MASS TIMBER at 111 ONE BRIDGELAND GREEN

Howard Hughes

LAKE FLATO

Kirksey ARCHITECTURE

StructureCraft

TELLEPSEN

WHAT IS MASS TIMBER?

Mass timber is a solid wood framing system that is made from small pieces of dimensional lumber that are secured with either glue, dowels, or nails.

Mass timber elements may be used for structural floor, roof, column, beam, or wall applications within a building.

◀ Framing at cross-laminated timber shear wall

BENEFITS OF MASS TIMBER

Mass timber provides significant opportunities for pre-assembly of structural components in a shop environment, which improves the finished quality / tolerances of the built product and reduces the overall labor / erection time for the structure. Additionally:

- Quiet construction site
- Reduced construction time
- Renewable material
- Lighter foundation loads
- Carbon storage
- Biophilia

◀ Framing at second floor deck

WHY MASS TIMBER FOR HOWARD HUGHES HOLDINGS INC.?

"Innovative, sustainable design is central to our long-term vision for building thriving, master planned communities. Our use of mass timber in One Bridgeland Green reflects this commitment—bridging nature with development and setting a new benchmark for wellness-focused workplaces in Houston."

Riddhi Doshi, Manager, Development
Howard Hughes Holdings Inc.

◀ Framing at third floor deck – preparing for concrete topping slab

▲ Aerial rendering of North elevation

DESIGN INTENT

Rural forms / One Bridgeland Green is designed with authentic agrarian materials & resiliency with mass timber as a unifying element.

Gable roof / Metal panels / Wood siding / Mass timber / Native plantings

Biophilia / Connection to Nature

Daylight & views: floor to ceiling strip windows & gable roof

Exposed wood structure - Wood has a comfortable surface temperature and the ability to compensate for rapid fluctuations in temperature and humidity.

Sustainability / Lower CO2

Mass timber has reduced embodied carbon. Embodied carbon is the carbon dioxide emissions from a building's materials, including what it takes to make the materials, transport them, place them within the structure, and even what it will take to dispose of them at the end of their life.

Embodied carbon for the structure:

688 tCO2e or 135 kgCO2e/m2 (cradle-to-site / A1-A4)

This represents a 50-75% reduction compared to a typical office building.

This is equivalent to ~150 cars operating for one year.

▲ South elevation rendering

BUILDING FACTS

One Bridgeland Green is the first full mass timber office building in the Greater Houston area.

International building code	2018
Construction classification	Building Type VB
Automatic sprinkler system	Yes

Fire-resistance rating required for building elements:

Primary structural frame	0-Hour
Bearing walls (Int. & Ext.)	0-Hour
Non-bearing walls & partitions (Int. & Ext.)	0-Hour
Floor construction	0-Hour
Roof construction	0-Hour

Project team

Owner	Howard Hughes Holdings Inc.
Design Architect	Lake Flato
Architect of Record	Kirksey Architecture
Civil	BGE, Inc.
Landscape	KW Landscape Architects
Structural	StructureCraft
MEP/LV	DBR
Acoustics	SLR Consulting
Contractor	Tellepsen
Timber Subcontractor	StructureCraft

Base building designed for LEED Gold certification

LEED GOLD DESIGN STRATEGIES

*Photovoltaic Array (Solar Panels)
(60) 395 Watt PV Modules, totaling 23,700 Watts
EA5 Renewable Energy Production
Use 1-10% renewable energy to offset building energy costs

*10,000 gallon cistern = 99% of demand met
WE1 Outdoor Water Use Reduction
Reduce water use by 25-50% over the baseline

*Secure bicycle storage (short & long term) and shower rooms.
LT6 Bicycle Facilities

Electric Vehicle infrastructure installed for 6% of parking spaces
LT8 Green Vehicles

* Refer to floor plans for locations
* Certification in progress

55% reduction in global warming potential compared to an equivalent concrete building
MR1 Building Life-Cycle Impact Reduction

Increased breathing zone ventilation rates to 95% of all occupied spaces by at least 15% above the minimum rates
IEQ1 Enhanced Indoor Air Quality Strategies

