

plant[®]
P R E F A B



PANELIZED & MODULAR SOLUTIONS
Typical Scope Allocations

Note

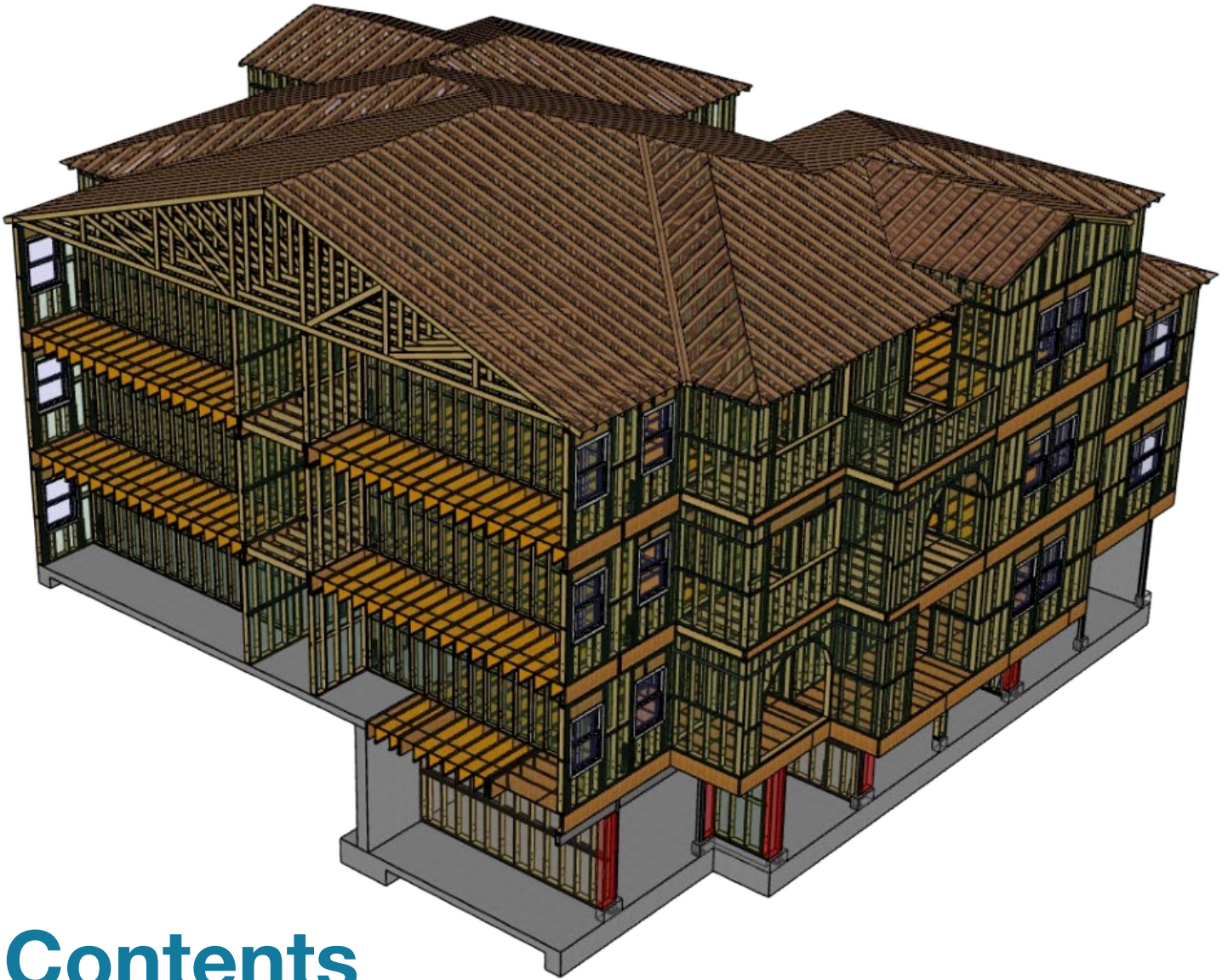
This document is for general reference; each project is unique and we will work with you to determine the most optimal building solution and scope allocation to meet the needs of your specific project.

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Typical Scope Allocation for Panelized Components



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Virtual Design & Construction (VDC)

- Plant Prefab creates a complete 3D model of your entire project, coordinating all structural, mechanical, electrical, plumbing, and sprinklers.
- Our in-house design and engineering teams work hand-in-hand with your architect and engineer of record to maximize the benefits of design for manufacturing.

