern bricks and Portland mortar were used
- Areas where brick is stained due to wicking up moisture from ground level
- There are areas of the upper wall that have experienced on-going wetting due to failure of the cornice drainage system and ice build-up caused by heat loss through the envelope

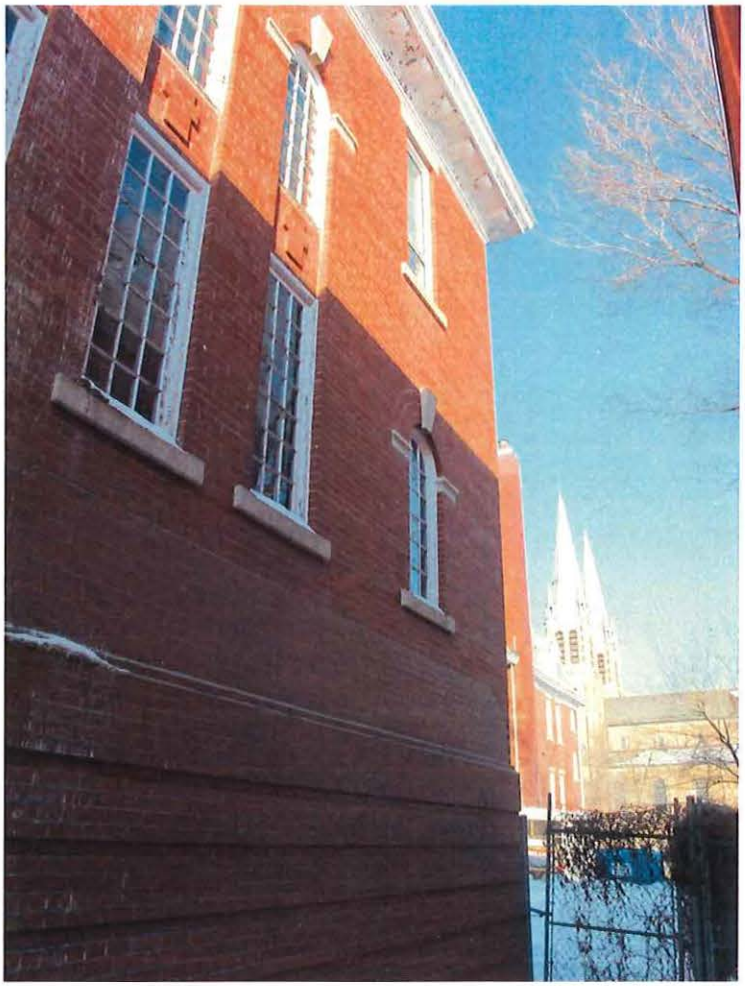

Figure 19 – South face of the Chapel – note area of running bond where modern brick and mortar were used

Figure 20 – South façade where wicking up of moisture is evidenced by the efflorescence on the bricks

Figure 21 – South façade – note running bond above windows where original brick arches have been replaced

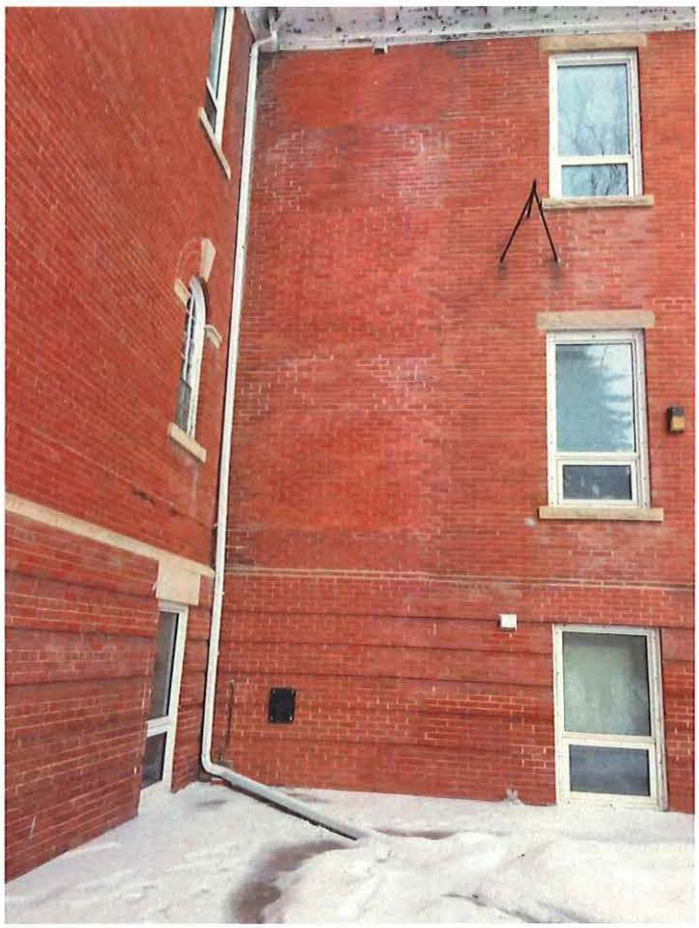

Figure 22 – Join of 1924 addition with 1914 building – water staining on masonry from roof area above

East Façade

The east façade has had some masonry repairs done to it recently. Mainly associated with repair of broken limestone lintels and sills. There has also been some minor localized repointing. As work has been done at various times in the past on this area of the building and elsewhere, it is difficult to ascertain exactly which repairs were done with the stone repairs.

The method used to repair the stone lintels and sills at this end of the building entailed removal and replacement of the brick masonry above and below the affected windows. The resultant work has a significant impact on the historic masonry work on the building due to full removal of the original work. It has been replaced using a different treatment of the final mortar joint. The original mortar joints are tooled in a slightly "weathered" joint, whereas the reinstalled masonry has used a "coved" tooled joint. Further to this, the brick work was not cleaned off sufficiently after work was completed, leaving mortar around the edges of the bricks. The removal and replacement of the brick masonry has also left some of the bricks damaged. There was no effort to replace these broken bricks and they have been reinstalled into the wall.

Figure 23 – East façade – note brick joints in area of replaced wall above and below windows

The porch on the East side of the building is experiencing some movement, as illustrated by the open crack and repointing work adjacent to it.

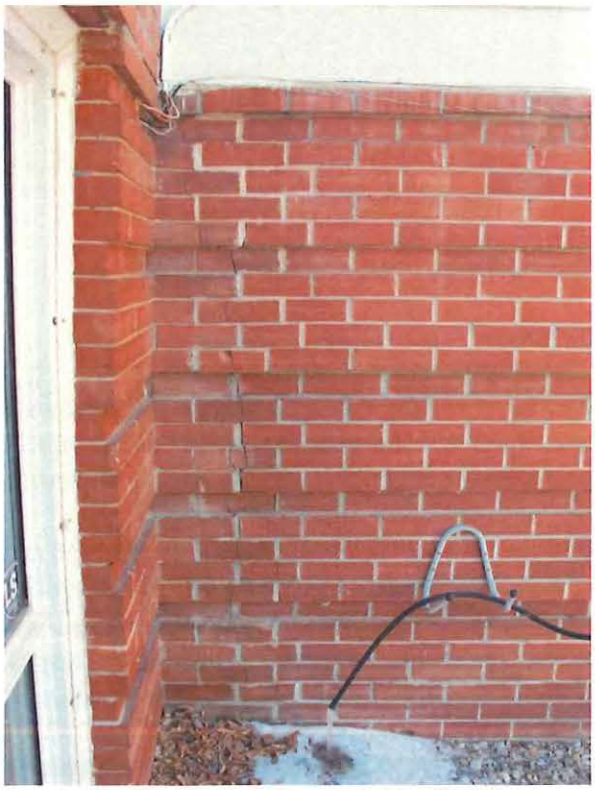

Figure 24 – Vertical crack on south side of porch on east side of building

Chimney

When the site was visited at various times during February and March it was noticed that there was considerable wetting of the bricks on the tall chimney at the south side of the building. This condition was reported to the building owner who contacted a mechanical company to do some investigation. It was found that the flexible metal liner of the chimney had deteriorated and recommendation was made to install a new metal flue into the chimney when weather permitted the shut down of the heating system of the building. We do not know how long this condition has existed. Saturation of the masonry during cold weather can cause damage to the bricks and mortar through repeated freeze/thaw cycles. It should be noted that there is some noticeable spalling of the face of the bricks on the chimney. Mortar in the wet areas is very friable on the surface and the joints are quite heavily weathered on parts, more noticeable on the south and west sides. The vertical mortar joints get progressively wider higher up on the chimney. We suspect that this is the result of everything expanding due to freezing and that the interior masonry of the chimney may also be in suspect condition. There is a noticeable bulging in part of the chimney and obvious vertical cracks through the bricks, that have been repaired at some time in the past.

We are recommending removal of the upper part of the chimney, as it is overly high, rebuilding of the chimney from the eave line up to 1 metre above the upper roof level, and repointing of the remainder of the chimney. More investigation may be necessary. We propose similar brick detailing at the top of the rebuilt chimney to that on the existing chimney at the west end of the building. Reducing the height of the chimney will make future repair and maintenance more reasonable in effort in cost.

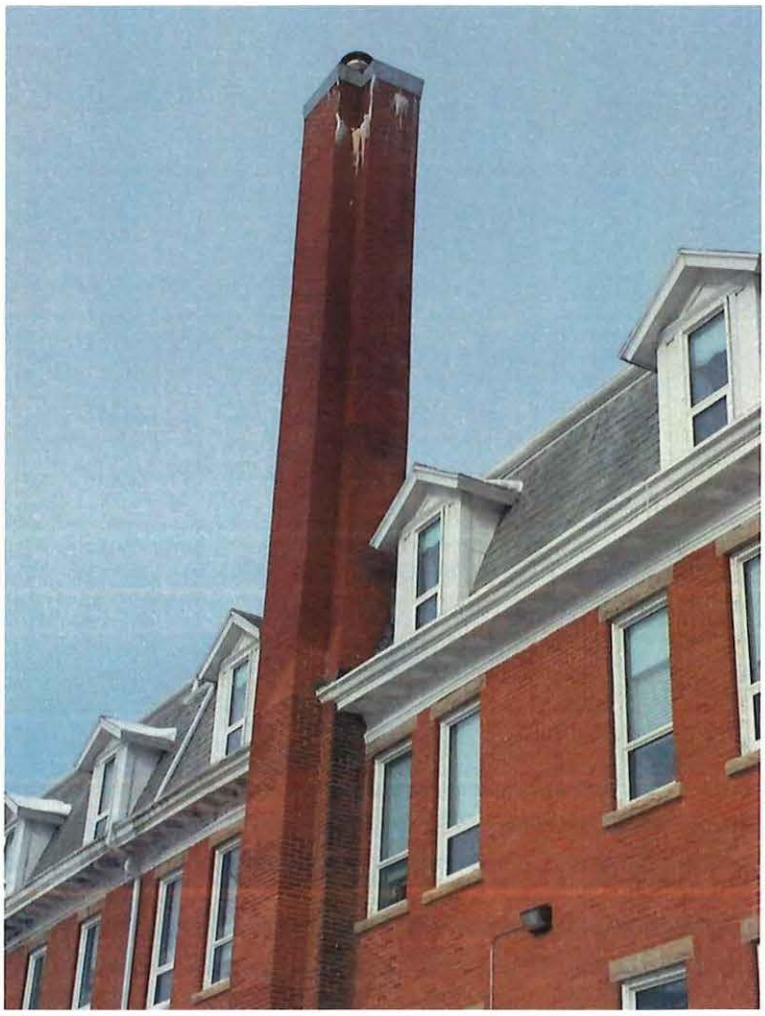

Figure 25 a) – Chimney is wet from combustion gasses seeping through flue liner.

