



# THE WORLD'S TALLEST TIMBER-FRAME BUILDING OFFERS FIRE PROTECTION AT A REDUCED WEIGHT

**BROCK COMMONS,  
UNIVERSITY OF  
BRITISH COLUMBIA**

**PROJECT PROFILE**

The tallest mass timber building in the world now stands at the University of British Columbia (UBC) at the Point Grey campus. Brock Commons, a student residence, is 174 feet tall. Designing a timber building was purposeful, as the material is sustainable and versatile; it stores—rather than emits—carbon dioxide for the life of the structure and beyond when wood fiber is recycled or reclaimed. The building was designed to achieve a minimum LEED™ Gold certification. To provide exceptional fire protection while remaining lightweight, USG Sheetrock® Brand UltraLight Panels Firecode® X (UL Type ULIX) were installed in this structure.

In total, this building used an estimated 1.1 million square feet of USG Sheetrock® Brand UltraLight Panels Firecode® X. As a result, the building weighs approximately 506,000 pounds less than if it were built using standard 5/8 inch USG Sheetrock® Brand Firecode® X Panels.

The benefits of USG Sheetrock® Brand UltraLight Panels Firecode® X go far beyond lightweight characteristics.

By using these panels, Brock Commons met the one- and two-hour fire ratings required for this type of wood structure. The cross-laminated timber (CLT) and glulam components used in the project have been enhanced through complete encapsulation, with three- to four-layers of fire-rated USG Sheetrock® Brand UltraLight Panels Firecode® X, dependent on location.

Additional safety measures of the structure include a series of repetitive, highly compartmentalized small rooms to help contain flame spread in the event of a fire, as well as a backup water and emergency power supply so the sprinkler system will function even if the building loses its standard power and electrical supply. Brock Commons also contains a building-monitoring system and an upgraded concrete and steel core that's protected by 25,000 sq. ft. of USG Sheetrock® Brand Glass-Mat Liner Panels. It's also the first building in British Columbia to be specified to the new 2015 National Building Code of Canada for seismic design.

Aside from its primary function as a student residence, the building will also serve as an academic research site for students and researchers, who study and monitor its operations.

Brock Commons serves as an exceptional place for students to live, work and play, while simultaneously bettering the environment as a result of its sustainable characteristics.

**Brock Commons aspires to be a game-changer for the future when tall, mass wood buildings will be an economical, preferred choice for developers and builders in British Columbia. To be truly environmentally meaningful, mass wood structures must be incorporated into buildings of all types and sizes, whether the wood is exposed or encapsulated with gypsum board. To truly make an impact on the environment, the use of mass wood must become commonplace and ubiquitous.**

**Russell Acton, Principal**  
Acton Ostry Architects Inc.



# PROJECT FEATURES

- 404 student residents
- 272 studios
- 33 four-bedroom units
- Study spaces
- Social gathering spaces
- Ground-floor lounge for commuter students

## SUSTAINABILITY

Using USG Sheetrock® Brand UltraLight Panels Firecode® X (UL Type ULIX) increases the sustainable features in a building. The reduced weight allows for 28% more boards per truckload, meaning less fuel consumption for delivery and fewer tons of waste scrap.

This product is also GREENGUARD Gold Certified, a standard that includes health-based criteria and lower total VOC emissions levels to ensure that products are acceptable for use in environments such as schools and health care facilities.

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GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit [ul.com/gg](http://ul.com/gg).



# PRODUCT HIGHLIGHT

**USG Sheetrock® Brand UltraLight Panels Firecode® X (UL Type ULIX) – 1.1 million sq. ft. used**—These are the lightest 5/8 in. Type X panels available, making them easier to lift, carry and install. The UL Type ULIX panels are exclusive to USG and are listed for use in fire-rated partitions and are classified as to fire resistance, surface-burning characteristics and noncombustibility.

**174 FEET TALL** 

**1.1 MILLION SQ. FT. OF USG SHEETROCK® BRAND ULTRALIGHT PANELS FIRECODE® X (UL TYPE ULIX) USED** 

**WEIGHS 506,000 LB. LESS THAN IF IT WERE BUILT USING STANDARD 5/8 in. USG SHEETROCK® BRAND FIRECODE® X PANELS**

## KEY PRODUCTS

**USG Sheetrock® Brand Glass-Mat Liner Panels—25,000 sq. ft. used**—High-performance interior panels with moisture and mold resistance, ideal for use in USG shaft wall and area separation wall systems when weather exposure is anticipated.



**“ Using USG Sheetrock® Brand UltraLight Panels Firecode® X made installation a breeze. There is a shortage of skilled labour in the area, so having a panel that was quick and simple to install helped keep the project moving along quickly and enabled the next project to begin on time. ”**

Power Drywall



## GREATEST CHALLENGE

In addition to developing a straightforward economical solution for the mass wood structure, one of the greatest challenges for the project was to obtain an approval from the Building Safety Standards Branch of British Columbia that would allow construction of the building. Approval was granted by means of a Site Specific Regulation, which stipulated that a mass wood structure would be allowed, provided that the wood was fully encapsulated with gypsum board to achieve the required fire resistance ratings.

## KEY PRODUCTS

**USG Sheetrock® Brand Mold Tough® Panels—300,000 sq. ft. used**—A noncombustible, moisture- and mold-resistant gypsum core encased in moisture- and mold-resistant, 100% recycled green face and brown back paper. These panels score, snap, install and finish as easily as standard drywall.