Pre-Delivery / Factory Fabrication

- Plant Prefab provides factory fabrication of open-cavity panels for the building envelope, including:
 - **Floor Panels (aka “cassettes”)**
 - Framing and subfloor
 - Crane set in large assemblies
 - **Exterior Wall Panels**
 - Framing, sheathing, and WRB
 - Joints taped as much as feasible in factory
 - Crane set in large assemblies
 - **Interior Wall Panels**
 - Framing and structural sheathing on one side if required (e.g., shear walls)
 - Flat-packed in sections that can be handled / installed on-site by 1-2 people
 - **Roof Panels (aka “cassettes”)**
 - Framing, sheathing, and WRB
 - Joints taped as much as feasible in factory
 - Rafter with sheathing and WRB
 - Or
 - Trusses and sheathing and WRB shipped loose and installed on-site
 - Crane set in large assemblies
 - **Windows**
 - Installed in factory (stickers left on for field verification by local official/owner)
 - Can install flashing in factory, but depends on local building inspector
 - We can buy direct and get preferred pricing on Andersen and Plygem, but we can also use Marvin, Jeld-Wen, or others
 - **Decks, Balconies, Pergolas, Stairs**
 - Pre-assembled in factory
 - Can fabricate from lumber (pressure-treated aka “PT” or other rot-resistant lumber) or steel
 - **Structural Steel**
 - Beam and column assemblies
- All components are:
 - Built to spec, meaning the panels can include all of the above, but do not have to. Our panel system is flexible.
 - Factory assembled into “cassettes” (up to 12’-6” x 40’ components).
 - Factory-labeled with printed layout lines for wall locations, outlet box locations, etc. to save time and reduce risk during installation.

- Factory-labeled with component numbering for reference in installation instructions.
- Shrink-wrapped and loaded onto truck.
- Inspected on-site using normal building inspection process that you would for site-built, stick-framed (cavities are open, fasteners, etc. are fully visible).
- Holes and knock-outs for MEP can be coordinated in 3D model and machined in factory.
- Holdowns and other hardware provided (some installed, some shipped loose with locations identified).
- Transport coordinated with transport company and GC.

See reference images for construction details.

Storage

- Storage at Plant Prefab available.
- Offsite storage can be coordinated with transport company and GC.

Transport

- Contract with Plant Prefab, transport company, or setting company.
- Transport from the factory can be directly to the site for setting, or to a temporary storage facility or staging area close to the site. Logistics will be defined on a project-specific basis.
- Plant Prefab will provide dimensions and weights of all loads (panel bundles) along with optimal load sketches calculated by our BIM and VDC software to reference for quoting and coordination.

See reference images for sample bundling and loading diagrams.

- Ship-loose materials can be shipped on flatbeds or in separate box trucks. The methods will be defined on a project-specific basis, taking into consideration transport costs, safe transport, and installation efficiencies. A ship kit booklet will be provided that describes quantities and location of ship-loose materials.

See reference images for sample truck loading.

Installation Manual & Ship Kit

- Plant Prefab will provide an installation manual that is coordinated with the panel labeling. The manual will define sequencing, means, and methods for the entire installation.
- A ship kit booklet will be provided that describes quantities and location of ship-loose materials.

Rigging and Crane

- Typically carried by GC or setting company.

- Plant Prefab will provide dimensions and weights of all loads (panel bundles) for crane plan and crane size.
- Panels will be delivered with rigging straps pre-installed.

See reference images for sample rigging and craning.

Setting and Structural Connections

- Scope completed by setting company contracted separately or under GC, or by GC's set crew.
- Plant Prefab will provide hardware and fasteners for panel-to-panel connections.
- GC will provide and install any required embedded hardware in the foundation.
- Set crew will make all structural connections and tape all remaining seams in exterior sheathing for a weathertight enclosure.

Taping and Flashing

- Plant Prefab will tape/flash any seams and window openings in exterior Huber-ZIP sheathing within wall panels that can be taped/flashed in the factory.
- Seams at mate lines between wall panels, on roof, and all other areas that cannot be taped/flashed in the factory will be taped/flashed on-site by set crew or GC.

