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

Attention: Mr. Greg Mitchell, M.PL., MCIP, RPP

Delivered via email: greg@primexinvestments.com

Dear Sir:

**Re: Seismic Upgrading Strategy
727 Yates Street, Victoria, B.C.
BMZ Reference Number: 90093-01**

As requested, this letter describes the Seismic Upgrading work for the existing building at 727 Yates Street, Victoria, B.C.

The existing building at 727 Yates Street comprises the original old (approx 100 years old) two-storey unreinforced brick masonry structure with wood floors and roof and also, a one-story more recent addition (1950's vintage) made with concrete block masonry and wood roof, added at the rear. The building has no basement, so foundations are shallow footings with a ground floor concrete slab on grade.

The structural drawings submitted for a building permit show a one-story addition on top of the existing older two-story building, over most of the area of the older two-story structure, and a four-story addition, on top, over most of the newer one-story part of the building at the rear.

The structural drawings provide structural design criteria on drawing S1, and indicates that the new additional floors to the existing building are designed to 100% of the Seismic requirements of the B.C Building Code 2018 and that the existing structure (including the old two-story brick structure) is Seismically upgraded to meet 100% of the Seismic design requirements of the 2018 B.C. Building Code. As the existing Brick walls of the older two-story structure are to remain as is, two detailed Seismic requirements of the Code are identified on the structural drawings as "deficiencies" as these are not practical to correct in detail without completely replacing the old brickwork or completely rebuilding the old brickwork. The two deficiencies are:

1. The brick masonry walls of the old two-story structure are unreinforced. The Code requires all masonry walls in high Seismic zones are to be reinforced. To compensate for this deficiency, all unreinforced brick walls are designed for Code seismic design factors of $R_d=R_o=1.0$, which means the old brick walls are designed to remain "elastic" and not to be overstressed under the design earthquake seismic design forces.
2. There is no significant seismic separation gap between the brick walls of the older two-story building and the existing brick walls of the older brick building to the west. The Code requires a seismic gap between structures to avoid damage due to collision of moving structures during the design earthquake. Note that all new parts of the building structure do have a seismic gap between the new structures and the existing building to the west.

A description of the structural work for 727 Yates Street is as follows:

1. The existing brick walls of the older two-story part of the building are to remain wherever they are visible in the completed project. The existing brick walls are anchored to the new structure for all seismic loads required by the BC Building Code.
2. All floors and roofs for the renovated building are new. A new reinforced concrete transfer structure will exist at the second floor to support the new residential floors above the second floor, over the commercial space on the ground floor. The new reinforced concrete second-floor structure also provides the required two-hour fire separation between the commercial ground floor space and the residential floors above. Seismic resistance for the ground floor structure is provided by new reinforced concrete rigid frames in the east-west direction and new reinforced concrete block shearwalls in the north-south direction. The new structure above the second floor is all wood frame with seismic resistance provided by plywood shear walls in both the east-west and north-south directions.
3. An unusual added cost of the new structural work is that all new and existing foundations along the west side of 727 Yates Street must be lowered to match the level of the basement of the existing building to the west, in order to avoid adding large horizontal soil pressures that may damage the basement walls of the existing building to the west, due to increased structure loads from the new structure of 727 Yates Street.

We trust the foregoing comments are clear and are sufficient for your purposes at this time. Please call the writer if you have any questions.

Yours truly,

Bryson Markulin Zickmantel Structural Engineers


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