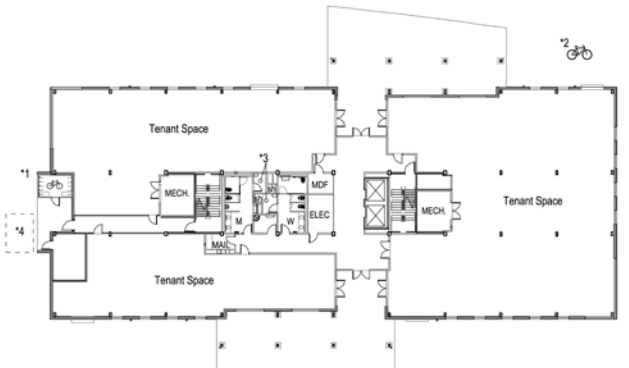
26% energy cost savings compared to an industry baseline
EA1 Optimize Energy Performance
Reduce the design energy cost by 3-47%

Achieved 60.8% spatial daylight autonomy for all regularly occupied floor area
IEQ4 Daylight
Average 40-75% sDA in regularly occupied spaces

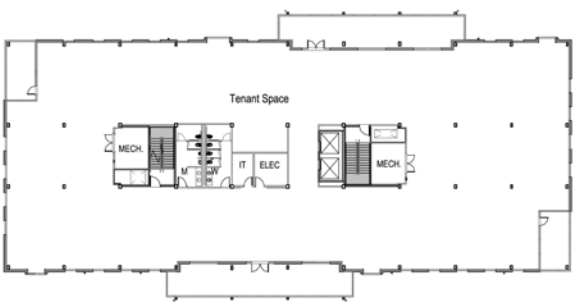
Prohibited excessive uplight and light trespass from outdoor lighting fixtures
SS6 Light Pollution Reduction

FLOOR PLANS

Scale 1"=60'-0"

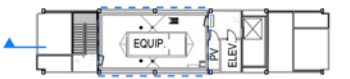


Level 1 Floor Plan
~11,800 Total Usable Square Feet

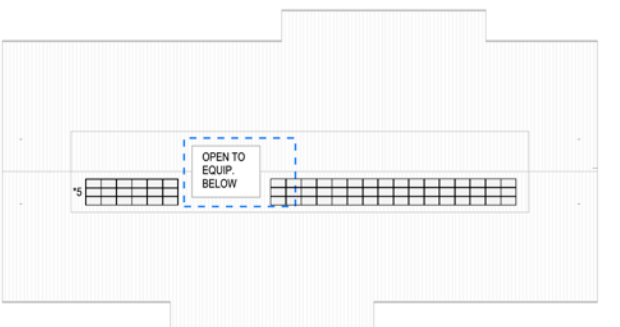


Levels 2-3 Floor Plan
~15,800 Total Usable Square Feet

East-West Building Section



Equipment Penthouse Plan
Outside Air Handling Unit (OAHU) on concrete curb with Air Cooled Chiller (ACC) sitting on structural grated platform above.



Roof Plan

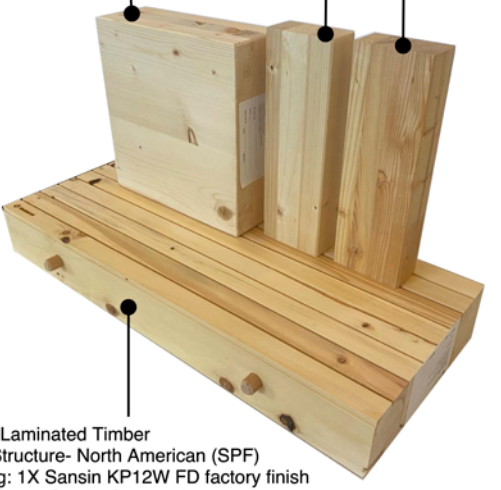
LEED Strategies | *1: long term bike storage *2: short term bike storage *3: shower rooms *4: 10,000 gallon underground cistern *5: solar panels

TIMBER SPECIES

Exterior Glulam Columns- Euro Larch
Coating: 2X Remmers Aqua HSL-35
Appearance Grade: Standard

Interior Glulam Columns- Euro Spruce
Coating: 1X Remmers Aqua HSL-35
Appearance Grade: Standard