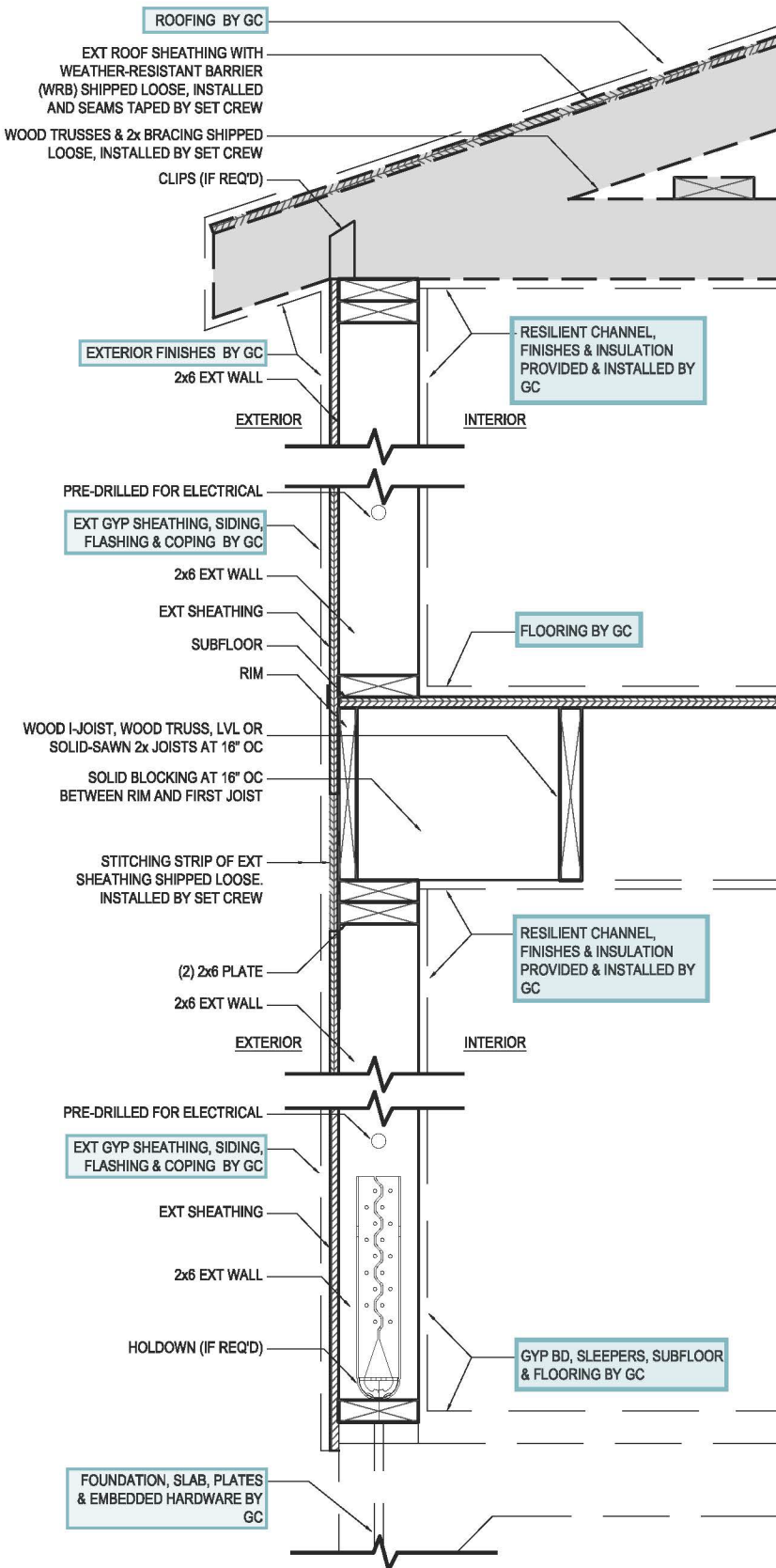
MEP and Sprinkler

- Plant Prefab will provide cutouts and drilling of panelized elements in the factory for MEP and sprinklers.

