

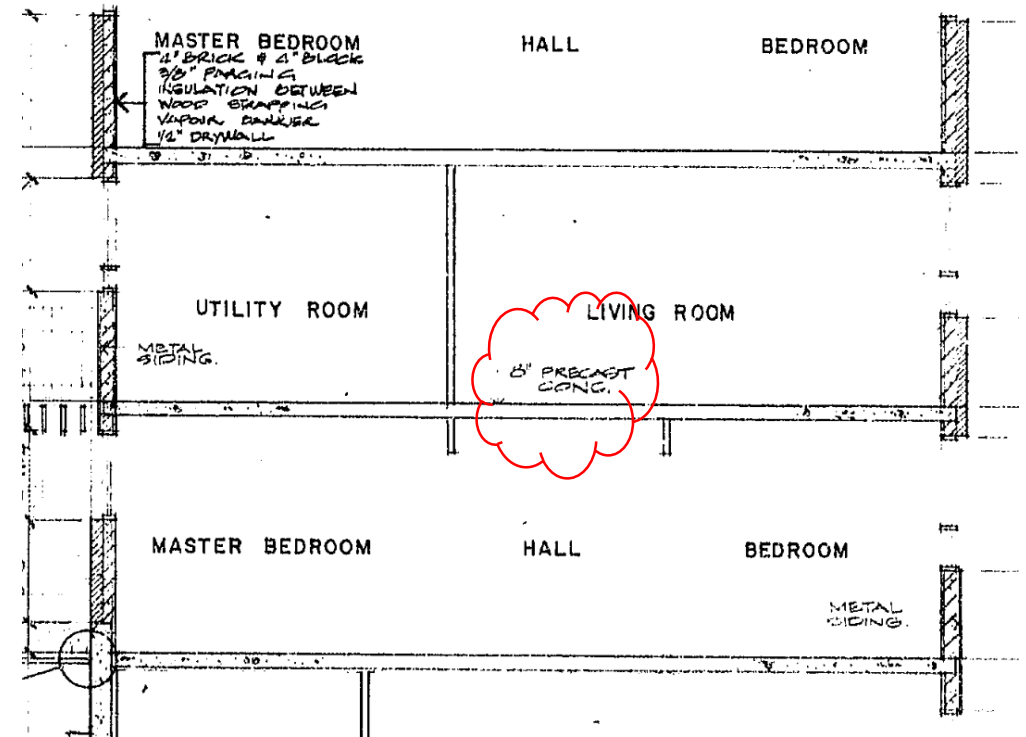
Item 6 - Swansea Mews Update
TCHC Public Board Meeting - June 28, 2022
Report#: TCHC:2022-42 **Attachment 1**