Cross-Laminated Timber Shear Walls-
North American (SPF)
Coating: 1X Sansin KP12W FD factory finish
Appearance Grade: Standard



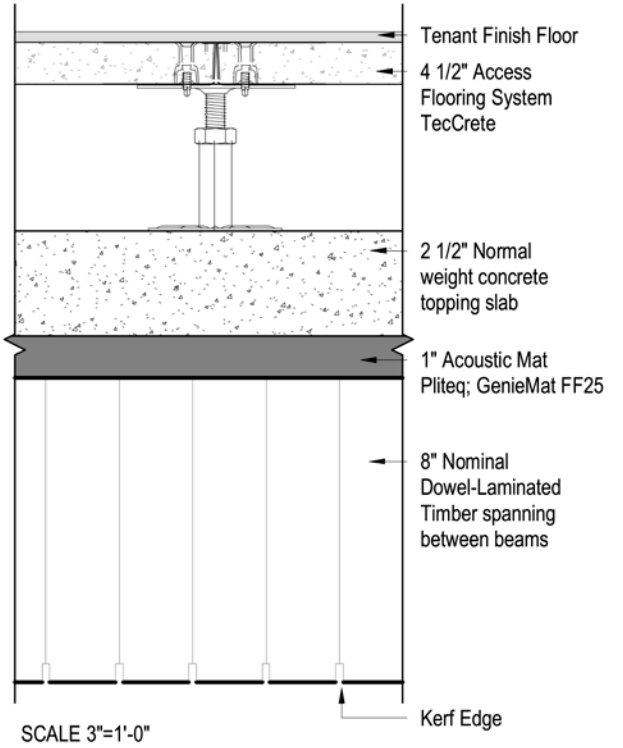
Dowel-Laminated Timber
Floor Structure- North American (SPF)
Coating: 1X Sansin KP12W FD factory finish
Appearance Grade: Standard
Edge Profile: Kerf

DowelLam

◀ Framing at second floor deck

TYPICAL FLOOR ASSEMBLY
IIC 50

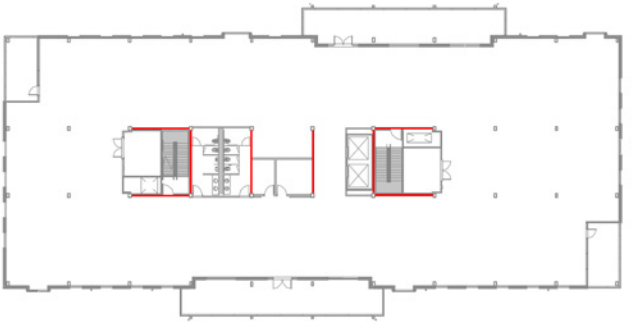
[Impact Insulation Class]



◀ Framing at second floor deck

CROSS-LAMINATED TIMBER SHEAR WALLS

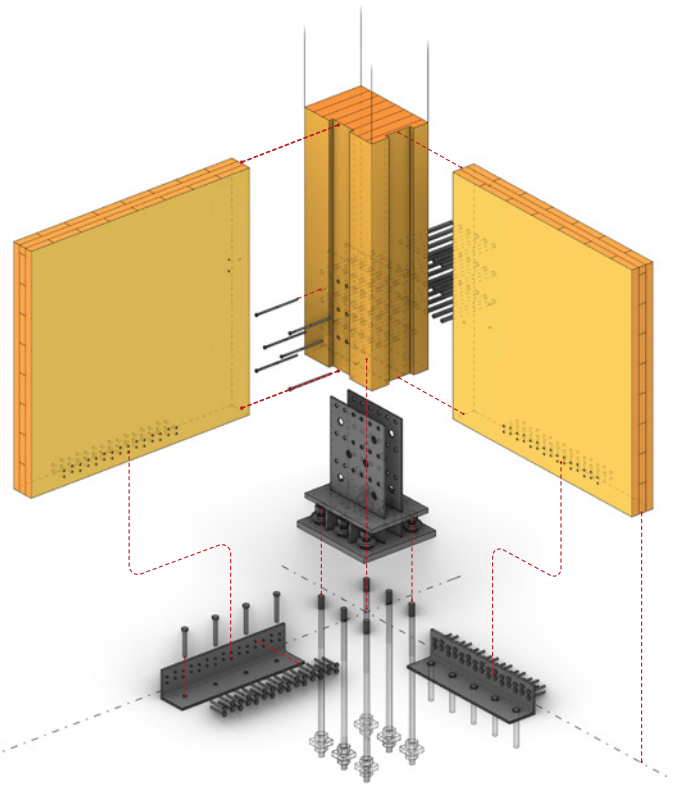
- The project utilizes CLT shear walls for the lateral system, designed to resist the significant wind loads common in the Gulf Coast region.
- Sixteen CLT shear wall assemblies, up to 53'-0" long, traveled from Canada to Houston, 2,419 miles on the flat bed of an 18-wheeler.
- The shear walls were erected in 11 working days. Plus, the pre-assembled CLT shear walls reduced the construction duration for the structure (vs. conventional methods.)
- Approximately 8,025 square feet of shear wall
- The use of CLT shear walls in place of traditional CMU block at the stair and elevator towers is what contributed to this project being a full mass timber building.