Reference Images

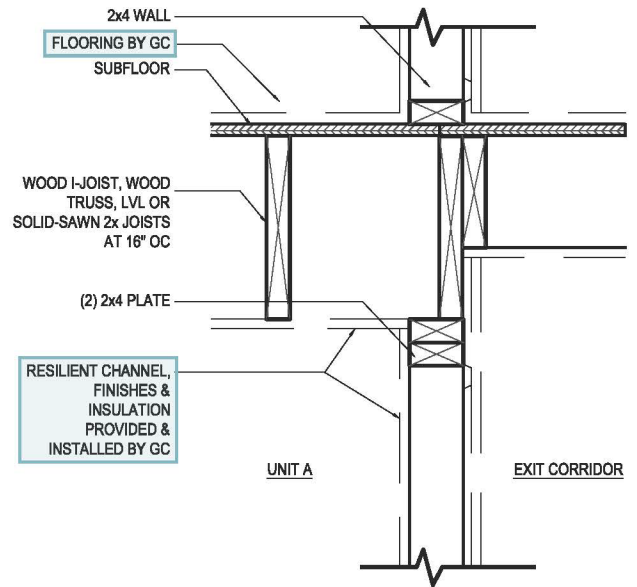
Pre-Delivery & Factory Fabrication

Typical details

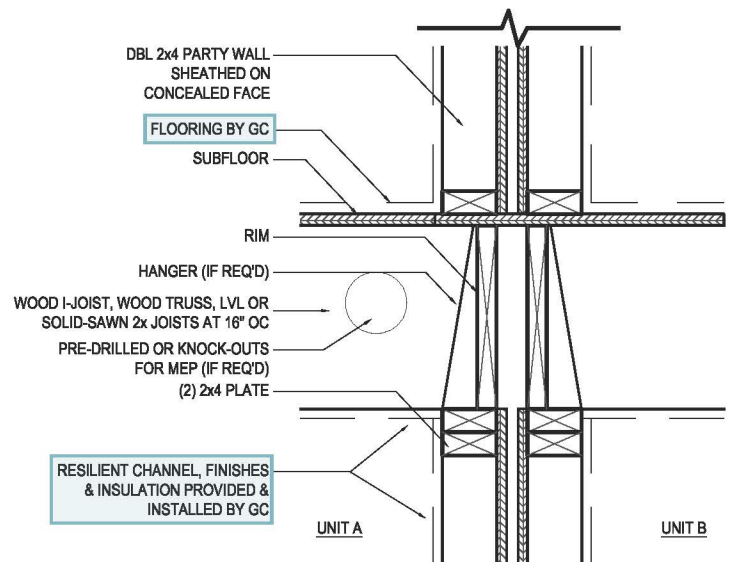


91 TYPICAL EXT WALL SECTION

LEGEND	
	PREFABRICATED BY PLANT PREFAB INSTALLED BY SET CREW
	PROVIDED BY PLANT PREFAB SHIPPED LOOSE INSTALLED BY SET CREW
	PROVIDED & INSTALLED BY GC