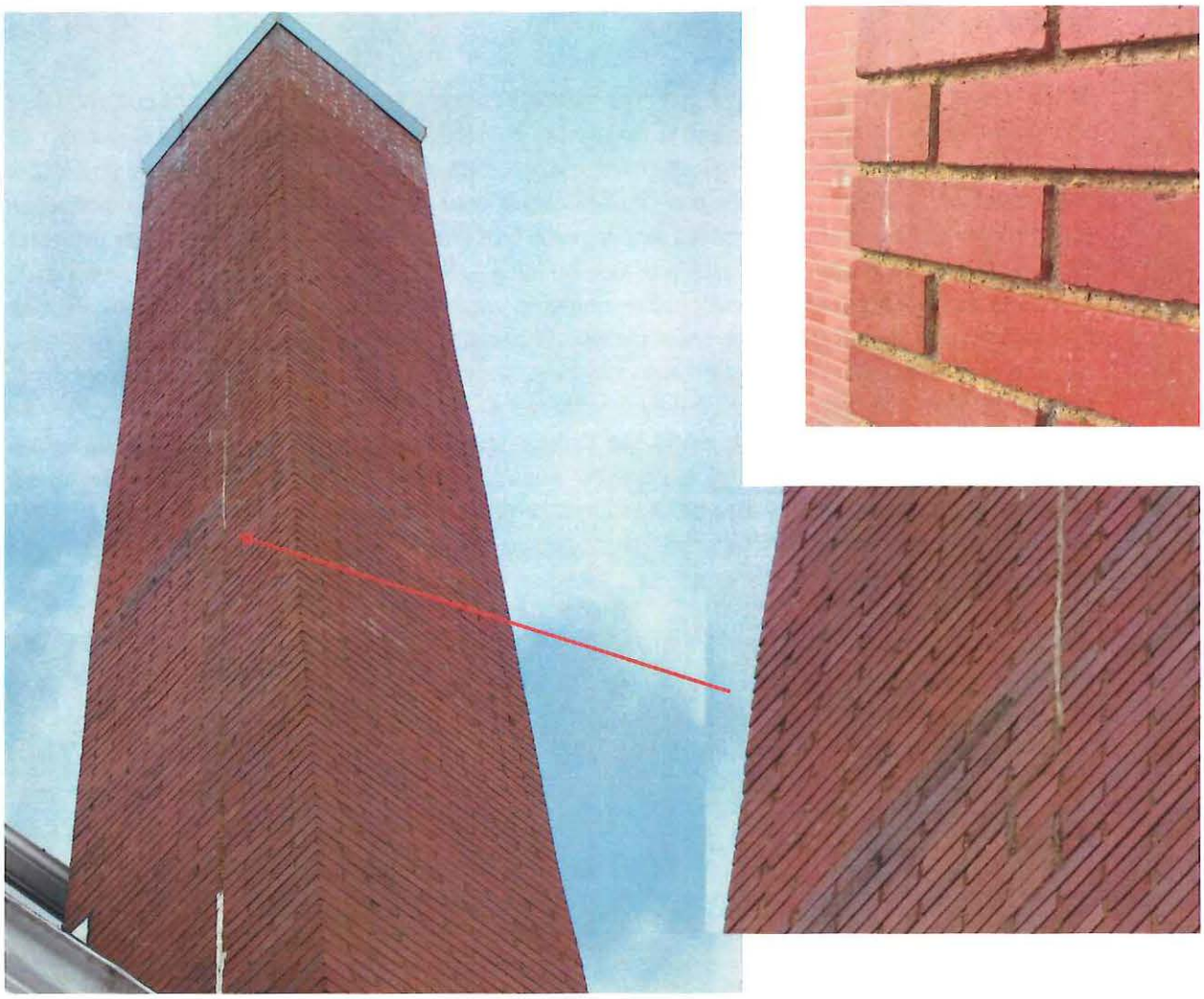

Figure 25 b) – (left) Bulging and vertical split through masonry
Figure 25 c) – (right top) weathered mortar joints starting about 12 feet above ground level
Figure 25 d) – (right bottom) blow up of chimney joints and seam

4.3. Stone Lintels and Sills

Detailing of the fenestration on the building includes stone lintels and sills. The 1909 and 1914 portions of the building use dressed limestone, whereas the 1924 portion uses sawn Tyndall Stone in these areas.

The sills are all lug style with slight slope of the top towards the exterior. A drip is noticeable in the stone sills. Many of the stone sills and lintels are cracked. A few have experienced severe breaks. These cracks allow moisture into the stone and wall which further advances the deterioration. Therefore it is important to seal these cracks to prevent water ingress.

Based on our observations there is not any significant differential movement of the lintels. The engineers report notes that the windows are narrow and the lintels are not subject to significant

loads.

Stone repairs should follow proper conservation methods. Some masons are trained in stone repair methods. Some product manufacturers, such as Cathedral Stone provide certification training for the use of their stone repair products and methods. We recommend the use of these proprietary products and certified installers.

The stone repairs that were completed on the east side of the building in 2017 were undertaken by removing portions of the brick masonry above and below the windows to remove the stones for repair and replacement. This impacts the appearance of the historic masonry on the wall and it is something we would like to avoid in conducting the repairs. According to the masonry contractor who did those repairs the stones are 8" in depth (two wythes of brick). See figure 20.

It is our recommendation that the stone repairs be done in-situ rather than removing them. For the lintels, this can be accomplished by crack fill repairs on lintels that are not showing any sign of displacement. On lintels where movement is noted or where the crack is more severe, drilling and pinning diagonally through the face of the stone will be done, using a proprietary anchoring mortar to embed stainless steel anchor pins. The face can be patched using a proprietary matching repair mortar. The cracks in the face can be injection filled. Loose stone material can be removed to a sufficient depth to allow for bonding of the repair mortar. Materials suggested are Jahn M80 anchor setting mortar and Jahn M70 limestone repair mortar.

For the stone sills that are cracked we recommend repairing in-situ. Similar methods can be used to fill narrow cracks as described for the lintels. That would employ injection crack fill and sufficient removal of any loose stone material around the crack to sufficient depth to allow for bonding of the repair mortar. Where there are large loose pieces of stone that have broken away, these may be removed, loose material cleaned away, and then set in place using a setting mortar and pinning in place or anchoring the material. The resultant crack can be repaired using proprietary repair mortar. Piecing in may be required where large pieces of stone are missing or where the break is at a corner or edge. Finding matching stone would be the greatest challenge for piecing in work. See Figure 27 for example of a severe crack in the sill where a large amount of stone material is missing.

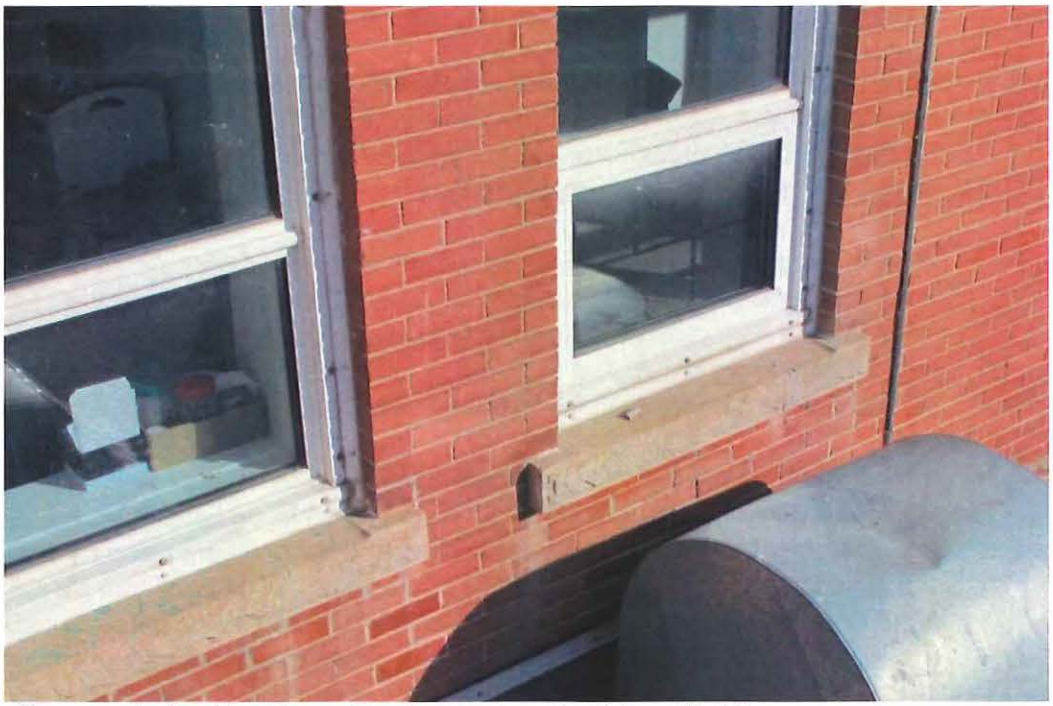

Figure 26 – Example sills with evidence of previous repairs on South face of building

