St. Theresa Parish

Building Envelope Assessment May 2016



1 INTRODUCTION

- John G. Cooke & Associates Ltd (JCAL) retained
- Purpose of survey: identify building deficiencies re on-going moisture issue in Church and recommend appropriate repairs and maintenance items
- Report prepared using information obtained onsite and includes investigation of existing conditions as well as review of previous documentation provided to JCAL

2 TERMS OF REFERENCE

• Conduct a visual survey with binoculars

 Access interior of the Church including the bell tower and storage areas

 Prepare a report highlighting deficiencies of existing conditions, recommendations and priorities for repairs

3 METHODOLOGY

- Church visited by JCAL team
- Access provided to the interior of the Church (inside the Church, basement, bell tower, roof of the rectory)
- Visual inspection of the exterior with the use of binoculars
- No destructive testing was performed

4 **DESCRIPTION**

- Church constructed in 1929
- Construction: steel frame, cinder block walls, concrete floors and a timber framed roof
- Exterior walls are brick masonry with a band of granite below and cut stone below the granite to grade (some parging installed along the north and east elevations)

5 EXISTING CONDITIONS

- 5.1 Interior Conditions
 - Ground floor & basement interior walls are damp
 - Ground floor: walls and ceilings contain moisture in localized areas (near corners and roof edges)
 - Northeast stairwell has extensive moisture problems
 & musty odour
 - Interior block walls of the bell tower were damp
 - Interior basement walls show serious signs of moisture



Photo 1: Water staining on interior finishes [JCAL 2016]

Photo 2: Water staining on interior finishes [JCAL 2016]



Photo 3: Peeling paint and musty smell inside north-east staircase [JCAL 2016]



Photo 4: Peeling paint and musty smell inside northeast staircase [JCAL 2016]



Photo 5: Water staining on interior finishes [JCAL 2016]

Photo 6: Water staining on interior finishes [JCAL 2016]



Photo 7: Damp walls during the basement renovation [JCAL 2016]



Photo 8: Water staining on interior finishes [JCAL 2016]

5 EXISTING CONDITIONS

- 5.2 Masonry Conditions
 - Brick in good condition
 - Masonry joints in stone and brick are in poor condition...moisture & water infiltration
 - Chimney has efflorescence and eroded joints and some loose bricks
 - Parapet above arch also has bricks in poor condition

5 EXISTING CONDITIONS

<u>5.2 Masonry Conditions (cont'd)</u>

- Proper grouting is required to repair mortar joints
- Parapet just east of north-east entrance has shifted 10 mm but appears to be stable
- Parging installed in lieu of stone (north & east elevations)...some areas of de-bonding & cracking
- Main entrance deteriorated mortar joints below windows and along perimeter of the wall



Photo 9: Soft, sandy mortar behind an outer layer of hard cement based mortar [JCAL 2016]



Photo 10: Debonded joints, efflorescence, and sandy joints are typical in the stone masonry [JCAL 2016]



Photo 11: Debonded joints, efflorescence, and sandy joints are typical in the stone masonry [JCAL 2016]



Photo 12: South elevation, the worst area of mortar deterioration. No mortar remains in the joint. [JCAL 2016]



Photo 13: Eroded mortar joints on the chimney [JCAL 2016]

Photo 14: Previous masonry repairs above the brick arch [JCAL 2016]



Photo 15: Caulking used to repair deteriorated mortar joints [JCAL 2016]



Photo 16: Parapet at north-east corner has shifted [JCAL 2016]



Photo 17: Cracks in parging along north wall [JCAL 2016]



Photo 18: Crack in parging along north wall [JCAL 2016] 17



Photo 19: Main entrance of the Church [JCAL 2016]

5 EXISTING CONDITIONS

- 5.3 Roofing Conditions
 - Roofing material is in good condition in most areas
 - Major issue observed is lack of detailing to shed water away from the walls – lack of crickets at junctions between different roof heights lead to water infiltration and therefore leaks
 - Many of the snow guards installed along roof edge have fallen off due to snow/ice build-up
 - Areas of ponding water on the rectory roof



Photo 20: Deteriorated masonry joints due to inadequate cricket [JCAL 2016]

Photo 21: Damaged cricket [JCAL 2016]



Photo 22: Previous brick repairs and deteriorated mortar joints due to inadequate drainage from roof [JCAL 2016]



Photo 23: Ventilation unit at risk of damage from falling snow and ice [JCAL 2016]



Photo 24: Snow build-up along south elevation [JCAL 2016]



Photo 25: Snow build-up along south elevation [JCAL 2016] 22



Photo 26: Water ponding on roof of rectory due to incorrect roof slope [JCAL 2016]

5 EXISTING CONDITIONS

- <u>5.4 Window and Door Conditions</u>
 - Vinyl windows and caulking on rectory in good condition
 - Leaded/stained glass windows of Church covered with plexiglass on the exterior
 - Entrance doors were noted as having peeling paint/varnish and failed caulking joints
 - Window sill details stacked bricks laid on edge not very effective for shedding water