◀ Erection of cross-laminated timber shear walls

STRUCTURAL DETAILS:

Sheer wall column base

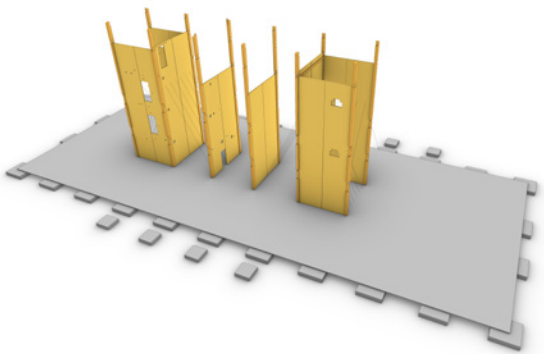


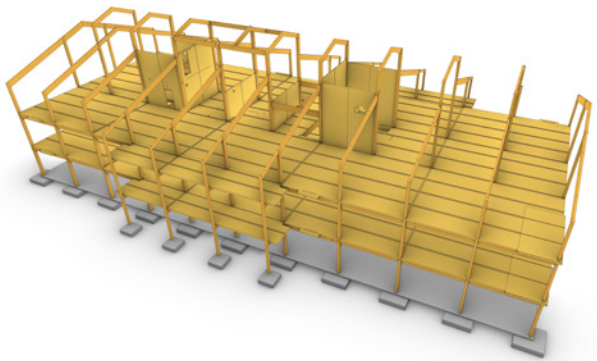
StructureCraft

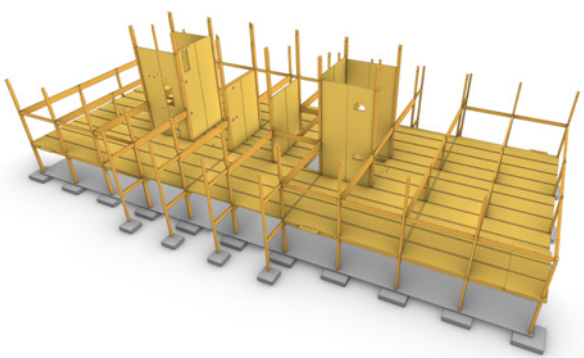
◀ image from off-site fabrication of shear wall column base

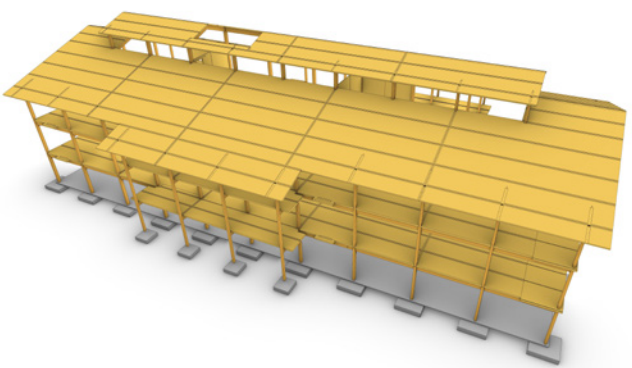
MASS TIMBER INSTALL

Completed in 15 weeks










PLITEQ

Scan with your smartphone camera to see more information about One Bridgeland Green

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