Using a Perforated Hollow Steel Beam to Build up Timber Hybrid Fire-Rated Slim Floors

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DESIGNING HYBRID STRUCTURES

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TIMBER, STEEL OR CONCRETE?
DELTABEAM® HYBRID STRUCTURES
TIMBER + STEEL + CONCRETE

FIRE RATED SLIM FLOOR SYSTEM
WHY SLIM FLOORS?
A SIMPLE QUESTION:

What is the cost in $/ft^2 of one extra vertical foot per floor?

What is the cost of cladding or curtain wall $/ft^2?
77 Wade Avenue
Toronto, ON, Canada

8 Story Office Building

• Spans:
  – Wood slab direction: 28’-10”
  – Beam direction: 26’-3”

• Loading: 50 psf live load

• GLT Timber Slabs + Composite Topping

• 2h fire resistance
DELTA BEAM + TIMBER
REDUCING THE FLOOR-TO-FLOOR HEIGHT

- 8 x 3 ft = 24 ft

Added Extra 2 Floors!

The thinner, stronger floors helped Next and its design team make a case for two additional storeys. The added density plus the premium tenants are willing to pay for the look and the location will defray the cost and time required to refine the design and secure buy-in from the City of Toronto’s building code officials.

Cary Solomon,
President & CEO
Next Property Group

DELTABEAM + MASS TIMBER
DELTABEAM + MASS TIMBER
What is the price in $/ft\(^2\) of one extra vertical foot per floor?

**Just for Cladding:**

Cladding Area: 4 x 100’ x 1’ = 400ft\(^2\) / floor

Value: 400ft\(^2\) x $100/ft\(^2\) = $40,000 / floor

Floor area: 100’ x 100’ = 10,000 ft\(^2\)

Cost ($/ft\(^2\)) = $40,000 / 10,000ft\(^2\)

**Answer:** $4/ft\(^2\)
77 Wade Avenue
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Just for Curtain Wall:

Wall Area: $2 \times (75' + 272') \times 3' = 2,080\text{ft}^2 / \text{floor}$

Value: $2080\text{ft}^2 \times $140/\text{ft}^2 = $290,000 / \text{floor}$

Floor area: $75' \times 272' = 20,400 \text{ ft}^2$

Cost ($/\text{ft}^2) = $290,000 / 20,400\text{ft}^2$

Answer: $14/\text{ft}^2$

$290,000 \times 8 \text{ floors} \approx $2,3M
FIRE RESISTANCE
INTEGRATED FIRE RESISTANCE

SHOP INSTALLED REINFORCEMENT FOR FIRE RESISTANCE
LONG SPANS & FLEXIBILITY
DELTABEAM + TIMBER

RENOVATION & REUSE = 50-75% LESS ECE
EXTRA LONG SPANS

4 PARKING STALLS BETWEEN COLUMNS

36 FEET
Create demanding shapes, easily.
TALL BUILDINGS
300 Main, 
42 story tower 
Winnipeg, Canada

Reduced the building height by over 60 feet
THANK YOU