5.4 Window and Door Conditions



Photo 27: Deterioration and efflorescence below typical window [JCAL 2016]

5 EXISTING CONDITIONS

• 5.5 Landscape Conditions

- Landscaping around the church is relatively flat
- Insufficient slope for rain water and melting snow to drain away from building – moisture issues
- South lawn should be re-graded. Other elevations more challenging and costly

6 RECOMMENDATIONS

• Improve the roof shedding capabilities

• Repair the deteriorated stone and brick joints

• Improve the site's drainage capabilities

• Repair and paint interior finishes

• Refinish the church doors and caulking

7 ESTIMATE OF PROBABLE COSTS AND PHASING

Table 1: Class D cost estimate of priorities of work in 2016 dollars.

Priority	Recommended	Work Item	Estimated Cost
1	2016	Immediate Stone Masonry - repairs to stone masonry on south elevation (near gas meter) where joints are 100% eroded and extensive moisture infiltration present	\$15,000.00 - \$20,000.00
		Engineering Fees	\$3,500.00
		Sub-Total	\$18,500.00 - \$23,500.00
2	2016	 Roofing Installation of crickets, downspouts, and snow guards 	\$55,000.00 - \$75,000.00
		Engineering Fees	\$5,000.00
		Sub-Total	\$60,000.00 - \$80,000.00
3	2017	 Landscaping Re-grade swale in south lawn 	\$35,000.00 - \$50,000.00
1		Engineering Fees	\$1,500.00
		Sub-Total	\$36,500.00 - \$51,500.00
4	2017	Stone Masonry - Complete remaining repairs to stone masonry on south and west elevations	\$90,000.00-\$110,000.00
		Engineering Fees	\$7,000.00
		Sub-Total	\$97,000.00 - \$117,000.00
5	2018-2020	Chimney Repairs - Perform brick masonry repairs	\$35,000.00 - \$55,000.00
		Engineering Fees	\$3,500.00
		Sub-Total	\$38,500.00 - \$58,500.00

7 ESTIMATE OF PROBABLE COSTS AND PHASING (CONT'D)

		West elevation and bell tower		\$590,000.00-\$640,000.00
		 Perform brick masonry repairs 		
6	2021-2024	 Install flashing to window sills 		
		 Re-caulk windows and doors 		
		Engineering Fees		\$26,500.00
		Sub-Total		\$615,500.00-\$665,500.00
		South elevation		\$80,000.00 - \$115,000.00
		 Perform brick masonry repairs 		
7	2025-2027	 Install flashing to window sills 		
		 Re-caulk windows and doors 		
		Engineering Fees		\$11,000.00
		Sub-Total		\$131,000.00-\$161,000.00
		North elevation		\$100,000.00-\$130,000.00
		 Perform brick masonry repairs 		
8	2028-2029	 Install flashing to window sills 		
		 Re-caulk windows and doors 		
		Engineering Fees		\$9,500.00
		Sub-Total		\$109,500.00-\$139,500.00
		East elevation		\$65,000.00-\$85,000.00
		 Perform brick masonry repairs 		
9	2030-2031	 Install flashing to window sills 		
		 Re-caulk windows and doors 		
		Engineering Fees		\$6,500.00
		Sub-Total		\$71,500.00-\$91,500.00
			Total	\$1,178,000.00-
				\$1,388,000.00

7 ESTIMATE OF PROBABLE COSTS AND PHASING (CONT'D)

- Masonry, roof, landscaping: \$1.178M-\$1.388M
- Interior finishes (repair, painting): \$330K \$355K
- Exterior church doors: \$50K \$56K

GRAND TOTAL: \$1.558 - \$1.799

2016 PROJECTS

- Masonry project (Sept):
 - Budget: \$15,000 \$20,000
 - Actual: \$18,387 (includes CCN #1- \$4,185 extra area)
 - Contractor: Solid Masonry Inc.
- Roofing project (Sept-Oct):
 - Budget: \$55,000 \$75,000
 - Actual: \$57,977 (includes \$4,900 additional crickets + CCN #1 \$11,430 remove & replace caulking around windows)
 - Contractor: Heather + Little Ltd.
 - Catholic Mutual Insurance reimbursement: \$41,785
- Engineering Services:
 - Budget: \$8,500
 - Actual: \$8,500
 - Contractor: John G. Cooke & Associates

2016 Masonry Project





2016 Roofing Project







2016 Roofing Project





2017 PROPOSED PROJECTS

- Masonry Repairs:
 - Budget: \$60,000 \$70,000
- Roofing Repairs:
 - Budget: \$75,000 \$85,000
- Landscaping:
 - Budget: \$20,000 \$30,000
- Door Re-finishing:
 - Budget: \$13,000 \$15,000

Engineering fees: \$10,900

2017 PROPOSED PROJECTS