Toronto
Community
Housing



Engineering Report
Presented at the Swansea Mews Town Hall Meeting
June 14, 2022

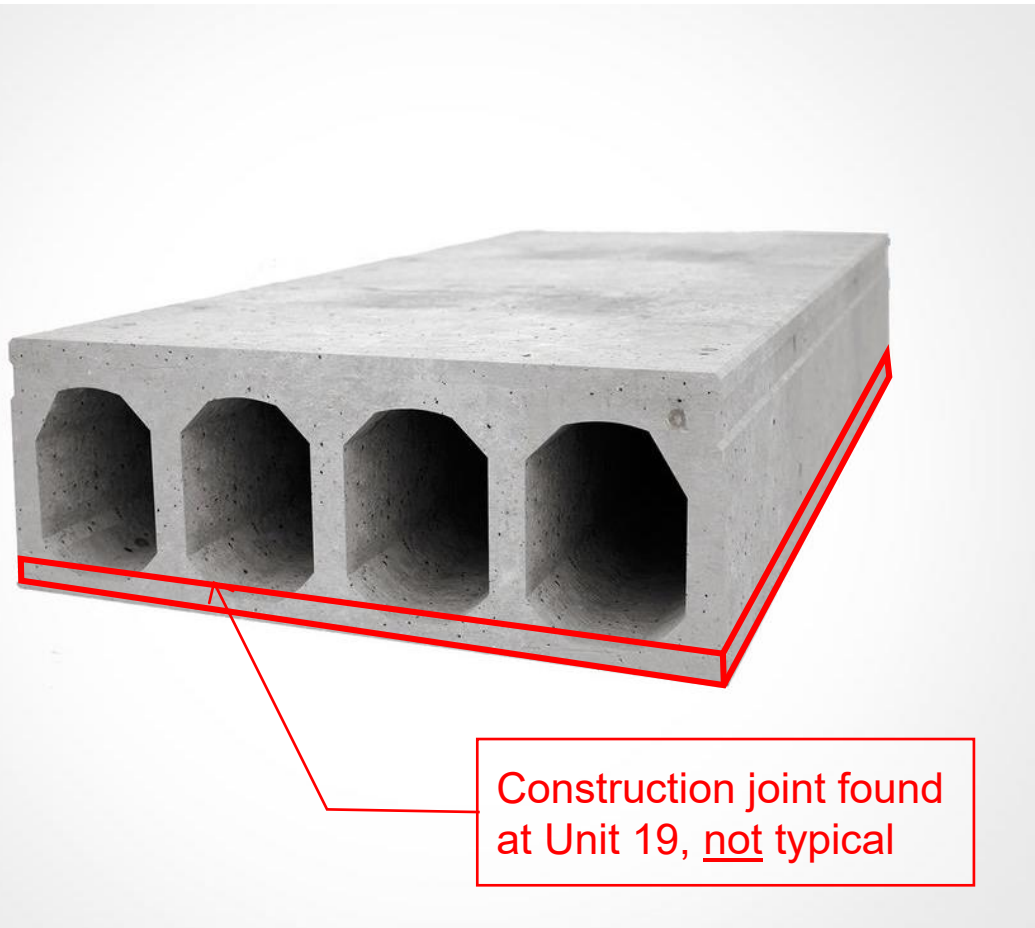
Existing Construction



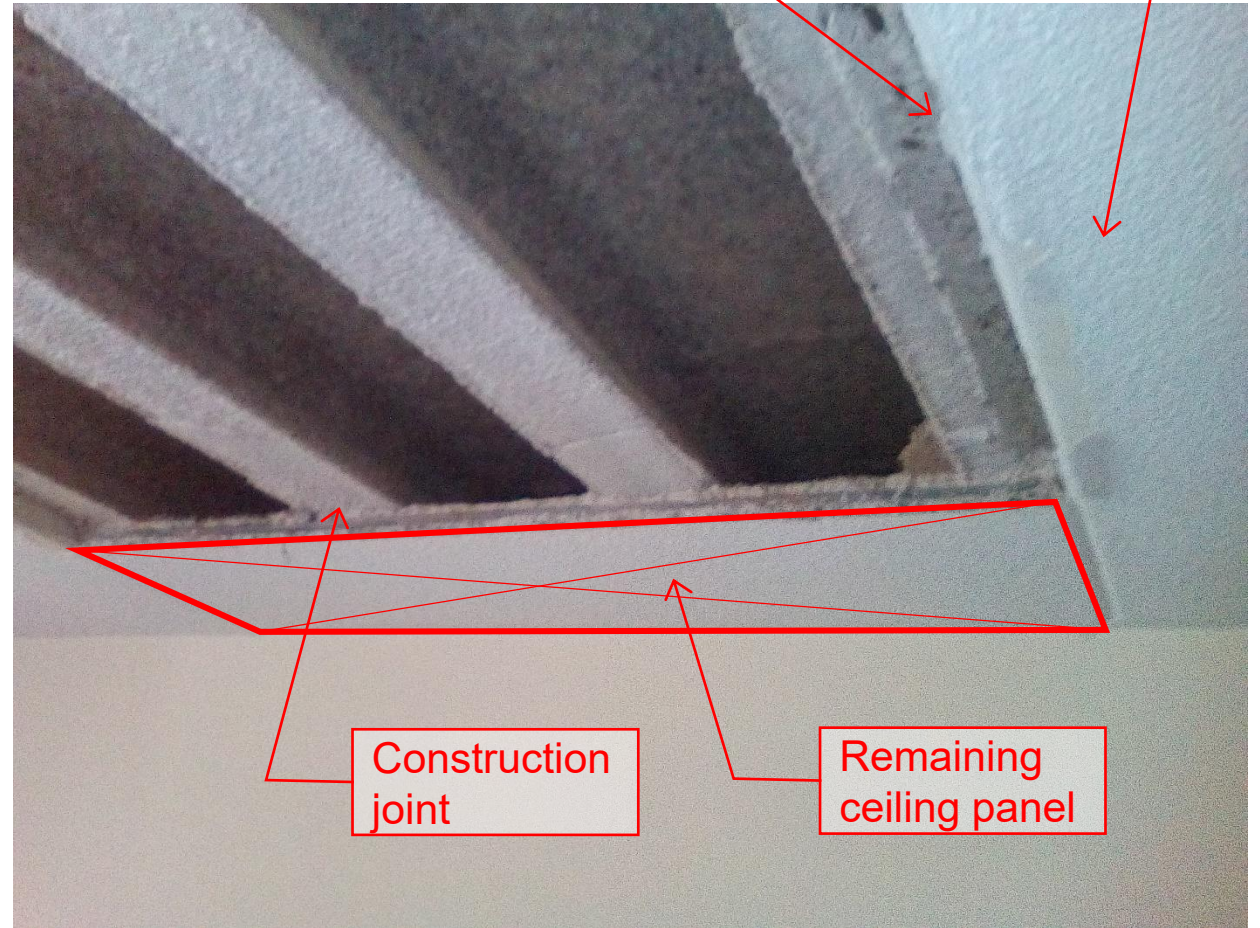
According to the original structural drawings, the 2nd, 3rd, and 4th floors of the townhouses consist of “8-inch thick hollow core precast slabs”. These slabs were designed to span the full width of a unit from party wall to party wall



Typical hollow core slab installation



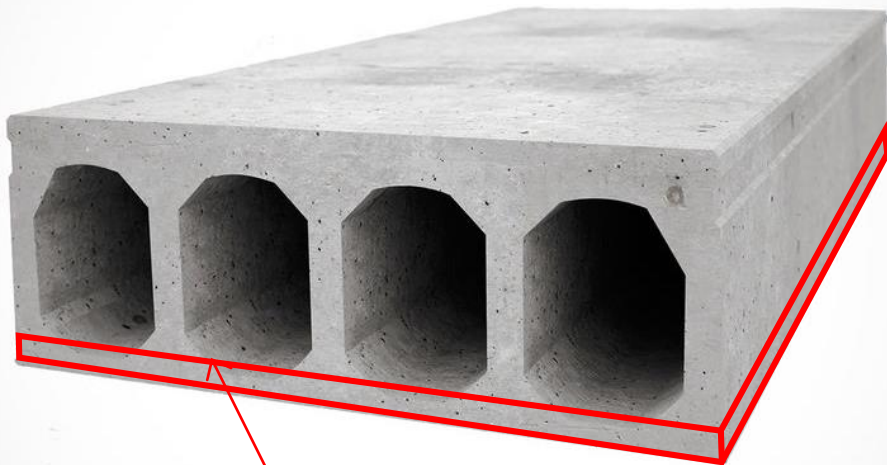
Example of a hollow-core precast panel



Precast panel in Unit 19

The third-party engineering team have determined:

- **Highly irregular failure**
None of the external engineering team, internal TCHC design/engineering dept. or City building dept. staff have ever seen a failure like this.
- **The defect is part of the original construction**
The panel did not fail due maintenance or upkeep.
- **The panel's defect was hidden**
Visual or conventional inspection would **not** have discovered this defect from the original construction.
- **The panel's failure was sudden**
There was no warning or signs of pre-failure.