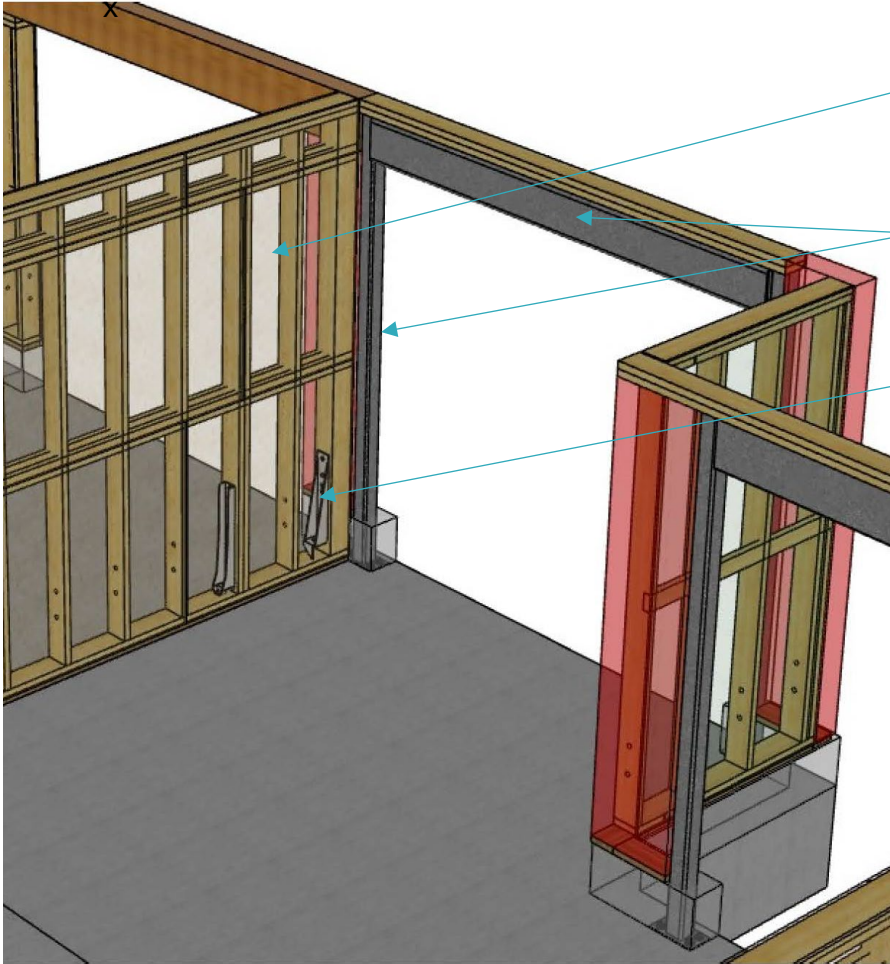
3 TYP EXIT CORR WALL-CLG SECTION



2 TYPICAL PARTY WALL SECTION

Pre-Delivery & Factory Fabrication

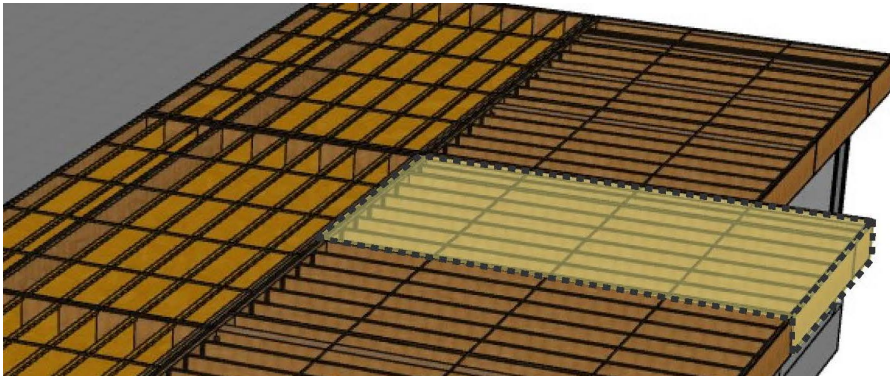
Typical details



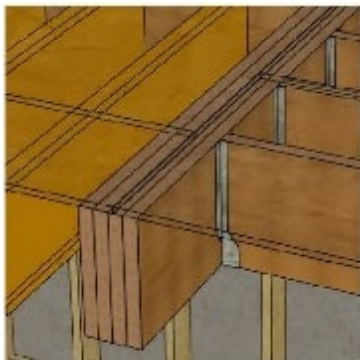
PRE-ASSEMBLED AND SHEATHED BRACED WALL AND SHEAR WALL PANELS.

STRUCTURAL STEEL COLUMNS, BEAMS AND MOMENT FRAMES.

SIMPSON HANGERS, HOLDOWNS AND OTHER REQUIRED HARDWARE.



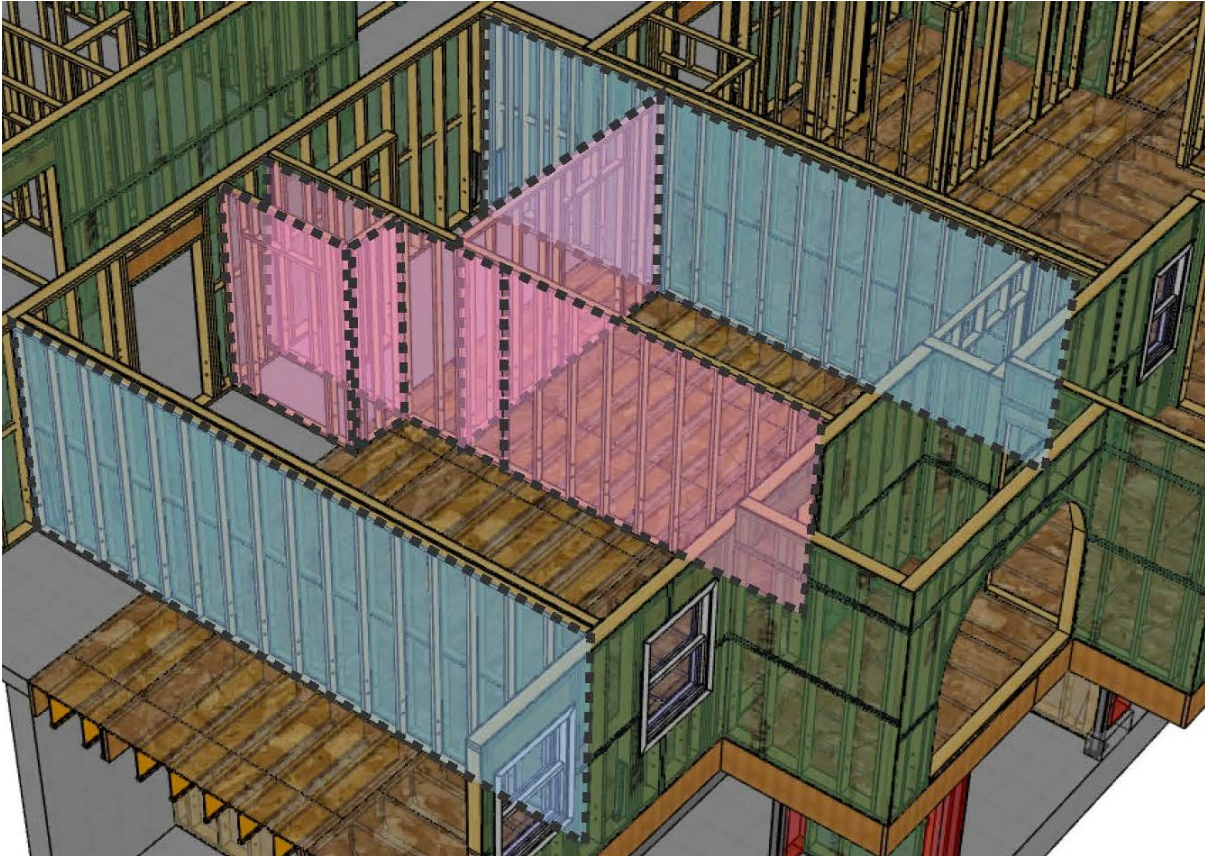
PRE-ASSEMBLED AND SHEATHED FLOOR CASSETTES SHIPPED IN LENGTHS UP TO 40'.



ENGINEERED WOOD BEAMS, JOISTS, HANGERS, AND SUBFLOOR SHEATHING PREASSEMBLED IN FLOOR CASSETTES.

Pre-Delivery & Factory Fabrication

Typical details



INTERIOR BEARING WALLS (BLUE) PRE-ASSEMBLED WITH SHEATHING ON ONE SIDE IN LENGTHS UP TO 40'.

