CASE STUDY: IMAGINATIVE BUILDING SOLUTIONS USING SLIM FRAMING & SLIM FLOORS/WALLS

Presented by:

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PROJECT FACTS
LUXENBOURG PROJECT FACTS

• **Project Overview:**
  - Three separate buildings.
  - All three buildings have 5 floors of residential units.
  - All three buildings have an indoor parking.
  - Total number of apartment units: 148
  - Total area: 21,000m² (225,000 ft²)
  - Project located in Quebec City.

• **The Challenge:**
  - Increase the speed of construction.
  - Enclose the building quickly.
  - Reduce the floor-to-floor height to maximize the number of floors (7).
  - Meet the overall budget.
INNOVATION 1:

PREFABRICATED SLIM-FLOOR COMPOSITE STRUCTURE
PREFABRICATED SLIM-FLOOR COMPOSITE STRUCTURE

- Hollow-Core Slab
- Composite Beam
- Composite Column
• Increased Speed of Construction
• Immediate Sub-Trade Access
• Inherent Fire Resistance
• Slim-Floors
• Extra Long Spans
OVER 12,000 PROJECTS

EXTRA LONG SPANS

11m (36ft)

4 PARKING STALLS BETWEEN COLUMNS
PREFABRICATED - FIRE RATED - SLIM FLOOR - LONG SPANS
INNOVATION 2:
THIN PRECAST WALLS
WITH
PRE-INSTALLED
WINDOWS
PLANT INSULATED THIN PRECAST CONCRETE WALL

50mm (2in) PRECAST WALL

PRE-INSTALLED WINDOW
CONVENTIONAL PANEL

55 to 90 psf

SANDWICH PANEL

105 to 130 psf

SLENDER WALL PANEL

28 to 40 psf
SLENDER WALL PANEL
PLANT APPLIED INSULATION

50mm (2in) PRECAST WALL

PRE-INSTALLED WINDOW

PLANT INSULATED THIN PRECAST CONCRETE WALL
ADVANTAGES AND CONSIDERATIONS OF SLENDER WALL OVER REGULAR PRECAST SYSTEMS

FABRICATION

TRANSPORT

SITE LOGISTICS
PLANT INSULATED THIN PRECAST CONCRETE WALL
INNOVATION 3: CANTILEVER BALCONIES WITHOUT A THERMAL BRIDGE
PRECAST + PRESTRESSED BALCONY

PRECAST CANTILEVER BALCONIES
SPRAYED INSULATION APPLIED UNDER THE BALCONY SLAB

PRECAST CANTILEVER BALCONIES
POLYSTYRENE SHEETS PLACED OVER THE SLAB

PRECAST CANTILEVER BALCONIES
LESSONS LEARNED:
LESSONS LEARNED

• The More Prefabrication the Better:
  – Much greater speed with prefabricated elements.
  – Less contingency.
  – Field installed building envelope lead to issues.

• Long spans = greater flexibility
  – One unit added to floor plate without any changes to the structure.

• Cantilever precast balconies without thermal bridge are possible.
QUESTIONS?
Peikko Group Corporation

- Founded in 1965 in Finland
- Offices in 32 Countries
- In North America since 2007
- Over 15000 Deltabeam projects completed worldwide
- Over 1500 employees

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