Construction joint found at Unit 19, not typical

Example of a hollow-core precast panel

Testing and Inspection

The third-party engineering team carried out 2 types of testing:

- **Electromagnetic Scanning**

This is a non-destructive imaging scan similar to X Ray

- **Destructive Hammer Testing**

The underside of a panel is broken open to test integrity and allow for actual visual inspection. This test does not compromise the structural integrity of the panel.

Electromagnetic Scanning Process



Electromagnetic Scanning Plan

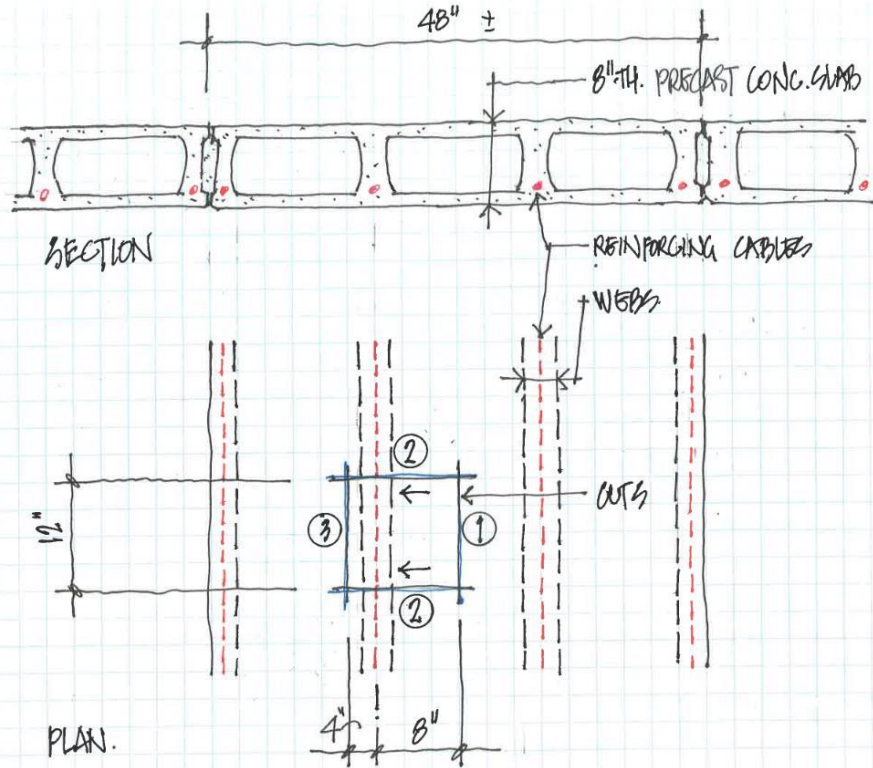


27 (17.5%) of units scanned (or known)

5 / 378 (1.3%) of panels scanned (or known) exhibited detachment

Destructive Testing Process

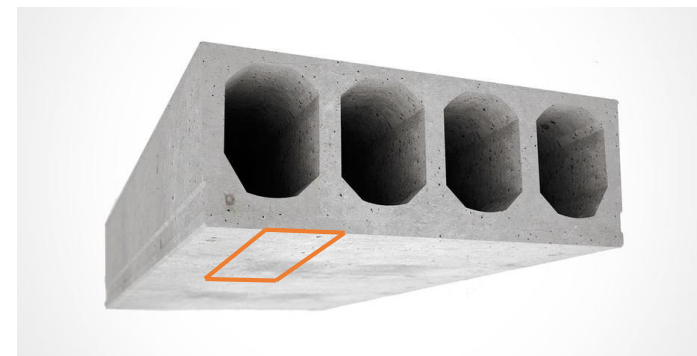
Swansea Mews - Cut Preparation for Destructive Testing



At locations marked with an "X" Procedures for test cut:

- 1 Scan U/S slab to locate reinforcing cables and confirm depth of cable.
- 2 Layout cut lines as shown.
- 3 Set concrete saw depth of cut to max. 1 3/8" (35mm). Verify depth of cut does not damage steel cables - if necessary decrease cut depth.
- 4 Cut in order shown. DO NOT BREAK cut section.