NON-BEARING INTERIOR PARTITIONS (PINK) PRE-ASSEMBLED AND FLAT-STACKED ON FLOOR DECK IN SIZES EASY MOVED INTO PLACE BY 1-2 WORKERS. ALL INTERIOR WALLS HAVE A UNIQUE IDENTIFYING LABEL. LAYOUT LINES FOR INTERIOR WALLS ARE PRINTED ON THE SUBFLOOR IN FACTORY AND LABELED TO MATCH THE CORRESPONDING INTERIOR WALL PANEL.

EXTERIOR WALLS (GREEN) PRE-ASSEMBLED WITH EXTERIOR SHEATHING AND INTEGRAL WRB INSTALLED IN LENGTHS UP TO 40'.



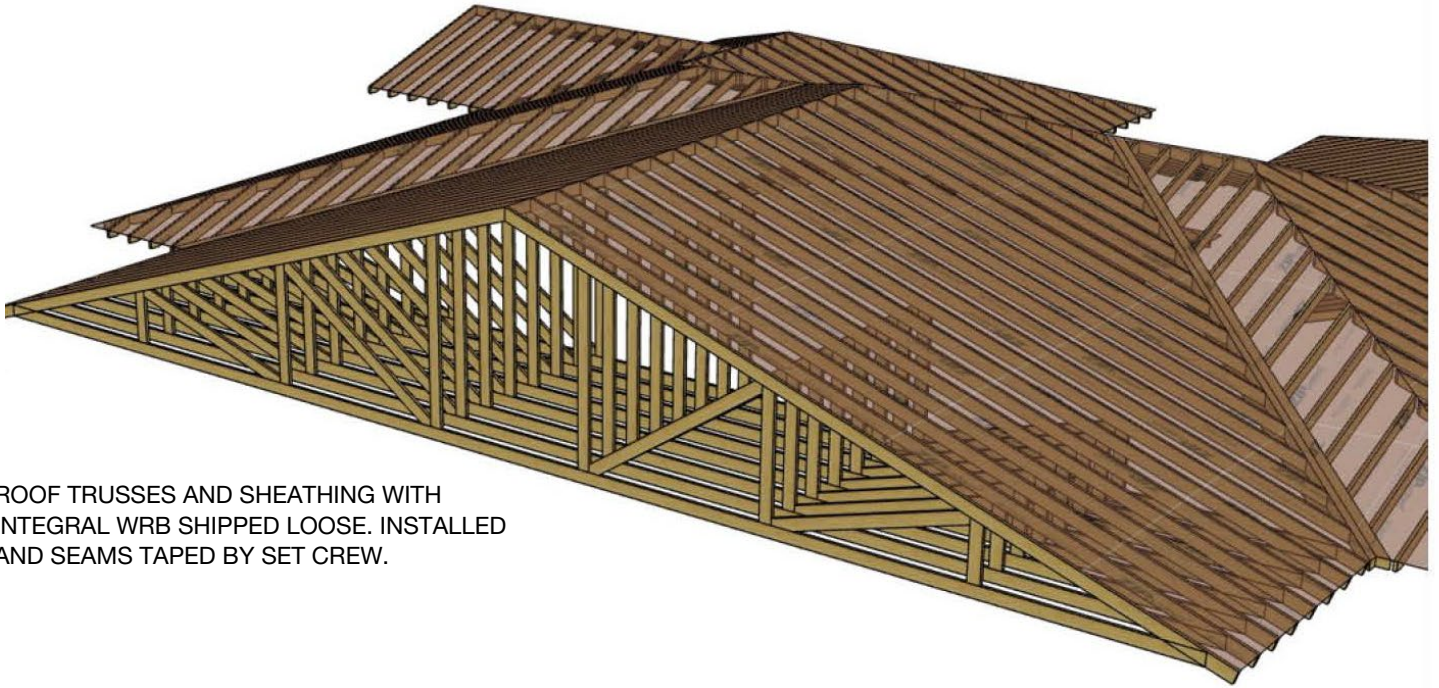
ARCHED OPENINGS AND CURVED WALL ASSEMBLIES PRE-ASSEMBLED AND SHEATHED WITH BLOCKING AND NAILERS.

WINDOWS INSTALLED IN FACTORY.

SEAMS IN EXTERIOR SHEATHING TAPED IN FACTORY AS MUCH AS FEASIBLE. SET CREW TAPES REMAINING SEAMS ON-SITE.

Pre-Delivery & Factory Fabrication

Typical details



ROOF TRUSSES AND SHEATHING WITH INTEGRAL WRB SHIPPED LOOSE. INSTALLED AND SEAMS TAPED BY SET CREW.

