

## FINDINGS:

The principal observations and description of the wall profile uncovered at the test openings may be summarized as follows (*the description starts from the outermost component moving inward towards the interior of the wall system*):

1. **Brick**: 4 inch wide brick unit;
2. **Drainage Gap**: the gap or void between the back face of the brick and the exterior sheathing system was noted to be ~1.25 to 1.5 inches;
3. **Building Paper (Tar Paper)**: 1 layer of building paper, loose laid and unbounded to the exterior sheathing. The building paper was noted to overlap the rubber sheet at the base of the wall;
4. **Through-wall Flashing**: Loose laid rubber-sheet. This rubber sheet was located at the base of the masonry wall where the masonry bears on the top edge of the concrete floor slab. This rubber sheet extended vertically up against the exterior sheathing system and horizontally covering the top edge of the concrete floor slab (7 to 10inches at vertical leg and 5inches at horizontal leg). At both test opening locations where this rubber sheet was uncovered, the vertical portion of the rubber sheet was noted to be pinched or wrinkled and not laid flat up against the back up sheathing. The rubber sheet was laid loose and there did not appear to be any attempt to bond the rubber sheet to the gypsum board sheathing system.
5. **Exterior Gypsum Board Sheathing**: The gypsum board sheathing was noted to be ~0.5 inches in thickness. At the three test openings where the gypsum board sheathing was uncovered it was observed to be in a state of disrepair. The gypsum board sheathing was noted to be brittle and damaged as a result of prolonged exposure to moisture (crumbled to the touch). As well the gypsum board was noted to be discoloured and contaminated with black residue.
6. **Brick Ties**: The brick ties uncovered at the three openings were noted as “corrugated metal strip brick ties”. These strips of corrugated metal serve to laterally secure the brick units to the metal stud wall system. At all three test openings conducted, corrugated metal strip ties were uncovered. At two of the three openings the metal strip ties were noted to be corroded to varying degrees.

## RECOMMENDATIONS:

Several factors were considered in assessing the viability of localized through wall flashing repairs or whether a more comprehensive repair approach is necessary. It should be understood that at the time of our field review limited test openings were performed. While the test openings revealed readily visible damage at the exterior sheathing, the soundness or water tightness of the remainder of the exterior sheathing outside the area of test openings is unknown and unclear. With respect to the corrugated metal strip ties that secure the brick façade to the metal studs, the condition of all brick ties is also unclear. Notwithstanding, the fact that two of three brick ties uncovered were observed to be corroded is a cause for concern. Further the extent of the contamination to the exterior gypsum board sheathing is unknown. At all locations uncovered by means of the test openings, the exterior sheathing was discoloured and contaminated with black residue. While no testing was performed to verify if mould was present, it is likely that mould growth has occurred where the gypsum board sheathing has been subject to prolonged exposure to water. Where local repairs are performed limited to the installation of a new through-wall flashing at the base of the walls only, there is a likelihood that future maintenance repairs will become necessary at brick areas that do not coincide with the new through wall flashing repair areas.

Based on the above we recommend that all the exterior brick be removed, the exterior sheathing be removed and a new wall system be introduced. The new wall system may be replaced with a new exterior sheathing and drainage board system and reinstatement of new brick. Alternatively, as the wall system is dismantled and exposed, this may offer an opportunity to improve the thermal performance of the exterior wall and additional insulation may be added by means of installing an exterior insulation finish system or EIFS - a wall system that combines an insulation board with layers of cementitious lamina and a paint coating.