

REFORMATTED FOR ACCESSIBILITY - SUMMARY ONLY

Structural Report

40 Wabash Avenue, Toronto, ON

Structural Review

MAL# 217083
Final Report
March 29, 2018

Prepared for:
Toronto Parks, Forestry, and Recreation

225 – 1750 STEELES AVENUE WEST
L4K 2L7
Tel: 905 760 – 1020
Fax: 905 760 – 1029
www.ma-eng.ca

Executive Summary:

1. The City of Toronto (the City) intends to convert a former linseed oil manufacturing plant into a community centre at 40 Wabash Ave in Toronto, Ontario. The building was originally constructed in 1910 and has been vacant since 1970.
2. The City of Toronto retained Milman & Associates Limited to conduct a visual condition survey of the existing structure at 40 Wabash Avenue, including the existing chimneystack structure. The purpose of this condition survey was to assess the condition of the existing structure and comment on any changes observed since the previous review of the structure, conducted in 2009 by Halcrow Yolles.
3. The poor condition of the roofing system has allowed water to penetrate into the building and damage the reinforced concrete structure. The reinforced concrete structure in areas A1 to A3 was typically in poor condition. Slab delamination in areas A1 to A3 ranged from approximately 70% to 80%; approximately 75% of columns in these areas require repairs.
4. In general, Areas A4 and A5 appeared to be in good condition. Slab soffit delamination in areas A4 and A5 ranged from 10% to 30%. Five of the fifteen observed columns in areas A4 and A5 require repairs, all located in the basement level of area A4.
5. In the interior of the building, approximately 25% of brick should be replaced, and approximately 55% of mortar joints should be repointed. Around the exterior, approximately 35% of the brick should be replaced, and 75% of mortar joints should be repointed. Several minor cracks in the brick wall were noted in the interior; however, an accurate assessment of the interior walls cannot be completed until the existing paint and graffiti is removed.

6. Due to the severity and extent of observed deterioration of the existing building, it is recommended that the reinforced concrete structure in Areas A1 to A3 be demolished and replaced with a new structure. The existing brick walls may be restored and maintained as part of a future community centre; however, if the existing reinforced concrete structure in areas A1 to A3 is demolished, the walls will require temporary lateral supports during construction. The concrete structure in areas A4 and A5 should be repaired; the observed deterioration did not necessitate removal and replacement of the structure in these areas.
7. The condition of the brick parapet appears to have significantly deteriorated since the 2009 review. Large gaps were observed in the mortar joints and several bricks were loose. The parapet should be demolished and replaced.
8. Several prominent cracks, up to 75mm in width, were observed along the top 4m of the chimneystack. The chimneystack appears to be leaning south along these cracks. The crack width does not appear to have significantly changed since the 2009 review. Vertical cracks that span part of the height of the chimneystack were observed along the north surface. It is recommended that the top of the chimneystack be demolished to the length of the cracks (approximately 4m) and that all other cracks should be repaired and mortar joints repointed. A detailed structural analysis of the stack should be completed in order to determine whether it is able to withstand the seismic and wind loads specified in the current *Ontario Building Code* at the reduced height. Depending on the results of the proposed analysis, the height of the stack may need to be further reduced, or structural reinforcement may be necessary.
9. The existing roofing and roof drains were in poor condition. All roofing and roof drains should be removed and replaced. Additional drains may be required in order to comply with current codes.
10. The foundation walls were not exposed during this condition survey and hence could not be reviewed.
11. The review described in this report is limited to elements that were exposed for visual review at the time of the condition survey. There was a concrete topping on the floor slab in areas A2 and A3 on all levels and hence the condition of the underlying slab could not be accurately assessed. Accurate review of the floor slab was further obstructed by debris that covered the floor slab in most locations throughout the building and water that covered the basement slab-on-grade in area A4.
12. A grand total estimated cost for structural work, as described above, is in the magnitude of **\$9,160,00.00 + HST**. The repair cost estimate is for structural work only. Architectural, mechanical, electrical, etc. are not included in the cost estimate. The cost estimate does not include potential foundation wall repairs, or other potential repairs of structural elements that were not exposed for review.

APPENDIX C

40 Wabash Avenue, Toronto, ON

STRUCTURAL REVIEW

Budgetary Cost Estimate

Cost Estimates

REMOVAL OF EXISTING STRUCTURE	Repair Quantity	Units	Unit Rate (\$)	Amount (\$)
Level 4 (A2 roof)	84.00	cu.m.	300.00	25,200.00
Level 3 (A3 roof, A2 3rd floor)	193.00	cu.m.	300.00	57,900.00
Level 2 (A2, A3 2nd floor)	193.00	cu.m.	300.00	57,900.00
Level 1 (A2, A3 ground floor, A1 roof)	176.00	cu.m.	300.00	52,800.00

REBUILD REMOVED STRUCTURE	Repair Quantity	Units	Unit Rate (\$)	Amount (\$)
Level 4 (A2 roof)	351.00	sq.m.	900.00	315,900.00
Level 3 (A3 roof, A2 3rd floor)	806.00	sq.m.	900.00	725,400.00
Level 2 (A2, A3 2nd floor)	806.00	sq.m.	900.00	725,400.00
Level 1 (A2, A3 ground floor, A1 roof)	738.00	sq.m.	900.00	664,200.00

CONCRETE SURFACE REPAIR	Repair Quantity	Units	Unit Rate (\$)	Amount (\$)
Level 4 (A5 roof)	28.00	sq.m.	700.00	19,600.00
Level 3 (A4 roof, A5)	164.00	sq.m.	700.00	114,800.00
Level 2 (A5)	28.00	sq.m.	700.00	19,600.00
Level 1 (A4, A5)	326.00	sq.m.	700.00	228,200.00

BRICK WALL REPAIR	Repair Quantity	Units	Unit Rate (\$)	Amount (\$)
Graffiti removal	4200.00	sq.m.	115.00	483,000.00
Interior Repointing	2090.00	sq.m.	260.00	543,400.00
Interior Replacement	825.00	sq.m.	260.00	214,500.00
Exterior Repointing	1820.00	sq.m.	400.00	728,000.00

CHIMNEYSTACK REPAIR	Repair Quantity	Units	Unit Rate (\$)	Amount (\$)
Demolition, Top of Stack	1.00	ea.	50,000.00	50,000.00
Crack Repair	20.00	m.	500.00	10,000.00
Exterior Brick Repointing	200.00	sq.m.	900.00	180,000.00
Demolition, Top of Stack	1.00	ea.	50,000.00	50,000.00

OTHER WORK	Repair Quantity	Units	Unit Rate (\$)	Amount (\$)
Haulage	1850.00	cu.m.	40.00	74,000.00

Subtotal: \$6,230,800.00
 Mobilization (2%): \$124,616.00
 G.C. Markup (10%): \$623,080.00
 Construction Supervision (5%): \$311,540.00
 Design & Project Management (5%): \$311,540.00
 Contingency (25%): \$1,557,700.00
 Total: \$9,159,276.00

Notes:

1. All values are in 2017 dollars
2. Taxes and security excluded
3. Cost of shoring included in demolition costs
4. Rebuilding costs include concrete, reinforcement and formwork for slabs, columns and beams
5. The costs presented are for structural work only. Architectural, electrical/mechanical, etc. are not included.
6. Costs are based solely on observed deficiencies and do not include costs for potential repairs of structural elements that were not exposed for review, such as foundation walls.