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Attachment G

June 06, 2022

Primex Investments Ltd.
#200 – 1785 West 4th Avenue
Vancouver, BC V6J 1M2

Attn: Mr. Greg Mitchell, M.PL., MCIP, RPP
(greg@primexinvestments.com)

Re: **Scott Building Seismic Upgrade Strategy**
2659 Douglas Street, Victoria, BC
EQ Project Number: 18010

As requested, this letter describes the structural design approach for the seismic upgrade of the Scott Building, specifically the heritage façade.

The existing Scott Building was constructed circa 1912 and currently consists of two occupied suspended levels and a roof, and a small basement area below grade. The building has had numerous minor modifications since the original construction date however does not appear to have been significantly altered from its original configuration.

The existing structure is constructed predominantly of timber framing; timber flooring over timber joists spanning between sawn timber beams. Larger spans utilise steel beams rather than timber beams. The beams span between cast-iron columns throughout the interior of the building, and load bearing multi-wythe unreinforced masonry brick walls around the building perimeter. The lateral load resistance for the existing building is provided by diaphragm action through timber flooring, transferring loads to the perimeter masonry brick walls. This load path was identified as a critical structural deficiency in the structural inspection and seismic assessment report by Glotman Simpson dated July 10, 2017.
The proposed upgrades to the building include the addition of an occupied one-storey addition on top of the existing building, and extensions to the building to the south and east (refer to structural and architectural plans). The upper levels of the building will be re-purposed for residential use, and the lower level will be a commercial space with some ground level residential areas. It has been proposed to retain approximately 50% of the existing floor area of the building at each of the suspended levels, however all the internal columns will be removed and replaced with new structure to suit the alignment of the new building plans. The building area retained will follow the existing façade on the north, west and south sides; with the central area and extensions noted above being new construction. All new structure has been designed to meet the requirements of the current BC building code.

The deficiencies of the existing unreinforced masonry brick façade are being addressed with a new lateral system for the building. Both the in-plane and out-of-plane structural capacity of the multi-wythe masonry walls has been assessed as a structural deficiency in a seismic event. Current code requirements require that brick masonry walls in high seismic zones are to be reinforced, however due to the heritage classification of the façade it is not seen as practical to correct this detailing deficiency without replacing or re-building the façade.

To address the deficiencies in the brick masonry façade the new lateral system has been designed to keep the displacements of the façade in an elastic range to prevent significant cracking and other permanently

damaging deformations that may result in failure of the facade. A displacement-based design approach based on accepted drift limits for unreinforced masonry has been implemented in the structural design.

The new lateral system supporting the façade and the entire building consists of:

1. Cintec anchors (tested up to acceptable design loads in various locations in the existing façade) installed from the inside face of the façade extending through to the outer finishing brick wythes.
2. A steel frame backing system behind the existing façade restraining the new anchors. This steel frame spans between the floor levels and transfers seismic forces from the façade into an upgraded concrete topping diaphragm.
3. A reinforced concrete diaphragm over the top of the existing and new floor systems. This system was selected due to its stiff behaviour that is compatible with the deformation limits of the brick masonry walls.
4. New reinforced concrete shear walls distributed around the building, which similar to the concrete diaphragm were chosen for their stiffness compatibility with the brick masonry walls.
5. Reinstatement and reinforcement of the parapet structure on the North and West façade, utilising new anchors and ties to restrain the parapet and tie the mass into the new steel backing system.
6. Strengthening of the existing joists to support the new concrete diaphragm. Loads from the floor system are also provided with an alternative gravity load path through the new façade restraint steel frame system to transfer loads directly to the foundations without relying on the masonry façade.

With reference to the document RFP#01 from Summit Brooke Construction, we can confirm that the structural components of this pricing document make up the structural systems directly required to support the heritage façade. Specifically:

1. General Requirements: Façade Strengthening, Excavation Shoring and Underpinning, Micro Piles.
2. Concrete: All concrete slabs (toppings on timber floors included), shear walls and foundation systems below shear walls.
3. Masonry: All masonry upgrades and restoration related works.
4. Metals: Structural steel and Misc Metals supporting strengthened floors new backing for façade.
5. Wood and Plastics: Framing materials and labour related to new façade backing wall.

We trust this adequately describes the approach to provide seismic upgrades to the existing structure of the Scott Building, and that this letter is adequate for your purposes at this time.

Please contact us if you have any queries.

Yours truly,
EQUILIBRIUM CONSULTING INC.

Craig Fowler P.Eng
Associate