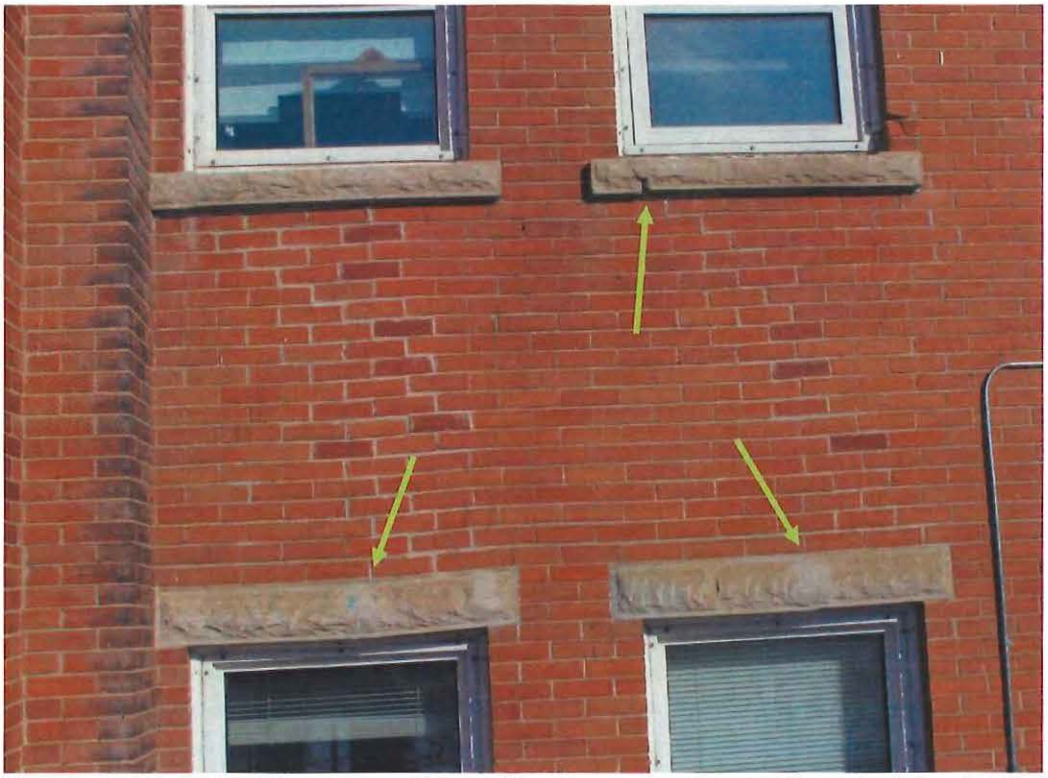

Figure 27 – Examples of cracked stone sills and lintels with evidence of previous repairs on South face beside chimney

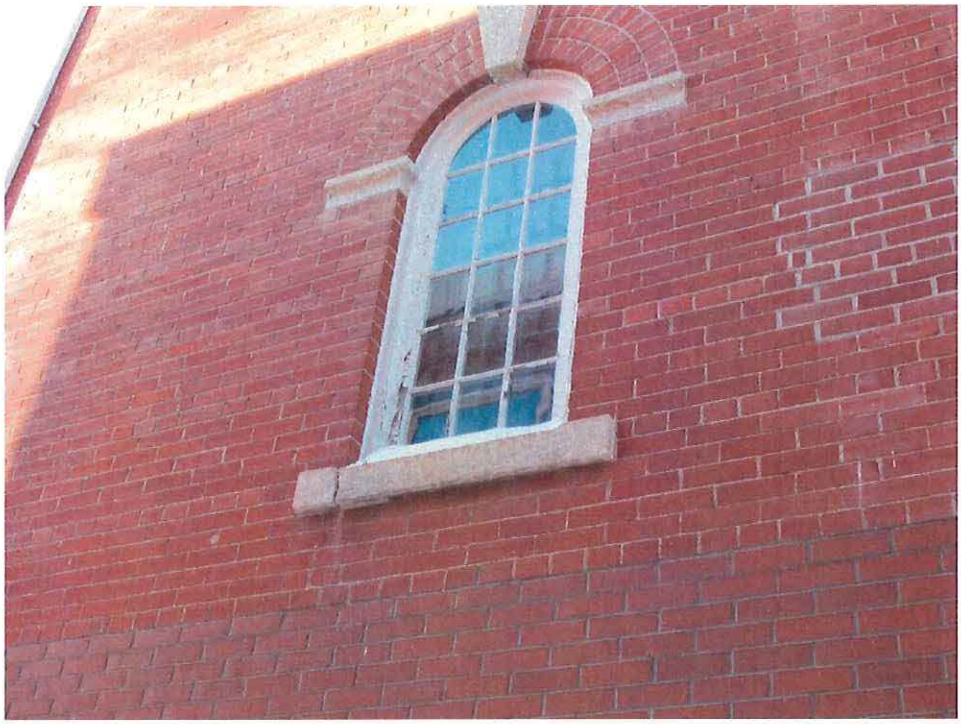

Figure 28 – South face of Chapel showing severely cracked Tyndall Stone sill

Figure 29 – South face of Chapel showing cracked Tyndall Stone sills on two windows

Figure 30 – Cracked limestone sill on South face of building

4.4. Profiled Metal Cornice

All portions of the building, including the original building and the additions incorporate a wide profiled cornice at the top of the masonry walls, below the Mansard roof. The cornice is constructed of profiled metal with modillion elements at the soffit of the overhang. A small section of the cornice was opened up on the 1909 portion of the building to observe the construction. This was done in an area where the cornice has experienced damage and was in poor condition.

The overhang is supported by wood 2 x members extending out from the roof and wall framing at the bottom of the Mansard roof. The 2 x members have a shiplap sheathing on the top side, over which is a profiled roof area. The cornice appears to have been intended to be formed as a wide gutter, collecting water off the Mansard roof and then draining at downspouts that poke through the cornice overhang. The metal profile appears to be continuous from the top of the cornice roof to the soffit, forming the crown mould profile. The soffit has brackets formed from metal, set into the flat soffit area. These were presumably all soldered seams. Some have come loose. Areas of the profiled metal have come loose from the soffit and are distorted.

At the time of one of our visits large icicles had formed between the profiled metal and the soffit. These presumably have forced open the two metal pieces, allowing birds and other vermin to enter the soffit.

The upper surface of the cornice is finished with an EPDM roofing that is adhered to the sheathing. A 2 x 4 member on the flat, provides a small curb to keep water from running over the edge of the cornice.

Paint on the profiled metal is peeling off around all areas of the building. This is common for painted galvanized metal. The 1924 specification calls up white lead and linseed oil as the medium for painting. Removal of the paint should be done using proper hazardous material procedures and clean up. Removal areas should be hoarded off so that dust from the paint removal does not spread around the building.

The cornice on the South face of the building appears to be in the worst condition. This is likely due to more direct sunlight melting snow and heat loss through the envelope causing ice damming conditions on the top surface of the cornice.

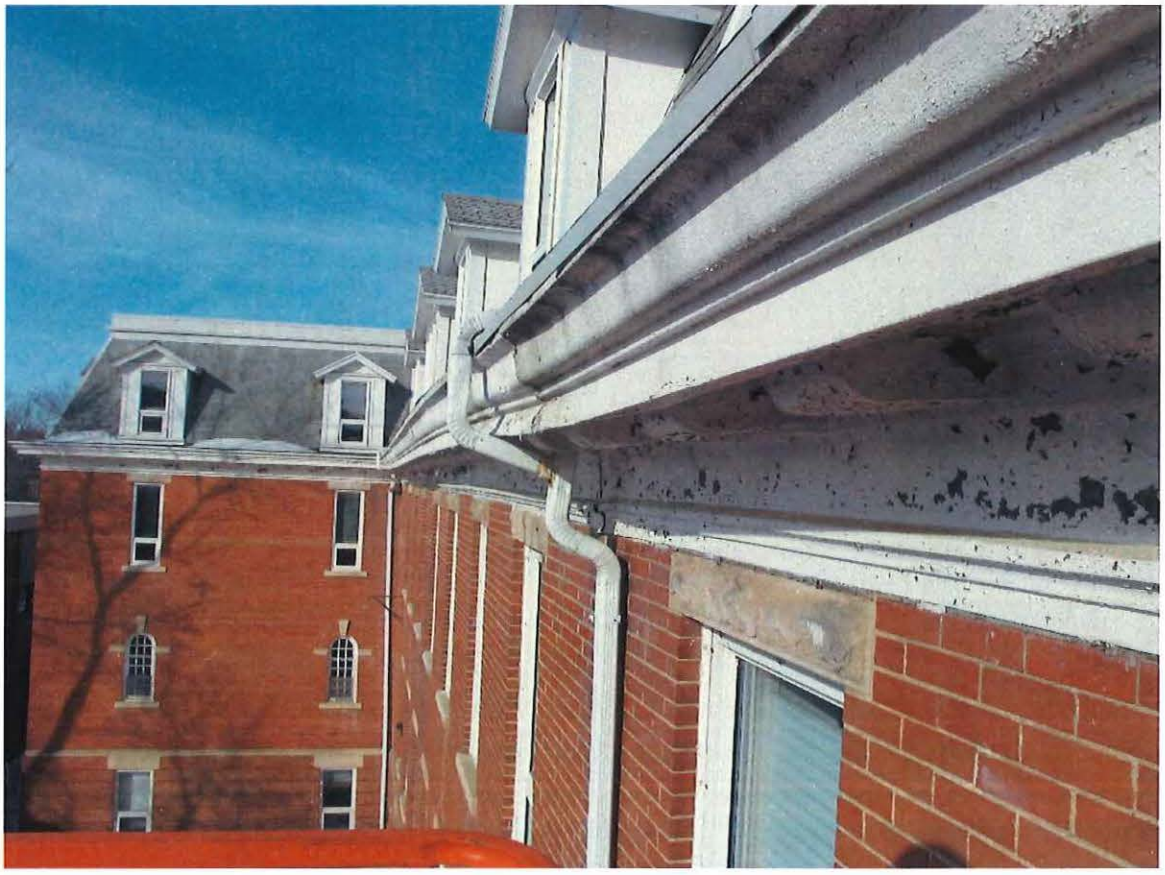

Figure 31 – profiled metal cornice on south face – distortion along lenthe

Figure 32 – profiled metal cornice on south face – showing profile at join

Figure 33 – profiled metal cornice on south face – noticeable deflection

Figure 34 – showing wood framing and furring (note bird nest)

Figure 35 – top side of cornice with EPDM roofing (wet condition at chimney)

Figure 36 – top side of cornice with EPDM roofing and roof patch material at chimney

Figure 37 – top side of cornice with EPDM roofing – at least one roof drain in the cornice appear to have been closed off (red arrow).

4.5. Slate Roofing

The Mansard roof on the entire building is clad with a green slate tile. The slate tile is likely original to the building. The condition of the slate varies around the building. In some areas observed on the South roof of the 1909 portion the slate is broken and missing and fastened in by using screws through the face of the tile. On areas around the building there is roofing tar that must have run onto the face of the slate during a re-roofing installation and never cleaned off.

The 1924 specifications call up the slate as, "natural unfading green Standard No. 1 Bangor slate". The specifications also call up the dormer roofs to be clad with slate. They are currently roofed with asphalt shingles. The exposure of the slate on the 1909 portion is about 14" x 8". The slate observed at one area missing a tile illustrates that the slate tile is head lapped so there is three slate coverage.

Where the slate is missing it should be replaced. The flashing around the dormer roofs should be replaced (none is evident). Some joints have been caulked, perhaps to address moisture ingress at some point in time. There may be limited tradespersons who can do the slate repair work. Consideration should be given to replacing the areas of the slate roof with the most damage. The areas where screws have been installed through the face of the slates should be observed periodically to ensure that any damage can be addressed.

Figure 38 – South façade - missing and broken slates and fasteners through face of slates (common around building)

Figure 39 – South façade – asphalt or tar on slates (common around building)

Figure 40 – South façade – roof caulk at dormers; missing top row of slates (note asphalt shingles on dormers and no metal flashing)

Figure 41 – South façade – plugged off roof drain location (below downspout). Also note broken, loose slates with face fastening.

