BCIT Student Residence, Burnaby, Canada: Large-Format Point-Supported CLT Optimization

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CTBUH Hybrid Timber Conference 2022

BCIT Student Residence

Large-Format Point-Supported CLT Optimization

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Introduction

+ Client: British Columbia Institute of Technology



- + 469 Bed Student Housing
- + 12 Stories plus 1 Basement
- + 16,000sf per Floor 250,000sf Building Area
- + 9'-3" Floor to Floor, 120' Ht.
- + Architect: Perkins & Will



Project Goals

- + Simple, practical, economical
- + Optimize layout for mass timber panels
- + Reduce construction time
- + Optimize Point-Supported CLT design



Structural System



PS-CLT Advantages

- + Efficient beamless system
- + Fewer crane picks (incl. hand erected columns)
- + Reduced schedule
- + Reduced floor-to-floor (env. savings)
- + Cost competitive



Point-Supported CLT









Point-Supported CLT



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Panel Testing

+ 18 Panels Tested

+ Multiple Suppliers





Methodology



Mass Timber Layout

+ Structure and Architect in Tandem

- + Utilize Large Format Panels
- + Reduced Columns
- + Steel Columns Fit Within Walls





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Panel Layout - Stresses



+ Vy weak





+ My weak





Lateral System

+ Self-stable cores (w/stairs)

+ Concentrically Braced Frame w/HSS brace and WF Column

+ Full-height towers erected prior to timber arrival on site

+ Concrete podium



Braced Frames















Construction Highlights

- + 40 Days for Cores
- + 3 Days for CLT deck
- + 4 Days for columns
- + 8 Days for envelope
- + In sequence, approx. 16 weeks for steel and timber
- + 22 months from mobilization to completion



Thank You

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