Breaking will occur with Consultants present to witness and record.





Examples of passing tests – underside of panel stays attached at “web”

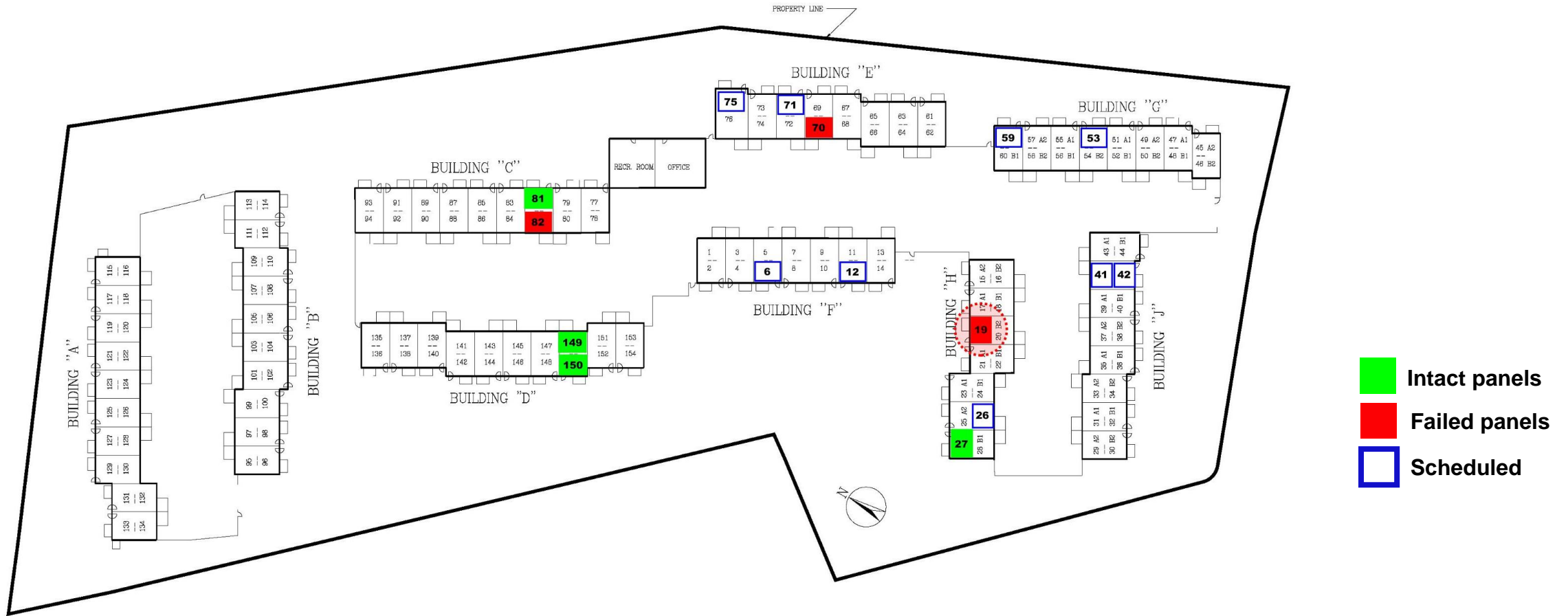


Example of failed test - panel failed clean separation occurred between underside of web and bottom of panel.



Destructive testing of the slab soffit (ceiling) – test shows a clear pour joint between the stems (main structure of the floor slab) and the soffit panel. Photo also illustrates that the concrete soffit is not reinforced (no bars or wire mesh visible at the cut lines) nor is there any physical connection to the stem.