5. Recommendations

5.1. Site Drainage and Tree Removal

1. North side/East side
    a. Remove two large spruce trees that are closest to the building on the north side and one deciduous tree on east side
    b. Regrade yard to slope away from building
    c. Build in mowing strip of clear draining rock with timber border at building – ensuring that the grade at the bottom of the rock drains away from the building. Top of rock to be at bottom of first course of exposed brick
2. South side
    a. Remove hard surfaces next to building that are causing ponding
    b. Re-landscape next to building installing a fibre control joint between any hard surfaces and the building. Use semi-pervious material that will allow some water to drain into the soil but with a positive slope away from the building.

c. Drainage path to be determined on south side of building. May entail installing a catch basin and drain to storm sewer. (to be determined)

5.2. Repointing and Brick Repairs

1. Repoint using pre-packaged natural hydraulic lime mortar, matching colour to original as closely as possible. King HLM 350 would be a suitable weak mortar that has lime mortar characteristics.
2. Have HLM 350 mortar tested for strength and air entrainment prior to using in wall
3. Match mortar profile. Rake back to slightly "weathered" profile
4. Stipple face of set mortar using stiff brush to lightly expose aggregate
5. Replace missing bricks using either bricks reclaimed from an unobvious location of the building (side of main entrance stair possibly) or new bricks matching size and colour
6. Use King NHL 500 for bedding bricks
7. Moisture cure and protect from weather
8. Install in seasonal weather above 5 degrees C
9. Have mason provide a description of all methods and materials to be used prior to proceeding and to demonstrate their work process at all stages from cut out, mixing, pointing and tooling
10. Ensure all areas of brickwork affected are cleaned and site is cleaned
11. Refer to draft specification

5.3. Stone Lintel and Sill Repairs

1. Repair stone lintels and sills in-situ
2. Use stone conservation repair techniques and materials
3. Use qualified stone conservation masons (with credentials)
4. Use proprietary products such as Jahn M70 limestone repair mortar and Jahn M80 Anchor setting mortar
5. Use certified Jahn product installers (with credentials)
6. Match repair mortars to colour of stones being repaired (Tyndall stone and limestone)
7. Have mason provide description of work method and materials and provide a mock up in an inconspicuous location
8. Include piecing-in work where severe open joints occur
9. Refer to draft specification

5.4. Chimney

1. Additional investigation of what condition mortar, interior masonry and ties are in.
2. Remove upper portion of chimney. Rebuild from approximately eave height to 1 metre above upper roof level. Repoint remainder of chimney.
3. Use King HLM 500 premixed mortar matching colour of original mortar as closely as possible for setting of rebuilt masonry. Use HLM 500 as repointing mortar for use on remainder of

chimney repointing, following manufacturer's written instructions for mix as pointing mortar, requiring a dryer mix.
4. Test HLM 500 mortar for strength and air entrainment prior to using on chimney
5. Scaffold chimney for proper work surface and so it can be hoarded in for weather protection and moisture curing
6. Follow procedures as for repointing of brick on lower wall area
7. Refer to draft specification

5.5. Cornice Repairs

1. Remove lead paint using proper hazmat methods and control dust
2. Clean and etch galvanized material that will remain
3. Where profiled metal is damaged beyond reasonable repair replace with matching profile
4. Remove EPDM roofing on top of cornice; replace rotten areas of wood deck (leave sufficient EPDM below metal flashing at the bottom of the slate roofing to allow tie in of roofing attempting to carry top edge of membrane underneath the existing metal flashing
5. Install wood blocking in soffit of cornice (fir or treated wood) at each outrigger for securement of soffit
6. Install new and salvaged profiled metal to fascia of cornice overlapping with top of cornice and secured to soffit
7. Solder repair any open seams of the metal brackets on the underside of the cornice
8. Re-secure all areas of soffit and ensure profiled metal fascia is secure to soffit (galvanized or stainless steel fasteners)
9. Repaint all metal using suitable galvanized metal primer (over etched surface) and two coats of premium quality paint (gloss coat)
10. Additionally, the drainage of the entire cornice should be reviewed and either reinstated as it was originally intended

5.6. Mansard Slate Roofing

1. Consider replacing entire slate roofing on Mansard roof area
2. Salvage all good slates for re-use in re-roofing
3. Obtain matching Vermont green slate (samples for approval) match thickness of original (1/4" minimum - to be confirmed) with punched nail holes
4. Review historic photos and details of building to determine best method of draining upper low slope roof. Remove and reuse existing gutters if suitable
5. Replace rotten wood sheathing using dimensional shiplap sheathing
6. Install moisture impervious valley flashing at all dormer and valley locations and at bottom of mansard roof, overlapping EPDM roofing membrane turned up the sloped roof
7. Install breathable underlayment over remainder of roof area
8. Install profiled lead coated copper flashing at all valley locations and intersections
9. Install lead/copper step flashing at all chimney locations and brick work
10. Install new and salvaged slates to match exposure of original roof (7 ½")

6. Opinion of Cost

The following is our opinion of costs. With the exception of the site work, these were arrived at through discussion with a general contractor and trade contractors. We believe these are as accurate as can be determined without having a complete set of Construction Documents to bid from. The site work is budgeted as an allowance at this time, until a scope of work can be determined.

Site Work (Priority 1)

Tree removal (2 on north side and 1 on east side) - allowance	$6,000.00
Regrading North Side and reinstate lawn – plant 3 new trees - allowance	$10,000.00
Remove concrete surface on South side courtyard and regrade - allowance	$10,000.00
New semi-pervious patio area/swale and landscaping - allowance	$10,000.00
Subtotal	$36,000.00
General Conditions @ 10%	$3,600.00
General Contractor Fee @5%	$1,800.00
Subtotal	$41,400.00
Add 20% Contingency	$8,280.00
Subtotal	$49,680.00
Consultant Fees/Expenses @12.5%	$6,210.00
Total Estimated Cost (exclusive of taxes)	**$55,890.00**

Masonry Repointing and Stone Repairs (Priority 1)

Repointing and brick replace North and West	$51,000.00
Repointing and brick replace South and East	$24,000.00
Sill and lintel repair North and West	$24,000.00
Sill and lintel repair South and East	$22,400.00
Subtotal	$121,000.00
General Conditions @ 10%	$12,100.00
General Contractor Fee @5%	$6,050.00
Subtotal	$139,550.00
Add 20% Contingency	$27,910.00
Subtotal	$167,460.00
Consultant Fees/Expenses @12.5%	$20,930.00
Total Estimated Cost (exclusive of taxes)	**$188,390.00**

Chimney (Priority 2)

Includes scaffolding
Remove upper approximately 30 ft of chimney
Rebuild approximately 15 ft section of chimney
Repoint remainder of chimney

Subtotal	$120,000.00
General Conditions @ 10%	$12,000.00
General Contractor Fee @5%	$6,000.00
Subtotal	$138,000.00
Add 20% Contingency	$28,800.00
Subtotal	$172,800.00
Consulting Fees/Expenses @12.5%	$21,600.00
Total Estimated Cost (exclusive of taxes)	**$194,400.00**

Cornice (Priority 3)

This currently deals with the cornice on the South side of the building only. Removal and re-painting of the remainder should be considered to maintain appearance of this heritage defining element around the remainder of the building. The highest cost consideration of this is in the removal of the lead paint. Paint test should be done to confirm the existing paint on the building contains lead. There may have been some remediation done in the past, but we do not have any evidence of this.

This work could proceed with work to the Mansard roof as there are roofing flashing elements that should carry through from the Mansard to the flat roof of the cornice. In the interim the flat roof area could be patched and areas around drains cleared so water can be taken off the flat roof areas.

Lead abatement (50m length only)	$40,000.00
Removals and wood blocking	$24,000.00
New profiled metal to match existing (allowance)	$54,000.00
Painting	$12,000.00
Strip in EPDM roofing	$15,000.00
Subtotal	$145,000.00
General Conditions @ 10%	$14,500.00
General Contractor Fee @5%	$7,250.00
Subtotal	$166,750.00
Add 20% Contingency	$33,350.00

Subtotal	$200,100.00
Consulting Fees/Expenses @12.5%	$25,010.00

Total Estimated Cost (exclusive of taxes)	**$225,110.00**
Lead remediation and repainting for remainder of building would add an estimated cost of $208,035 including General Contractor, and consulting fees (exclusive of taxes)	**$208,035.00**

Mansard Slate Roofing (Priority 3)

At the time the Mansard roof is replaced it would be a good idea to review heat loss through the roof and canopy area. Heat loss can contribute to the formation of ice that dams up and can damage the metal cornice. We are not aware of any water infiltration that may be occurring but further investigation may be necessary prior to the replacement of the slate roofing.

Allowance for removal and salvage of good slates
Allowance for new and salvage slate and install
Allowance for EPDM to top of cornice

Subtotal	$320,000.00
General Conditions @ 10%	$32,000.00
General Contractor Fee @5%	$16,000.00
Subtotal	$368,000.00
Add 20% Contingency	$73,600.00
Subtotal	$441,600.00
Consulting Fees/Expenses @12.5%	$55,200.00

Total Estimated Cost	**$496,800.00**

Electrical Upgrades to Lighting (Priority 1)

Energy conservation can be achieved by replacing existing light fixtures with more energy-efficient LED lights. These will be replaced throughout the corridors, and include emergency lighting, exit lights and exterior lights. Replacing these will reduce the ongoing operating costs of the building.

LED fixtures in corridors - allowance for 75	$10,000.00
Exterior lights	$2,000.00

Emergency lights	$6,800.00
Exit Signs	$4,800.00
Subtotal	$23,600.00
Add 20% Contingency	$4,720.00
Subtotal	$28,320.00
Consulting Fees/Expenses N/A	
Total Estimated Cost	**$28,320.00**

APPENDIX A

KGS REPORT

KGS GROUP CONSULTING ENGINEERS

Kontzamanis Graumann Smith MacMillan Inc.

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www.kgsgroup.com

March 16, 2018 File 18-3316-001

SEPW Architecture Inc.
109, 3725 Pasqua Street
Regina, Saskatchewan
S4S 6W8

ATTENTION: Ray Plosker, Principal

RE: Cathedral Courts - Rev1

Ray:

1.0 BACKGROUND

The following text is intended to summarize our various discussions relative to the items noted during our site visits and the review of information noted on the few drawings that are available.

The existing building is an assembly of three phases of original construction dated 1909, 1914, 1924, and a few subsequent renovations. The existing building is a three storey structure, consisting of spread footings, masonry exterior walls and wood framed floors. The front entrance is on the north side of the building, with stair up to the main floor and a relatively new ramp structure down to the lower level. The lower level is relatively shallow, such that the underside of the lower level windows is essentially at the exterior grade level. These older building were built at a time when energy costs were minimal and thermal efficiency / heat transfer through the walls was not a significant concern.

The three phases of construction are similar, but there are a few differences in the materials and methods of construction.

