



## OBSERVATION REPORT

Project:	Mathers House – Chimney Review	Report:	<b>OR-1</b>
Location:	6490 Deer Lake Ave., Burnaby, BC V5G 3T6	Date of Review:	Oct. 28, 2025
Client:	Alfred Horie Construction Co. Ltd.	Date of Issue:	Nov. 6, 2025
Contractor:	Alfred Horie Construction Co. Ltd.	Project No.:	L25-212.1
Observations and Remarks by: Cameron Robinson P.Eng.			
Reviewed by: Bryan Reilly, P.Eng.			
Report Distribution			
Name	Company	Contact	
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Cameron Robinson P.Eng., of Latera Engineering Inc. (Latera), attended the site to review the condition of the existing masonry chimneys at the above-noted address.

### OBSERVATIONS

<p>1. Photo shown is copied from the Heritage Burnaby website displaying the W. J. Mathers house. The North and Central chimneys are identified. The South chimney is not shown in this view and is located on the opposite side of the building.</p>	
<p>2. Photo shows the brick masonry of the south chimney after the chimney was removed to the top of the roof structure. This chimney is not being used as the fireplaces, this chimney serves, are not in operation.</p>	

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3. The mortar of the south chimney at the top of the roof level was easily compressed into powder with little force. There is essentially no strength to the mortar at this location. The soft mortar could be identified using a pick as far as could be reached down the flues (approximately 18-inches).



4. The bricks can be easily dislodged by hand. The chimney was held in place by its own weight only. The chimney, in its previous state, would likely have collapsed in a seismic event.



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5. Photo shows the north chimney with the brick removed down to the roof level. The mortar at this location was found to be considerably stronger than the south chimney; however, masonry has very little tensile strength therefore, a tall chimney is still likely to collapse in a seismic event. This chimney is not being used as the fireplaces, this chimney serves, are not in operation.



6. Photo shows the top of the central chimney. At the time the photo was taken, approximately 6 rows of bricks were removed. The central chimney is currently being used to vent the boiler. Note the proximity of this chimney to the existing roof structure behind.



7. The mortar is deteriorated similarly to the south chimney. The bricks could be easily separated by hand.



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8. The mortar is powdery and has lost essentially all strength at locations.



## RECOMMENDATIONS

- A. The most cost effective solution would be to remove the brick of the North and South chimneys to below the roof level and extend the roof over the existing chimneys. The North and South chimneys are not being used and could be abandoned within the walls of the building. Similarly, the Central chimney could also be dismantled to below the roof level and roofed over with the boiler venting rerouted and replaced with a metal stack.
- B. A tall chimney such as the North and South Chimneys are very vulnerable to seismic forces if they are rebuilt. Seismic forces are proportional to the mass of the structure. Heavy tall chimneys generate significant forces where the chimney meets the roof, likely leading to collapse and potential injury in a seismic event. External bracing of the chimneys is possible using 2 steel braces extending from the roof to the chimney at approximately 90 degrees to each other, extending to the approximate mid-point of the chimney. Each brace would be at approximately 45 degrees to the line of the roof. All loose masonry would need to be disassembled and reconstructed. The masonry can be reinforced internally with galvanized steel angles to maintain strength for the entire length of the chimney. In addition, reinforcing wire can be embedded in the mortar joints to further reinforce the chimney and ensure that it does not break apart internally in a seismic event. We would recommend that the braces be hot dip galvanized steel to limit corrosion then painted black to minimize their visual impact. Bracing of the central chimney could be done in a similar way from the roof structure; however, since this chimney is at the corner of a roof hip, it would be relatively easy to hide the braces within the roof structure.
- C. A third option would be to remove all loose brick and rebuild the chimney around an internal structure that would extend down the chimney for support and form a backup wall above the roof line to support the masonry. This would require the most engineering, labour on the part of the masons and a combination of custom structural steel and a cold form steel stud back-up wall. Capping at the top of the chimney would be required to keep the inside of the chimney dry.

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Once a determination for abandoning, bracing or internally bracing is made, Latera would be available to assist with the design and prepare drawings for construction.

If you have any questions or comments regarding the above, please do not hesitate to contact the undersigned directly.

Yours truly,

**LATERA ENGINEERING INC.**

2025-11-06



Permit to Practice: 1000301

Per: Cameron Robinson, P.Eng.

Reviewed by: Bryan Reilly, P.Eng.