Destructive Testing Plan



3/14 (21%) of panels tested (or known) exhibited detachment

Based on these results, every panel in every unit must be tested in order to ensure safety of the tenants.

Planned Retrofit

Site Improvements

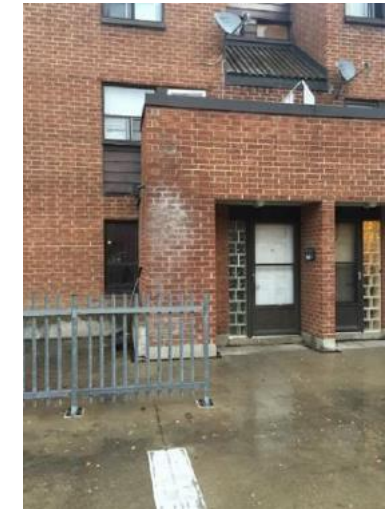
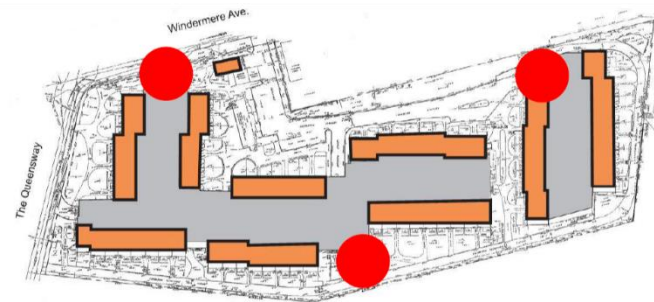
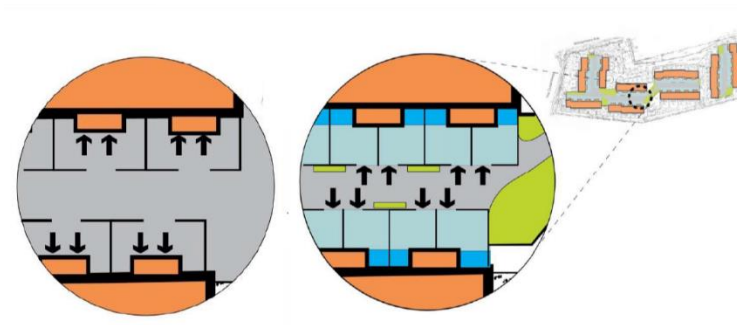
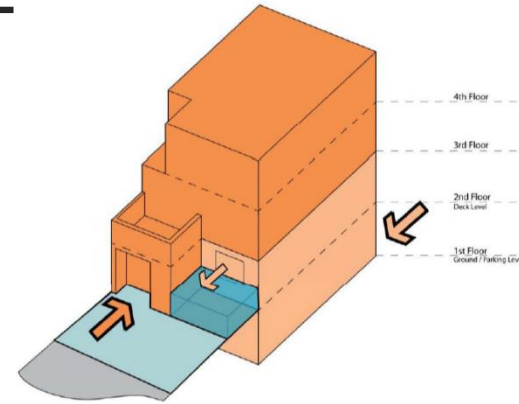
- Ease of Access Upgrades
- Unit Access and Visual Privacy
- Retaining Wall Repairs
- Parking Garage/Site Lighting
- Parking Garage Sewer Repairs Deck Upgrades – Maintenance
- Parking Garage Slab and Column Repair

Building Improvements

- Envelope Upgrades & Repairs
- Windows, doors, balconies, Re-roof
- Mechanical Upgrades – Boiler Replacement
- Electrical Upgrades
- Full Interior Finish Replacement

Interim Investments

- Landscape
- Sitewide Stair Replacement
- Waste Collection



Planned Retrofit

How to Move Forward:

1. **Get people to safety.**
2. Shore the buildings for safety.
3. Performing testing and inspection:
 - How many defective panels?
 - Can we detect defective panels through imaging?
 - Can the panels be repaired? How?
4. Can the retrofit proceed?
5. If so, can the work be moved forward faster to get tenants back to their homes?