It appears that some of the original windows / door openings have been infilled and some of the exterior masonry work has been previously patched and repaired The building has undergone some differential movement, that has resulted in some cracking of the bricks, stone and mortar joints as well as some apparent settlement at the east end of the structure.

With the relatively shallow spread footing foundations supported on the native Regina clay, it is not surprising that there has been some relative and differential movement. The Regina clay is classified as being highly plastic, which means that it is subject to significant changes in volume with changes in moisture content. The clay expands when moisture is added and shrinks when moisture is withdrawn.

The building has obtained heritage status, and as such the intention is to retain as much of the existing construction materials as possible. Given the age of the building, many of the original building materials are either no longer available for new purchase and/or there are very few available as salvage.

2.0 DISCUSSION

When water freezes, it expands. If moisture is absorbed into a material, or allowed to accumulated in a restricted space, if will cause damage to the material. Freeze-thaw damage is the term applied when there is repeated cycles of the moisture freezing and thawing, and the associated expansion of the moisture repeatedly causing deterioration of the materials. As the surfaces deteriorate and moisture is allowed to penetrate further into the material, the associated extent of the deterioration increases. This process negatively affects the durability of the exposed materials in their natural state and when subject to some subsequent cracking.

When moisture comes in contact with bare metal objects, the moisture results in a rusting/ corrosion of the surface of the metal. The rusting / corrosion results in the surface of the metal expanding to form a relatively soft material and a reduced volume of the underlying solid metal. Concrete and masonry items are relatively strong when subject to compressive forces, but relatively weak when subject to tensile forces. Therefore when embedded metal objects expand, such as lintel angles, embedded plates, and masonry ties, they create a tensile force on the adjacent surfaces, which tends to crack and/or displace the concrete or masonry items. An increase in the width and extent of cracking results in more moisture and the process continues at an accelerated rate.

The moisture in the soil at the foundation level will tend to increase in time after the initial construction. This can result in an initial heaving of the Regina clay at the foundation level. Depending on the methods and duration of construction, there may be very little net effect at the onset of occupancy.

Heat sources can tend to dry-out and decrease the moisture content of the soil, and result in some shrinkage. New water sources tend to increase the moisture content of the soil, and result in some expansion.

The large trees are evidence of many years of sustained growth, which means that the trees and their associated root structure have found ample sources of moisture during the wet and dry years. When surface water is not readily available; be it residual snow melt water, rain, or planned watering; the roots will locate other sources of buried moisture. This could be the roots entering the joints and/or cracks in buried piping and/or water collecting adjacent the foundation walls. If the source of moisture is the buried services, the root mass within the pipe will increase and at some point significantly restrict and/or plug the pipe. In these cases the buried services need to be reamed out and/or replaced. If the source is the moisture adjacent the foundations, and this source is due to improper drainage, then the soil in this area will be subject to repeated expansion and contraction, which can distort the building framing and result in cracking.

The existing grade is at the elevation of the underside of the lower level windows, with the south and north easterly area being relatively flat. As such there are issues with snow and melt water collecting adjacent the foundations. The heat loss through the exterior walls can result in a drying shrinkage of the adjacent soil and/or the increased presence of freeze-thaw damage to the exposed masonry construction.

To minimize changes in the moisture content, it is important to have roof drain downspouts that discharge well away from the exterior walls, an exterior ground cover that is relatively impervious and sloped to provide positive drainage away from the building, minimal vegetation in the vicinity of the foundations, and maintenance of buried sewer and water services.

The stone lintels above the windows and the stone sills below the windows have undergone some differential movement and deterioration. Given the age of this building, similar replacement members (stone and bricks) are probably not available, which leads to the need to repair the existing members. The exact details of the construction are not clear, due to limited details on the existing drawings. Some information has been obtained from one of the local contractors that has done some remedial repairs to this building in the past.

The loads being applied to the lintel blocks is not large, due to the fact that the exterior windows are relatively narrow and typically located one above the other, the occupancy of the building is primarily residential, the floors are wood framed. The stone sills are more of a framing member than a load carrying element.

3.0 RECOMMENDATIONS

Investigate options to improve the grade separation between the underside of the lower level windows and the adjacent site grade.

Regrade to improve the site grade and associated drainage away from the foundations. This could include one or more swales to collect the rain / snowmelt water and/or the construction of additional catch-basins at the front and rear of the building.

Remove the large trees that are relatively close to the building.

Engage masons experienced with historical repair techniques to repair the lintel stones above the windows and the sill stones below the windows. It is anticipated that the process will involve drilling and epoxy anchoring stainless steel pins, grouting cracks, repointing mortar joints.

Patch, seal, flash the edges of the roof, wall, cornice to ensure rain and snow melt water drain off the structure and into the eavetrough and downspout system.

Selectively repair any damaged / wood rot within the framing members.

Ensure the eavetrough and downspouts systems can collect and discharge the rain and snow melt water away from the building.

Establish a monitoring scheme consisting of a series of survey pins and tell-tale gauges to record the current conditions, and as a basis to evaluate future survey data.

We do not feel that underpinning the structure is an economical alternative at this time.

Sincerely

Bruce Peberdy, P. Eng.
Regional Manager

BAP/lf

APPENDIX B

SPECIFICATION FOR HISTORIC MASONRY

'DRAFT'

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

- .1 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.
- .2 CSA-A371-04, Masonry Construction for Buildings.
- .3 CSA A23.2-8A, Measuring mortar-strength properties of fine aggregate

1.2 DEFINITIONS

.1 Raking: the removal of loose/deteriorated mortar to 2 – 2 ½ joint thickness minimum 25mm is reached.

.2 Repointing: filling and finishing of masonry joints from which mortar is missing, has been raked out or has been omitted.

.3 Tooling: finishing of masonry joints using tool to provide final profile.

.4 Repair: using adhesives, pins, and repair mortars to re-bond sections of fractured masonry.

1.3 SYSTEM DESCRIPTION

.1 Work of this Section includes but is not limited to:

- .1 Raking joints to be repointed.
- .2 Preparation of masonry surface including joints surface cleaning, cleaning of voids and open joints, and masonry wetting prior to repointing.
- .3 Repointing of masonry joints.
- .4 Resetting of dislodged masonry units.
- .5 Ensuring cure of mortar.
- .6 Grouting by hand, small voids.
- .7 Repair of stone masonry units identified on drawings.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 05 - General Requirements.

.2 Provide samples in accordance with Section 01 00 05 - General Requirements.

- .1 Provide labelled samples of materials used on project for approval before work commences.

.3 Submit all MSDS sheets for products to be used on site. Provide copies to the consultant, owner and for posting on site.

1.5 QUALIFICATIONS

.1 Masonry Contractor:

.1 Use single Masonry Contractor for all masonry work.

.2 Masonry contractor to have substantiated experience in historic brick and stone masonry work and including work with natural hydraulic lime mortars. Provide list and references upon request.

.2 Masons:

.1 Mason to have certificate of qualification in historic stone and brick masonry work. Provide certification upon request.

.2 Mason to have certificate of qualification for use of proprietary Jahn mortar repair products listed in this specification. Provide certification upon request.

.3 Provide list of masons who will be on site and their curriculum vitae including historic masonry work.

.4 Where personnel differ from those individuals identified above, provide curriculum vitae of all individuals who will be working on site for the review by consultant.

1.6 MOCK-UPS AND DEMONSTRATION

.1 To demonstrate a full understanding of specified procedures, techniques and formulations are achieved before work commences. Provide demonstration of:

.1 Cutting out of mortar joints.

.2 Repointing procedures.

.3 Final tooling of joint.

.2 Provide mock-up of one (1) repaired stone sill and one (1) repaired stone lintel.

.3 Provide series of aged, mortar samples for review and selection, as identified in article 2.2. Mortar is to match as closely as possible to the existing mortar colouration using mix of sand that reflects the colour of the aggregate in the existing.

.4 Construct a mock-up in one area of the wall identified prior to beginning Work, for repointing using the mortar selected and to illustrate final tooling of the joint, Construct mock-up where directed by Consultant.

.5 Allow 24 hours for inspection of mock-up by Consultant before proceeding with masonry repointing and repair work.

.6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store, handle and protect materials in accordance with Section 01 00 05 - General Requirements.

.2 Store cementitious materials and aggregates in accordance with CAN/CSA A23.1.

.3 Keep material dry. Protect from weather, freezing and contamination.

.4 Ensure that manufacturer's labels and seals are intact upon delivery.

.5 Remove rejected or contaminated material from site.

1.8 EXISTING CONDITIONS

.1 Report in writing, to Consultant areas of deteriorated masonry revealed during work. Obtain Owner's approval and instructions of repair and replacement of masonry units before proceeding with repair work.

1.9 AMBIENT CONDITIONS

.1 It is the intent to carry out this Work seasonally when ambient weather conditions are within the range required by the Work without additional heating required. Provide heating only if unusual circumstances occur and with the prior consent of the Consultant.

.2 Maintain masonry temperature between 5 degrees C and 25 degrees C for duration of work.

.3 If heating is required (when approved), provide hoarding for protection of work for not less than 30 days, and maintain curing temperatures for a minimum of 10 days.

.4 When ambient outside air temperature is below 5 degrees C:

.1 Store cements and sands for immediate use within heated enclosure. Allow cement and sands to reach minimum temperature of 10 degrees C.

.2 Heat and maintain water to minimum of 20 degrees C and maximum of 30 degrees C:

.1 At time of use temperature of mortar to be minimum of 15 degrees C and maximum of 30 degrees C.

.2 Do not mix if mortar or water has higher temperature than 30 degrees C.

.3 Maintain mortar mix between 10 degrees and 30 degrees.

Part 2 Products

2.1 MATERIALS

.1 Repointing Mortar: For use on walls. Proprietary pre-mixture of natural hydraulic lime and sand. Acceptable product: King Masonry Products HLM-350 in pre-mixed bags. Match colour of mortar for the brick masonry to existing mortar samples obtained on site. Match non-weathered sample from interior of joint not at exposed weathered face of mortar joint. Provide range of mortar samples for review and approval of Consultant and heritage authority.

.1 Mortar properties as follows:

.1 Strengths: 7 day 0.7 MPa (100 psi); 28 day 1.8 MPa (260 psi); 90 day 2.7 MPa (390 MPa); 120 day 3.0 MPa (435 psi); 365 day 3.5 MPa (510 psi)

.2 Air entrainment to ASTM C 231 12% to 15%.

.3 Flow to ASTM C 1437 for repointing: 80%

.4 Flow to ASTM C 1437 for bedding: 110 +/- 5%

.5 Vicat cone for repointing to ASTM C780: 15mm +/- 5mm

.2 Repointing Mortar: For use on chimney above roof level. Use King Masonry Products HLM – 500 but adjust water in mix so it is suitable for repointing. Follow mixing procedure for HLM 350 and as per written instructions from King Masonry Products. Match colour of mortar to existing.

.3 Bedding Mortar: proprietary pre-mixture of natural hydraulic lime and sand. Acceptable product: King Masonry Products HLM-500 in pre-mixed bags. Match colour of mortar for the brick masonry to existing mortar samples obtained on site. Match non-weathered sample from interior of joint not at exposed weathered face of mortar joint. Provide range of mortar samples for review and approval of Consultant and heritage authority.