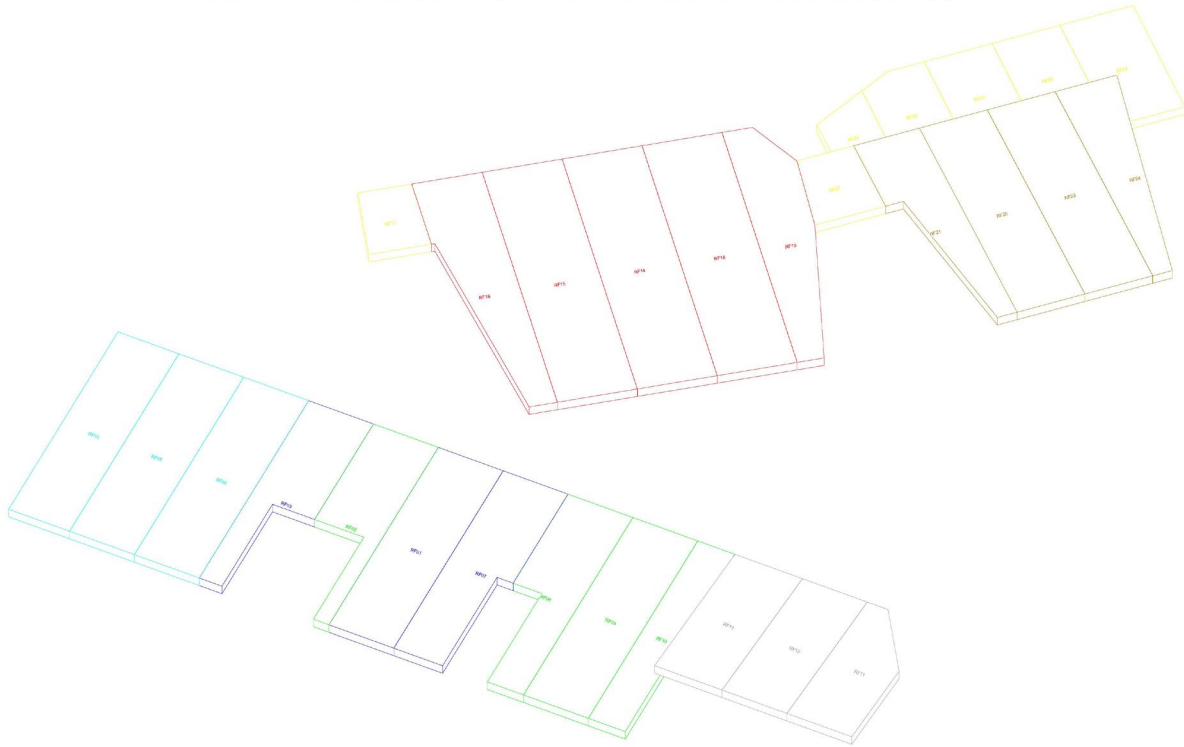


PRE-ASSEMBLED WOOD OR METAL STAIRS AND RAILS FOR TEMPORARY OR PERMANENT USE CAN BE SUPPLIED.

