Learning Objectives

At the end of this program, participants will be able to:

1. Understand how prefabrication accelerates construction, improves quality/precision, reduces waste and presents drier buildings at lock-up.
2. See how precise wall frames can reduce building shrinkage/compression.
3. Position seismic anchors and mechanical systems in concrete slabs very accurately “the first time.”
4. See how back-framing (rework) can be greatly reduced through iterative design.
Reducing and Managing Waste

Mitsui Home Products

Rondino

Presente

Glacena

Chou Chou
Systemized Construction?

- Minimize material waste in the factory and at site.
- Pre-fabricate as much as possible to:
  - Accelerate site construction.
  - Ensure panels are tight, square, accurately framed, correct load-bearing, correctly nailed and exceptionally dry.
  - Reduce wall compression (shrinkage) with precise materials.
- Optimize construction through “integrated” design.
  - Designing the best alternatives for walls, floors, and roof.
  - Reduce “re-work”: back-framing can be 15% of framing cost.
  - Precise anchor and mechanical positioning.
- Discover infeasibilities prior to construction.
Wood Frame Mid-Rise Construction in B.C.
Introduced into BCBC in April 2009

**Building Height:** Clause 3.2.2.45.(1)(c)
Definition: Grade is a defined term, "lowest of the average levels of finished ground adjoining each exterior wall"
Building Footprint
Clause 3.2.2.45.(1)(d)

6 Storey Residential - Code

- Attic Sprinklers
- Balcony Sprinklers
- Protected concealed spaces
- Non-Combustible Cladding
- 2 Layer Floors
- Fire Blocking

Six-Storey Wood-Frame

Slide courtesy of GHL Consultants Ltd.

Slide courtesy of GHL Consultants Ltd.

Remy
Cambie Rd.
Richmond
Anchoring
APEGBC Technical Bulletin

A complimentary document on technical & practice issues

- Fire Safety
- Structural
- Building Envelope
Mid-Rise Construction in B.C.

- Since introducing Mid-Rise wood-frame into BC’s BC in 2009, 30 buildings are under construction.
- We have erected 8 mid-rise buildings, with 2 set to begin and many more under consideration.
- In BC, there are approximately 100 more mid-rise wood-frame buildings in design or under consideration.
- Prefabrication is becoming the “principle construction method” under consideration by many builders.

Finding Infeasibilities

Design Infeasibilities
Design Infeasibilities

- Fourth floor plan: roof framing over.
- Third floor plan: fourth floor framing over.
- Diagram of structural details with notes on beam placement.
- Images of interior and exterior of a building showing framing and electrical conduits.

This beam was missing.
Projects in the U.S.A.

Multiple configurations from standard kit of parts
Santa Ana, CA
Conventional (Title 24)

Frog optimized
• Envelope
• Natural ventilation
• Daylight & LEDs

By 2014
Surplus short lumber remanufactured back into 2x4/6 Finger-Joint Studs

Questions?
This concludes The American Institute of Architects Continuing Education Systems Course

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WoodWorks