.1 Mortar properties as follows:

.1 Strengths: 7 day 1.0 MPa (145 psi); 28 day 2.2 MPa (320 psi); 90 day 3.5 MPa (510 MPa); 365 day 4.5 MPa (650 psi)

.2 Air entrainment to ASTM C 231 12% to 15%.

.3 Flow to ASTM C 1437 for bedding: 110 +/- 5%

.4 Prior to commencing work, prepare each mortar mix in accordance with manufacturer's printed instructions and have the mortar tested for strength and air content at 7 days and 28 days. Adjust mortar mix if requirements are not met and have mortar re-tested. Test in accordance with CSA A-179-04.

.5 Once the tested mortar mix has been accepted then have mortar tested again in accordance with CSA A-179-04 at 28 days, and 90 days. Submit test results to Consultant. Allow mortar to become sufficiently stable prior to taking it out of mould. This may be 5 days for the NHL mortar. Store at 90 +/- 5% RH.

.6 Water: potable, clean and free from contaminants.

.7 Sand: to ASTM C144.

Sieve Size	% By Weight Passing Each Sieve	% By Weight Retained on Each Sieve
No. 4 (4.75 mm)	100	0
No. 8	90	5
No. 16	70	25
No. 30 (600 micron)	50	20
No. 50 (300 micron)	30	20
No. 100 (150 micron)	15	15
No. 200 (75 micron)	0	15

.1 The coloration of the sand will impact the appearance of the mortar. Match the original coloration of the sand as closely as possible.

2.2 MORTAR MIXES

.1 Repointing Mortar: Pre-packaged proprietary natural hydraulic lime mortar. The following instructions are for King NHL 350 mortar. (Request repointing mix proportions and procedures for NHL 500 mortar from King Masonry Products prior to proceeding.)

.1 King NHL 350 natural hydraulic lime mortar. (Use King NHL 500 on chimney above roof level.)

.2 Mix in accordance with manufacturer's written instructions.

.3 Use mix proportion of 4.5 litres of potable water per 30 kg (66lbs) bag. Weigh bags prior to mixing and adjust water accordingly. Begin by mixing 4 litres of water with the 30 kg bag of pre-mixed mortar. Mix for 3 to 5 minutes in paddle mixer. Use remaining water to adjust the mix to obtain the desired consistency.

.4 Use penetrating cone to test for consistency of mixture. ASTM C-1713 calls for a consistency of 15mm +/- 5mm for the cone penetration method.

.5 Mix only what can be used prior to mortar starts to set. Lime based mortars begin to set within half an hour.

.6 Do not use any Retarders or additives.

.7 Always mix in a clean mixing trough.

.2 Bedding Mortar: Pre-packaged proprietary natural hydraulic lime mortar

.1 King NHL 500 natural hydraulic lime mortar.

.2 Mix in accordance with manufacturer's written instructions.

.3 Use mix proportion of 5.5 litres of potable water per 30 kg (66lbs) bag. Weigh bags prior to mixing and adjust water accordingly. Begin by mixing 5 litres of water with the 30 kg bag of pre-mixed mortar. Mix for 3 to 5 minutes in paddle mixer. Use remaining water to adjust the mix to obtain the desired consistency.

.4 Mix only what can be used prior to mortar starts to set. Lime based mortars begin to set within half an hour.

.5 Do not use any Retarders or additives.

.6 Always mix in a clean mixing trough.

Part 3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

.1 Report in writing to Consultant areas of deteriorated masonry not previously identified.

.2 Obtain Owner's written approval for repair and replacement of masonry units before proceeding with repair work.

3.2 EXAMINATION/TESTING

.1 Procedure of testing: examine joints visually for obvious signs of deteriorated masonry.

.2 Test joints not visually deteriorated as follows:

.1 Test for voids and weakness by sounding with mallet or other approved means.

.2 Perform testing in co-operation with Consultant so that unsound joints can be marked and recorded.

3.3 REPAIR

.1 Perform repair work of brick masonry by replacing damaged units with matching brick. Obtain brick to match as closely as possible in size, colour and characteristics.

.2 Stone sills: Limestone lug sills with split face and dressed edges (on eastern and central portion. / Sawcut beige Tyndall stone (on western portion)

.1 Perform repair work of stone sills by patching, piecing-in or consolidating, using recognized conservation methods. Replace any damaged areas using in kind material. Hand chisel out area around break so it is clean. Remove fines using dry compressed air. Where crack can be filled apply Jahn M70 repair mortar into break area and finish to match texture and profile of existing stone sill. Match

colour of repair mortar to existing stone. Follow product manufacturer's written instructions for installation of repair mortar.

.3 Stone lintels face repair for lintels that are not showing any sign of displacement: Limestone with split face and dressed edges (on eastern and central portion. / Sawcut beige Tyndall stone (on western portion). Use least invasive method depending on size of crack.

.1 For hairline cracks. Use flowable proprietary crack filler, install using syringe into small drilled holes. Fill all drilled holes with Jahn M70 repair mortar. Follow product manufacturer's written instructions for installation of crack fillers.

.2 For wider cracks carefully remove by hand, area around break so it is clean. Apply Jahn M70 repair mortar into break area and finish to match texture and profile of existing stone lintel. Follow directions for Jahn stone patch for repair methods and installation. Match colour and texture of repair mortar to existing stone.

.4 Stone lintels pin repair for lintels that are showing displacement on bottom surface (Note that if alternate repair method is proposed then provide an explanation of the repair technique prior to proceeding):

.1 Carefully drill from underside of lintel at approximately a 45 degree angle across the crack. Drill hole oversized to accept anchored stainless steel pin, using Jahn M80 anchor mortar. Length of pin to be sufficient to embed 75mm into each side of crack.

.2 Use 10mm diameter stainless steel pin into drilled hole, setting back sufficiently so face of stone can be patched.

.3 Fill space around pin using anchor mortar. Follow directions from product manufacturer for installation.

.4 Patch face of underside of stone using Jahn M70 repair mortar.

.5 Where rebuilding of portions of the brick or stone masonry is required provide proposed method of removal and rebuilding, ties and mortar for review and approval by the Consultant, and heritage authority.

3.4 RAKING JOINTS

.1 Use thin diamond blade cutting tool to cut to depth required at the mid-point of horizontal joints. Manually chisel horizontal and vertical joints after cutting. Do not widen joints.

.2 If using small power tools (such as purpose made mortar rake) obtain approval to use prior to removing any mortar. Use vacuum attached to power tools. Prevent spread of dust from removal process. Ensure that all cut out mortar is cleaned up from site on a daily basis so this does not blow around and create a health issue for building occupants.

.3 Remove deteriorated mortar to sound mortar 2 to 2 ½ times the thickness of the joint but in no case less than 25 mm leaving square corners and a flat surface at back of cut. Clean out voids and cavities encountered. May require deeper raking if mortar is deteriorated. Maximum depth of 30mm from face of masonry unit. If mortar joint is deteriorated beyond this point then review with Architect and heritage authority for recommended action as re-bedding of the bricks may be required.

.4 Work at a pace and using methods that will ensure that no masonry units are chipped, altered or damaged by work to remove mortar.

.5 Clean by compressed air, with non-ferrous brush surfaces of joints without damaging texture of exposed joints or masonry units.

3.5 REPOINTING:

.1 Work from top down, protected from direct sun.

.2 Dampen joints. No surface water shall be present on joint when pointing begins.

.3 Keep masonry damp while pointing is being performed.

.4 Keep pointing back from surface. Avoid feather edges. Do not smear lime mortar on face of bricks.

.5 Tool and compact using jointing tool to force mortar into joint.

.6 Repoint in two-steps, ensuring that mortar is pushed to the back of the joint and no voids are created in the process of placing the mortar. Repoint back half of joint and compress. When set up sufficiently so that fingernail can indent first step, then repoint the face of the joint, compressing the joint.

.7 Tool joints as follows;

.1 Provide a "weathered" joint profile with mortar indented approximately 3mm at the top of the joint and flush at the bottom of the joint, matching the original.

.8 For exposed joints above grade, once hardened to the point where a fingernail will make a small impression then finish joints by stippling them by striking with a stiff fibre brush to soften the texture of the joint and to match existing original mortar as closely as possible.

.9 Remove excess mortar from masonry face before it sets.

3.6 RESETTING

.1 Reset displaced brick masonry units to match original coursing, joint width and profile with "weathered" joint.

.2 Set stone on full-bed of bedding mortar. Tool when set to a point when a slight depression can be made with a fingernail.

.3 Use stainless steel ties installed into the back up where stone masonry is to be reinstated. Ties to be mechanically anchored to back up masonry. Provide sample of ties proposed for use for acceptance.

.4 Use hot-dipped galvanized steel ties for reinstating brick masonry. Provide sample for review and acceptance.

3.7 CLEANING

.1 Clean surfaces of mortar droppings, stains and other blemishes resulting from work of this contract as work progresses.

.2 Clean mortar from bricks using stiff natural bristle or nylon brush after mortar has obtained its initial set and has not fully cured (1 – 2 hours).

.3 Clean masonry with stiff natural bristle brushes and plain water only if mortar has fully cured.

3.8 PROTECTION OF COMPLETED WORK

.1 Cover completed and partially completed work not enclosed or sheltered at end of each work day.

.2 Cover with waterproof tarps to prevent weather from eroding recently repointed material.

.1 Maintain tarps in place for minimum of 1 week after repointing.

.2 Ensure that bottoms of tarps permit airflow to reach mortar in joints.

.3 Anchor coverings securely in position. Do not anchor directly onto building.

.4 Install and maintain wetted burlap protection during the curing process for a minimum of 7 days. Burlap is to be installed 100 mm (4") away from the masonry.

.5 Keep burlap moist by setting bottom into tray of water or by wet misting burlap - ensure no direct spray reaches surface of curing mortar. Do not allow burlap to dry out.

.6 Shade areas of work from direct sunlight during periods over 25 degrees C, and maintain constant dampness of burlap.

.7 Protect area of repointing work using tarps, from winds that will dry out the mortar.

.8 Maintain ambient temperature of 5 to 25 degrees C for minimum of 4 weeks after repointing masonry.

3.9 FINAL CLEAN UP

.1 Clean up all droppings from site.

.2 Remove hoarding.

