Case Study:

Belmont Trio, Kitchener, ON

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Background

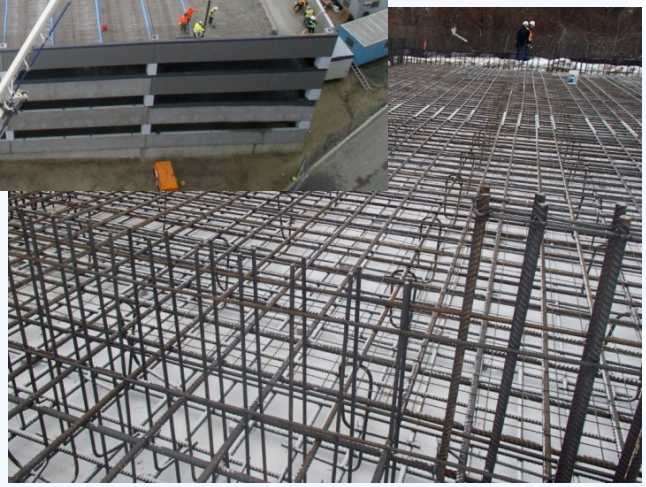
- Precast Concrete is a mature technology
- Southern Ontario has long been familiar with precast parking garages, precast hollow-core floors and precast cladding
- With the recent opening of two new precast wall panel plants in Southwest Ontario total precast buildings have become a viable and desirable option

Project Overview

- Three residential towers: 14, 12 and 8 storeys
- Central 4-level parking structure
- 412 residential units and 492 parking spaces
- All structures built utilizing total precast construction

Foundations

- Basements not practical due to high water table
- Necessitated an above-ground parking structure
- Garage built using precast concrete double tee floors support by precast spandrel beams and walls
- Raft slabs used for building foundations



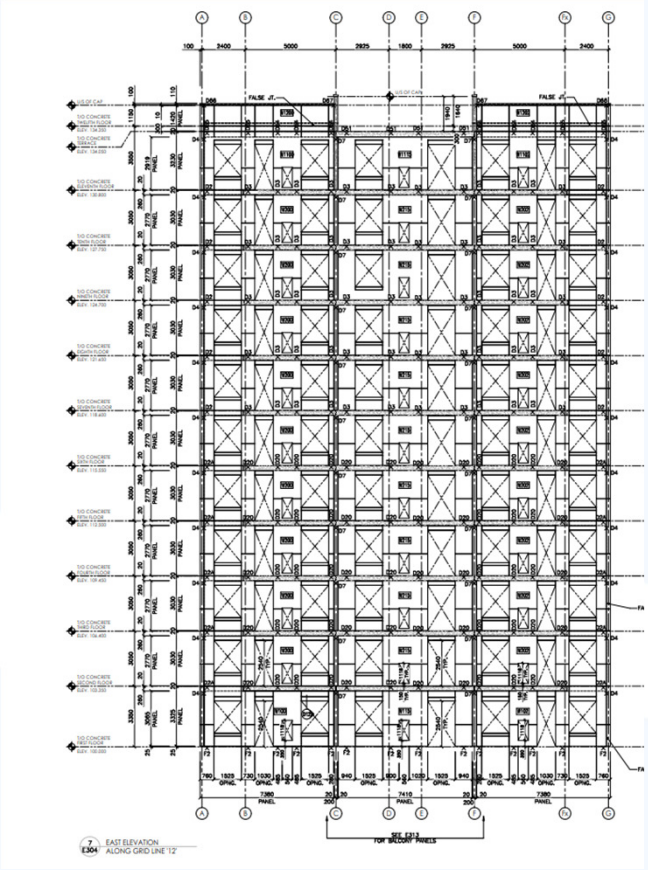
Objectives, Solutions & Achievements

- Owner's objective was to build structures in quick, predictable manner
- Precast allowed for fabrication of structural elements to occur off site and be quickly assembled on site
- Erection of structures could continue through most weather conditions
- Building cladding erected with structure
- High durability for both structure and cladding

Project Facts

- Three residential buildings utilized over 3,250 pieces of precast concrete in addition to nearly 434,500 ft^2 of precast hollow-core slabs
- Parking structure provided additional 230 pieces of precast concrete
- Typically precast floors were erected in a weekly cycle
- 14-storey tower was built, from groundbreaking to occupancy in 17 months

Innovation



- Precast fabricator was introduced into design process during initial phases and was a regular participant in design meetings
- Allowed design to conform to fabricator's unique fabrication approach and eliminate changes later
- Allowed fabricator to start shop drawings and fabrication before final architectural design was completed

Innovation

- Utilizing the exterior wall precast wall as the main structural bearing element provided a great deal of structural efficiency, but limited the architectural aesthetics of the building
- Overcome by the architect through a series of offset, two-storey balconies and combining the exterior building penetrations for venting and exhaust in a louver above the glazing

Lessons Learned

- Precast concrete building construction can be effectively used in the efficient construction of residential building towers
- Coordination and scheduling were key to efficiency both in design and construction
- The more familiar designers become with the product, the more creative their designs become