



**Grand Trunk Railway
(GTR) Shops**

CAN THE GTR BUILDING BE REPURPOSED AS PROPOSED?



The Engineer's Comment

R. RITZ ARCHITECT INC.

CAN THE GTR BUILDING BE REPURPOSED AS PROPOSED? THE ENGINEER'S COMMENT.

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I mentioned at the last Open House that, Michael Pond of Read Jones Christoffersen Ltd. Engineers (RJC Engineers), was going to be on site on November 26 to have a look at the GTR Building along with myself and City of Stratford staff, Emily Robson, Corporate Initiatives Lead and André Morin, CAO.

Michael could not be here tonight but did provide this comment, RJC's last formal review of the structure was completed in 2012—fourteen years ago—when restorative work was identified as necessary and the replacement of the roof was recommended as a priority to protect the building from further deterioration. Since then, the structure has remained abandoned, and the removal of the roof has left the steel trusses, beams and purlins exposed to the elements, without the protection or the stabilizing diaphragm action originally intended to tie the system together.

That said, there is optimism that the structure can be largely preserved and restored. At the same time, a significant amount of detailed validation is required before RJC can responsibly provide any public statements. A comprehensive condition assessment, testing program, and structural analysis are all necessary to confirm the building's current state and to understand the upgrades that would be required to support the uses being contemplated.





CAN THE GTR BUILDING BE REPURPOSED AS PROPOSED? RJC ENGINEERS - REPORT

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Building Condition Assessment Report
City of Stratford Cooper Site
350 Downie Street, Stratford, Ontario

June 25, 2012
RJC No.: TOR103282.0003

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Executive Summary

Introduction

Read Jones Christoffersen Ltd was retained by Aird & Berlis LLP on behalf of the City of Stratford to undertake a physical condition assessment of the building structure located at 350 Downie Street in the City of Stratford, Ontario, commonly referred to as the "Cooper Site".

Purpose

The primary purpose of this investigation was to determine the as-built condition of the building steel framing structure as it relates to the overall structural integrity of the building at the above noted site. In conjunction with the building structure, a review of the slab-on-grade, roof deck structure, roofing system, and exterior cladding elements was also undertaken as part of the investigation.

The findings of the condition assessment were used to evaluate the capability of typical structural elements within the existing building structure, given their present condition, to withstand current building design loads for the purpose of establishing the probable cost to remediate the structure in comparison with the cost to completely dispose of the structure.

Summary of Findings and Conclusions

The findings of our field survey has concluded that original construction deficiencies (e.g. missing rivet bolts), in service use (e.g. impact damage), fire related member failure and warping, and corrosion related deterioration of the steel superstructure exposed to rain and snow has locally reduced the structural capacity of the affected roof framing and column members. If the building is to be brought back in to a serviceable condition, rehabilitation of the observed deficiencies and deterioration is required. Furthermore, in order to avoid future growth of corrosion related deterioration, measures are required to protect the structure against rain and snow.

In order to analyze the structure's ability to support loads based on the Ontario Building Code (OBC), a computer modeling program called SAP 2000 (version 15) was used to model typical truss systems for the roof framing. Our theoretical structural analysis has found that in general, the typical roof trusses are capable of supporting the intended vertical loading, assuming that the members have not undergone any section loss due to corrosion; however, the roof beams spanning between trusses are not adequate to support the loads imposed. Reinforcing of the roof beams are required to meet the minimum load requirements of the OBC

Read Jones Christoffersen Ltd.





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Rehabilitation of Superstructure - \$12,000,000

The purpose of this strategy is to essentially repair, reinforce, restore, and protect the structure of the building to reinstate the structural integrity of the building and allow for its future re-use. Furthermore, with the future use of the building and projected timing of construction unknown, protection of the structure would also be required to maintain its integrity for that period of vacancy.

The following scope of work is the minimum recommended work required to restore the structural integrity of the building and protect it during its period of vacancy:

1. Wholesale removal and disposal of the existing roofing systems, including decking, strapping, vertical cladding at each apex, etc.;
2. Sandblast all steel to bright, clean steel;
3. Replace warped roof purlins;
4. Reinforce roof purlins;
5. Reinforce damaged and deteriorated truss members;
6. Chip concrete around bases of deteriorated columns;
7. Reinforce deteriorated column webs and flanges;
8. Repair delaminated and deteriorated mezzanine concrete;
9. Repair exterior concrete walls by removing and repairing delaminated concrete and injecting cracks in concrete;
10. Repairs to brick veneer, masonry infill, and cladding;
11. Coat all structural steel with Galvafroid or other protective coating;
12. Install new cladding and glazing in existing openings;
13. Install new roofing assembly including strapping and decking;
14. Replace all roof drains and rain water leaders;

Building Demolition - \$4,000,000

This strategy involves the complete demolition of the building structure, including sub-structure elements, down to grade. The purpose of this strategy is to end up with a brownfield site graded to the approximate current ground elevation for future development purposes as deemed appropriate by the City of Stratford.

Annex Demolition - \$500,000