END OF SECTION

APPENDIX C

TABLE FOR CONSERVATION GUIDELINES

	STANDARDS AND GUIDELINES	Reference 4.3.3 Roofs	
	GENERAL GUIDELINES		
1	**Understanding** the roof and how it contributes to the heritage		Mansard and dormers– No change. Cornice – remain intact with repairs
2	**Understanding** the properties and characteristics of the roof as well as changes and previous maintenance practices.	Failing to consider the impact of previous changes and maintenance practices on the roof.	Original slate roof still in place on Mansard. Dormers replaced with asphalt shingles and caulking at valley. Valleys should be flashed with membrane and metal. Cornice has had drainage altered.
3	**Documenting** the form, materials and condition of roof assemblies before undertaking an intervention, including the roof's pitch, shape, decorative and functional elements, and materials, and its size, colour and patterning.	Undertaking an intervention that affects character defining roofs and roof elements, without first documenting their existing character and condition.	Documented through original drawings 1924, revision drawings 1990, and photos 2018.
4	**Assessing** the condition of the roof assembly and materials early in the planning process so that the scope of work is based on current conditions.		Assessment was done. Slates are missing in spots and have been fastened using screws through face. Condition worse in older wings. Many slates could be reused. Some stained by tar from roofing. Metal profile cornice in poor condition on south side. Some areas may be able to be salvaged. Galvanized metal, painted.
5	**Determining** the cause of a roof's distress, damage or deterioration through investigation, monitoring and minimally invasive or non-destructive testing techniques.		Done in assessment stage. Slate is age related. Cornice paint not adhering is common on galvanized metal. Ice damming on south side has damaged areas of metal cornice.
6	**Protecting** and maintaining a roof by cleaning and maintaining the gutters, downspouts and flat roof drains, and replacing deteriorated flashing in kind. Roof sheathing should also be checked for proper venting to prevent moisture condensation and water penetration, and to ensure that materials are free from insect infestation.	Failing to maintain roofs on a cyclical basis. Failing to replace deteriorated flashing, or to clean and properly maintain gutters and downspouts and flat roof drains so that water and debris collect and damage roof fasteners, sheathing and the underlying structure.	Doesn't appear to be any original downspouts. Gutters on upper roof appear to have been changed. Some roof drainage on cornice altered in past. Reinstate some of original cornice drainage where practical.
7	**Retaining** sound or deteriorated roof assemblies that can be repaired.	Stripping the roof of sound or repairable character defining materials, such as slate, clay tile, wood and architectural metal	Recommendation to salvage all good and reusable slates. Cornice metal profile distorted and damaged through time and ice buildup. Replace in kind.

	Recommended	Not Recommended	Intervention
8	**Stabilizing** deteriorated roofs by structural reinforcement, weather protection or correcting unsafe conditions, as required, until repair work is undertaken.	Removing deteriorated roof elements that could be stabilized or repaired.	Some additional wood blocking needed for proper support and fastening of soffit and cornice profile.
9	**Repairing** parts of roofs by patching, piecing-in, consolidating, or otherwise reinforcing, using recognized conservation methods. Repair may also include the limited replacement in kind, or with a compatible substitute material, of extensively deteriorated or missing parts of the roof. Repairs should match the existing work as closely as possible, both physically and visually.		Could be repaired in kind. Issue is ongoing maintenance around dormers where no membrane or metal flashing is present.
10	**Protecting** adjacent character-defining elements from accidental damage or exposure to damaging materials during maintenance or repair work		Acknowledged. This will have to be addressed when access to cornice and chimney.
11	**Replacing** in kind extensively deteriorated or missing parts of roof assemblies where there are surviving prototypes	Replacing an entire roof element, such as a dormer, when limited replacement of deteriorated and missing parts is possible. Using a substitute material for the replacement part that neither conveys the same appearance as the surviving parts of the roof element, nor is physically or visually compatible	Repairs only will be undertaken. Upper area of roof has been replaced with membrane roofing but no intervention is planned.
12	**Testing** proposed interventions to establish appropriate replacement materials, quality of workmanship and methodology. This can include reviewing samples, testing products, methods or assemblies, or creating a mock-up. Testing should be carried out under the same conditions as the proposed intervention.		Samples for matching slate will be required. Shop drawings for matching metal cornice profile will be required.
13	**Documenting** all interventions that affect the building's roof, and ensuring that the documentation is available to those responsible for future interventions		As built documentation will be provided.
	ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS		
	Recommended	**Not Recommended**	
14	**Repairing** a roof assembly, including its functional and decorative elements, by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on documentary or physical evidence.	Replacing an entire roof element, such as a cupola, dormer or lightning rod, when the repair of materials and limited replacement of deteriorated or missing elements is feasible. Failing to reuse intact roofing materials when only the roofing structure or sheathing needs replacement.	N/A

15	**Improving** the detailing of roof elements, following recognized conservation methods, to correct faulty details. For example, adjusting the slope of a cornice to prevent ponding, or introducing a new drip edge at the eave to better direct water runoff away from a masonry wall. Such improvements should be physically and visually compatible		We are proposing impervious membrane at valleys. The cornice is flat but some drains have been closed. We would propose to open these but would have to be addressed at grade for water draining away from building. There is some heat loss in Mansard roof and cornice contributing to ice build up. This won't be addressed in the scope of work planned.
16	**Replacing** in kind an entire element of the roof that is too deteriorated to repair — if the overall form and detailing are still evident — using the physical evidence as a model to reproduce the element. This can include a large section of roofing, a dormer, or a chimney. If using the same kind of material is not technically or economically feasible, then a compatible substitute material may be considered	Removing a roof element that is irreparable, such as a chimney or dormer, and not replacing it, or replacing it with a new element that does not convey the same appearance or serve the same function. Replacing deteriorated roof elements and materials that are no longer available with physically or visually incompatible substitutes	For the Mansard and dormer roofs the best approach would be to remove and replace slates (some salvage material) using proper membrane flashing, breathable underlayment and metal valley flashing and drip edges. The cost of slate roof is high but would retain heritage character. Decision will have to be made relative to materials and budget.
17	**Replacing** missing historic features by designing and constructing a new roof feature, based on physical and documentary evidence, or one that is compatible in size, scale, material, style or colour	Creating a false historical appearance because the replicated feature is incompatible or based on insufficient physical and documentary evidence	N/A
	ADDITIONS OR ALTERATIONS TO ROOFS AND ROOF ELEMENTS		
	Recommended	**Not Recommended**	
18	**Modifying** or replacing a roof or roof element, to accommodate an expanded program, a new use, or applicable codes and regulations, in a manner that respects the building's heritage value.	Constructing an addition that requires removing a character-defining roof. Changing the configuration of a roof by adding new elements, such as dormer windows, vents or skylights, in a manner that negatively affects its heritage value	N/A
19	**Selecting** appropriate rooftop mechanical and service equipment and associated piping and cabling, such as air-conditioning components, transformers or solar collectors, and installing the equipment as inconspicuously as possible, while respecting the building's heritage value and character-defining elements	Selecting inappropriate rooftop mechanical or service equipment, or installing such equipment in a manner that compromises the building's heritage value and character defining elements. Adding significant loads to a roof without assessing the impact on the building's structure	N/A
20	**Designing** and constructing additions to roofs, such as access stairs, elevator or mechanical equipment housing, decks and terraces, and dormers and skylights that are inconspicuous from the public right of way and do not damage or obscure character defining elements.	Designing and constructing a roof addition that compromises the building's character-defining roof elements, its structural integrity, or its overall appearance. Constructing a rooftop addition that blocks natural light patterns or important views	N/A

	HEALTH AND SAFETY AND SECURITY CONSIDERATIONS		
	Recommended	**Not Recommended**	
21	**Complying** with health and safety requirements, by providing lightning protection, or snow and ice guards, or roof anchors in a manner that conserves the roof's heritage value and minimizes impact on its character-defining elements	Damaging or destroying character-defining elements while making modifications to comply with health and safety requirements.	N/A
22	**Working** with code specialists to determine the most appropriate solution to health, safety and security requirements with the least impact on the character-defining elements and overall heritage value of the historic building	Making changes to character-defining roofs, without first exploring equivalent systems, methods or devices that may be less damaging to the character-defining elements and heritage value of the historic building.	N/A
23	**Removing** or encapsulating hazardous materials, such as asbestos insulation, using the least-invasive abatement methods possible, and only after thorough testing has been conducted		We believe there is lead paint on the galvanized metal of the cornice (the 1924 specification calls up lead and linseed oil). This should be tested and remediation done preventing the spread of lead dust with proper clean up.
24	**Protecting** roofs against loss or damage by identifying and assessing the specific fire risks, and by implementing an appropriate fire-protection strategy that addresses those risks	Covering flammable character-defining elements with fire-resistant sheathing or coatings that alter their appearance. Replacing wood roof elements with alternate materials, without carefully considering other options for reducing fire spread. Failing to take proper fire protection precautions when using a technique that could endanger the building, such as applying membranes on wood roofs using heat	N/A
	SUSTAINABILITY CONSIDERATIONS		
	Recommended	**Not Recommended**	
25	**Complying** with energy efficiency objectives in upgrades to the roof assembly in a manner that respects the building's character defining elements, and considers the energy efficiency of the building envelope and systems as a whole.	Damaging or destroying character-defining elements while making modifications to comply with energy efficiency requirements.	May address heat loss issues in the future but not in the scope of this work.
26	**Working** with energy efficiency and sustainability specialists to determine the most appropriate solution to energy efficiency and sustainability requirements with the least impact on the character-defining elements and overall heritage value of the historic building	Making changes to the roof assembly, without first exploring alternative sustainability solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building	N/A.
27	**Exercising** caution and foreseeing the potential effects of insulating the roof on the building envelope to avoid damaging changes, such as displacing the dew point and creating thermal bridges, or increasing the snow load	Installing insulation without anticipating its potential impact on the building envelope. Inserting thermal insulation in roof assemblies, without providing appropriate vapour barriers or ventilation.	N/A. would be assessed in the future.

28	**Installing** thermal insulation in non-character-defining roof spaces, such as attics, without adversely affecting the building envelope.	Installing insulation in habitable attic spaces without considering its effect on character-defining interior features such as mouldings	N/A
29	**Ensuring** that structural, drainage and access requirements to improve the roof's energy efficiency can be met without damaging character-defining elements.		Drainage of flat cornice can be improved. Current rain water leaders are not heritage.
30	**Assessing** the addition of vegetated roof systems (green roofs) or storm water cisterns to flat-roof assemblies, and their impact on the building's heritage value and structural integrity, before work begins.	Adding a vegetated or reflective membrane roof system that might compromise the building's heritage value or its structural integrity.	N/A
	ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS		
	Recommended	**Not Recommended**	
31	**Repairing** a roof assembly from the restoration period by reinforcing its materials	Replacing an entire roof feature from the restoration period, such as a cupola or dormer, when the repair of materials and limited replacement of deteriorated or missing parts is possible	N/A
32	**Replacing** in kind an entire roof feature from the restoration period that is too deteriorated to repair, using the physical evidence as a model to reproduce the feature. The new work should be well documented and unobtrusively dated to guide future research and treatment	Removing an irreparable roof feature from the restoration period and not replacing it, or replacing it with an inappropriate new roof feature. Reinstating a roof detail that is damaging to character defining elements.	N/A
	REMOVING FEATURES FROM OTHER PERIODS		
33	**Removing** or altering a non character-defining roof or roof element, such as a later dormer or asphalt roofing, dating from a period other than the restoration period.	Failing to remove a non character-defining roof or roof element from another period that confuses the depiction of the building's chosen restoration period	N/A
34	**Retaining** alterations to roof assemblies that address problems with the original design if those alterations do not have a negative impact on the building's heritage value.	Removing a roof element from a later period that serves an important function in the building's ongoing use, such as a skylight for natural daylight, or a vent for natural ventilation.	N/A
	RECREATING MISSING FEATURES FROM THE RESTORATION PERIOD		
35	**Recreating** a missing roof element that existed during the restoration period, based on physical or documentary evidence; for example, reinstating a dormer or cupola	Constructing a roof element that was part of the building's original design, but never actually built, or constructing a feature thought to have existed during the restoration period, but for which there is insufficient documentation	N/A

	STANDARDS AND GUIDELINES	Reference 4.5.3 Masonry	
	GENERAL GUIDELINES		
	Recommended	Not Recommended	Intervention
1	**Understanding** the properties and characteristics of the masonry of the historic place.		N/A
2	**Documenting** the form, materials and condition of masonry	**Documenting** the form, materials and condition of masonry	Photo documentation taken of current condition. 1924 specification available through owner.
3	**Protecting** and maintaining masonry by preventing water penetration, and maintaining proper drainage so that water or organic matter does not stand on flat surfaces, or accumulate in decorative features.	Failing to identify, evaluate and treat the causes of masonry deterioration. Applying water-repellent coatings to stop moisture penetration when the problem could be solved by repairing failed flashings, deteriorated mortar joints, or other mechanical defects.	Mortar on projecting ledges to be repaired. Not the best detail but inherent in the original design. Cracked stone sills to be repaired.
4	**Applying** appropriate surface treatments, such as breathable coatings, to masonry elements as a last resort, only if masonry repairs, alternative design solutions or flashings have failed to stop water penetration, and if a maintenance program is established for the coating.		N/A
5	**Sealing** or coating areas of spalled or blistered glaze on terra cotta units, using appropriate paints or sealants that are physically and visually compatible with the masonry units.		N/A
6	**Cleaning** masonry, only when necessary, to remove heavy soiling or graffiti. The cleaning method should be as gentle as possible to obtain satisfactory results.	Over-cleaning masonry surfaces to create a new appearance, thus introducing chemicals or moisture into the materials. Blasting brick or stone surfaces, using dry or wet grit sand or other abrasives that permanently erode the surface of the material and accelerate deterioration. Using a cleaning method that involves water or liquid chemical solutions when there is a possibility of freezing temperatures. Cleaning with chemical products that damage masonry or mortar, such as using acid on limestone or marble. Failing to rinse off and neutralize appropriate chemicals on masonry surfaces after cleaning. Applying high-pressure water cleaning methods that damage the masonry and mortar joints and adjacent materials.	There are some areas where mortar has not been cleaned off the face of the masonry. This should be addressed at some time. Droppings from birds is ongoing but should be addressed through maintenance cleaning.

	Recommended	Not Recommended	Intervention
7	**Carrying** out masonry cleaning tests after it has been deter-mined that a specific cleaning method is appropriate.	Cleaning masonry surfaces without sufficient time to determine long-term effectiveness and impacts.	Not included at this time. Test areas would be done prior to proceeding with larger areas.
8	Inspecting painted masonry surfaces to determine whether paint can successfully be removed without damaging the masonry, or if repainting is necessary. Testing in an inconspicuous area may be required.	Removing deteriorated roof elements that could be stabilized or repaired.	N/A
9	**Removing** damaged or deteriorated paint only to the next sound layer, using the gentlest method possible; for example, hand scraping before repainting.	Removing paint that is firmly adhering to masonry surfaces. Using methods of removing paint that are destructive to masonry, such as sandblasting, application of caustic solutions, or high-pressure water blasting.	N/A
10	**Re-applying** compatible paint or coatings, if necessary, that are physically compatible with the previous surface treatments and visually compatible with the surface to which they are applied.	Applying paint, coatings or stucco to masonry that has been historically unpainted or uncoated. Removing paint from historically painted masonry, unless it is damaging the underlying masonry. Removing stucco from masonry that was historically never exposed.	N/A
11	**Retaining** sound and repairable masonry that contributes to the heritage value of the historic place.	Replacing or rebuilding masonry that can be repaired.	Repairs to be done in-situ or with least amount of remove/replacement of material.
12	**Stabilizing** deteriorated masonry by structural reinforcement and weather protection, or correcting unsafe conditions, as required, until repair work is undertaken.		N/A
13	**Repairing** masonry by repointing the mortar joints where there is evidence of deterioration, such as disintegrating or cracked mortar, loose bricks, or damp walls.	Removing sound mortar.	Repointing will be done in areas where deterioration has occurred. These areas have been identified on drawings. Sound mortar will be left in place.

	Recommended	Not Recommended	Intervention
14	**Removing** deteriorated or inappropriate mortar by carefully raking the joints, using hand tools or appropriate mechanical means to avoid damaging the masonry.	Using rotary grinders or electric saws to fully remove mortar from joints before repointing. In some instances it may be acceptable to make a single pass with a cutting disk to release tension in the mortar before raking the joint. Extreme caution must be used to prevent accidental damage.	Not included at this time.
15	**Using** mortars that ensure the long-term preservation of the masonry assembly, and are compatible in strength, porosity, absorption and vapour permeability with the existing masonry units. Pointing mortars should be weaker than the masonry units; bedding mortars should meet structural requirements; and the joint profile should be visually compatible with the masonry in colour, texture and width.	Repointing with mortar of a higher Portland cement content than in the original mortar. This can create a bond stronger than the historic material (brick or stone) and cause damage as a result of the differing expansion coefficients and porosity of the materials. Repointing with a synthetic caulking compound. Using a 'scrub' coating technique to repoint instead of using traditional repointing methods.	A pre-packaged hydraulic lime mortar has been suggested. It is weak mortar with properties of lime mortars. The mortar will be tested prior to use in the wall so that we can adjust if needed.
16	**Duplicating** original mortar joints in colour, texture, width and joint profile.		The joint will be tooled to match the original "weathered" joint profile. We will have samples of the original sent so samples can be made up to match colouration.
17	**Replacing** in kind extensively deteriorated or missing parts of masonry elements, based on documentary and physical evidence		If we can salvage bricks from an area of the building for replacing broken ones in the wall then we will do so. For example bricks may be reclaimed from the chimney if it is lowered.
	ADDITIONAL GUIDELINES FOR REHABILITATION PROJECTS		
	Recommended	**Not Recommended**	
18	**Repairing** masonry by patching, piecing-in or consolidating, using recognized conservation methods. Repair might include the limited replacement in kind, or replacement with a compatible substitute material, of extensively deteriorated or missing masonry units, where there are surviving prototypes. Repairs might also include dismantling and rebuilding a masonry wall or structure, if an evaluation of its overall condition determines that more than limited repair or replacement in kind is required.		Repair will be the approach taken.
19	**Replacing** in kind an irreparable masonry element, based on documentary and physical evidence.	Removing an irreparable masonry element and not replacing it, or replacing it with an inappropriate new element.	N/A
	HEALTH, SAFETY AND SECURITY CONSIDERATIONS		
20	Removing hazardous materials from masonry, using the least-invasive abatement methods, and only after adequate testing has been conducted.		Bird dropping will need to be addressed on some areas of the wall.
21	**Selecting** replacement materials from sustainable sources, where possible. For example, replacing		Possible if source is found for some piecing in of the stone sills.

	deteriorated stone units using in-kind stone recovered from a building demolition.		
	ADDITIONAL GUIDELINES FOR RESTORATION PROJECTS		
22	**Repairing,** stabilizing and securing masonry elements from the restoration period, using recognized conservation methods. Repairs should be physically and visually compatible and identifiable on close inspection for future research.	Removing masonry elements from the restoration period that could be stabilized and conserved. Replacing an entire masonry element from the restoration period, when repair and limited replacement of deteriorated or missing parts is possible. Using a substitute material for the replacement that neither conveys the same appearance as the surviving masonry, nor is physically or chemically compatible.	N/A
23	**Replacing** in kind a masonry element from the restoration period that is too deteriorated to repair, based on documentary and physical evidence. The new work should be well documented and unobtrusively dated to guide future research and treatment.	Removing an irreparable masonry element from the restoration and not replacing it, or replacing it with an inappropriate new element.	N/A

APPENDIX D

ELEVATION DRAWINGS

SOUTH ELEVATION

EAST ELEVATION

PROJECT

ACADEMY HOUSING DEVELOPMENT

DRAWING

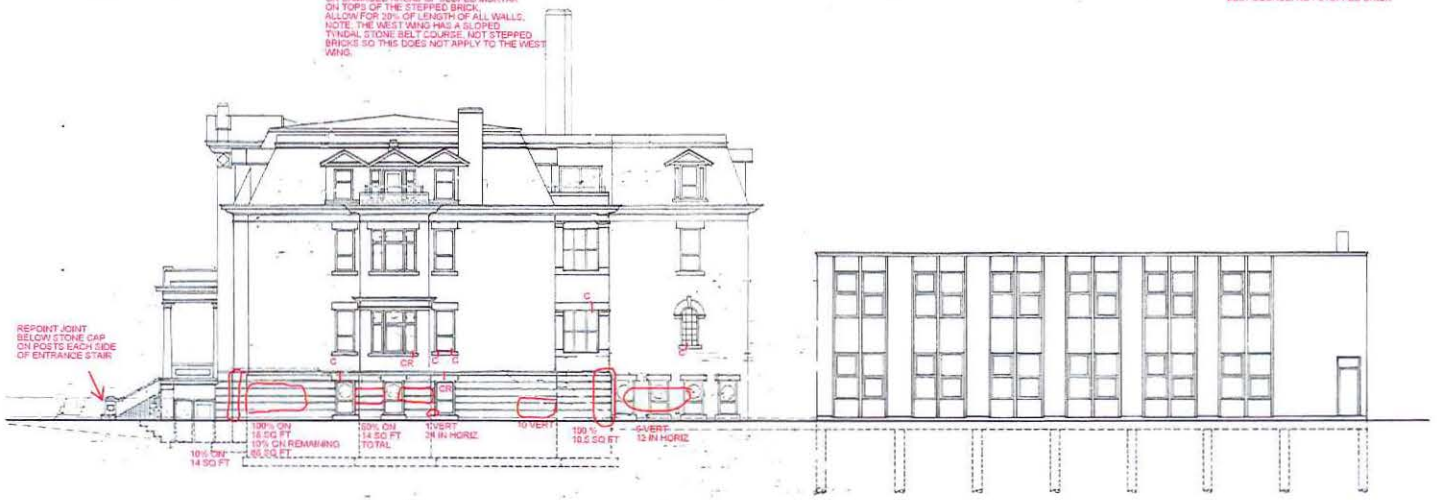
ELEVATIONS

SEPW Architecture Inc.

A1

REVISION

NORTH ELEVATION



WEST ELEVATION

ACADEMY
HOUSING
DEVELOPMENT

DRAWING

ELEVATIONS

SEPW Architecture Inc.

A2