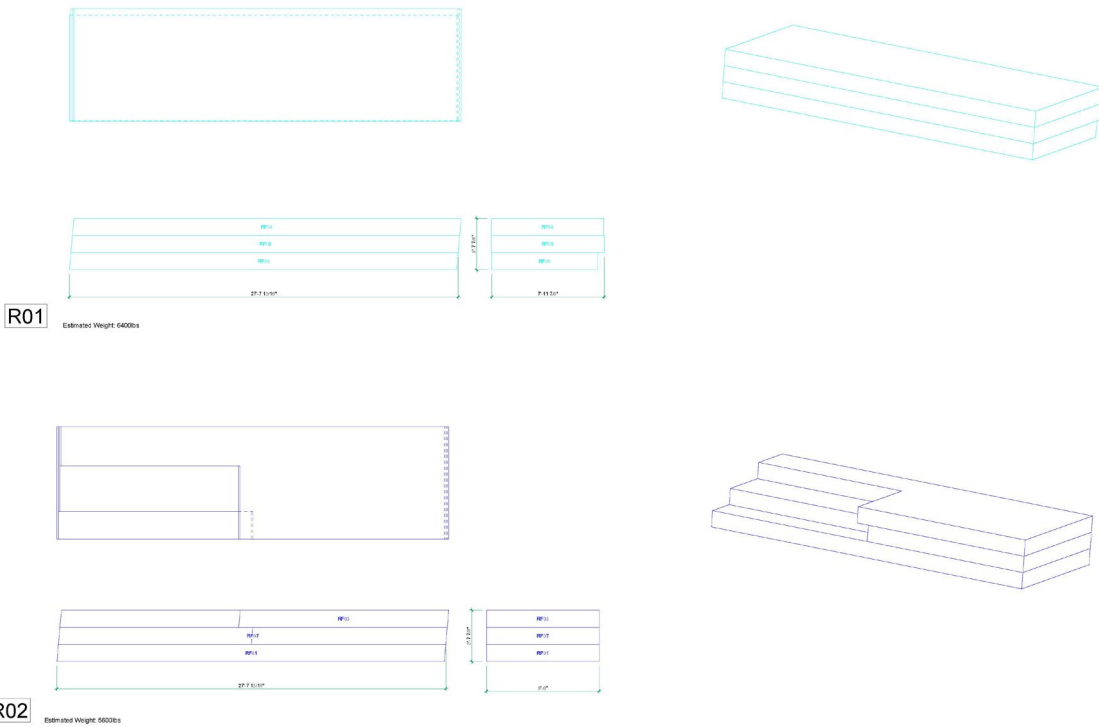
Transport

Sample panel bundling

EMPIRE GRADE ROOF BUNDLE OVERVIEW



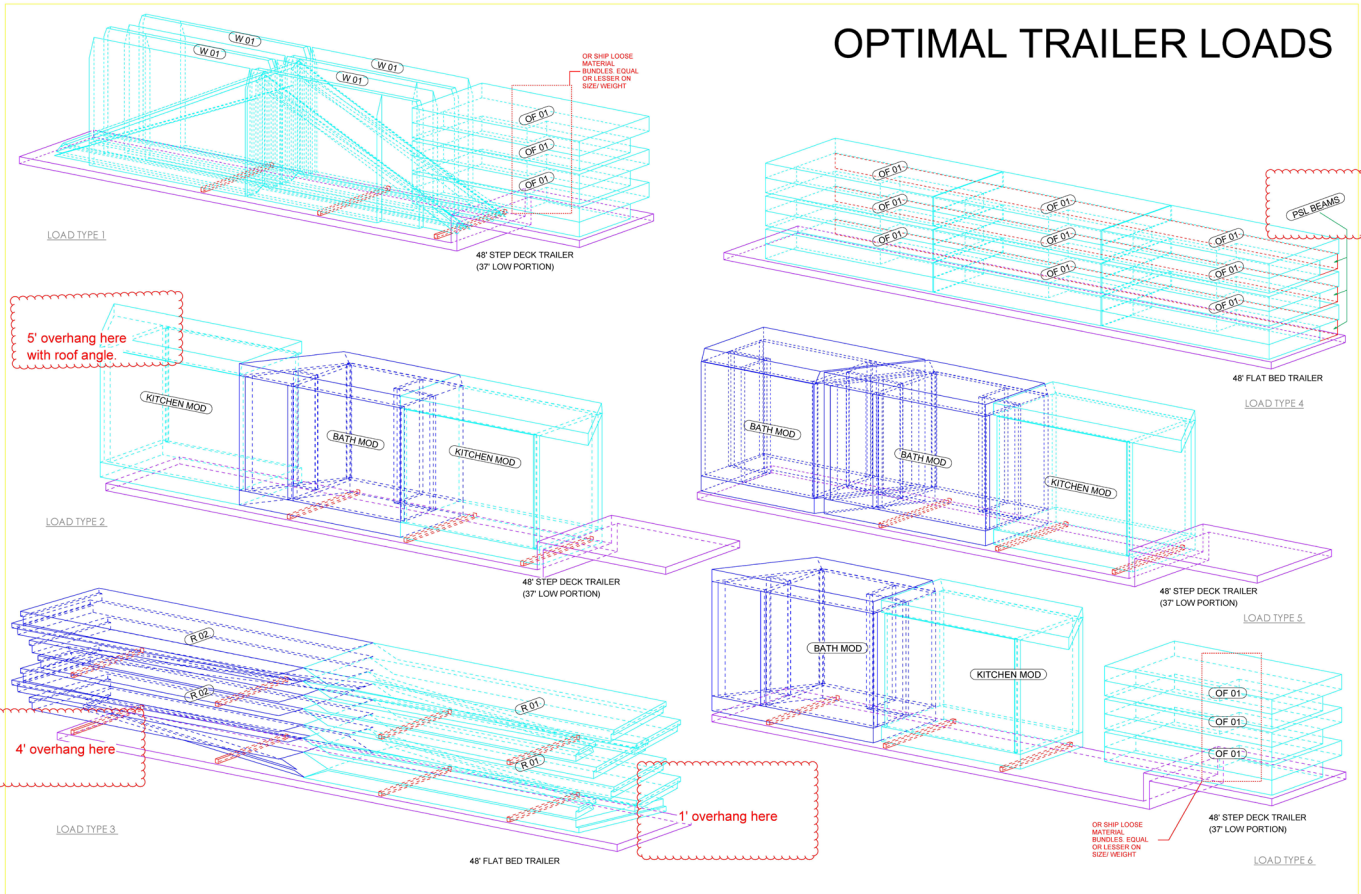
EMPIRE GRADE - R BUNDLES



Transport

Sample optimal load diagrams

OPTIMAL TRAILER LOADS



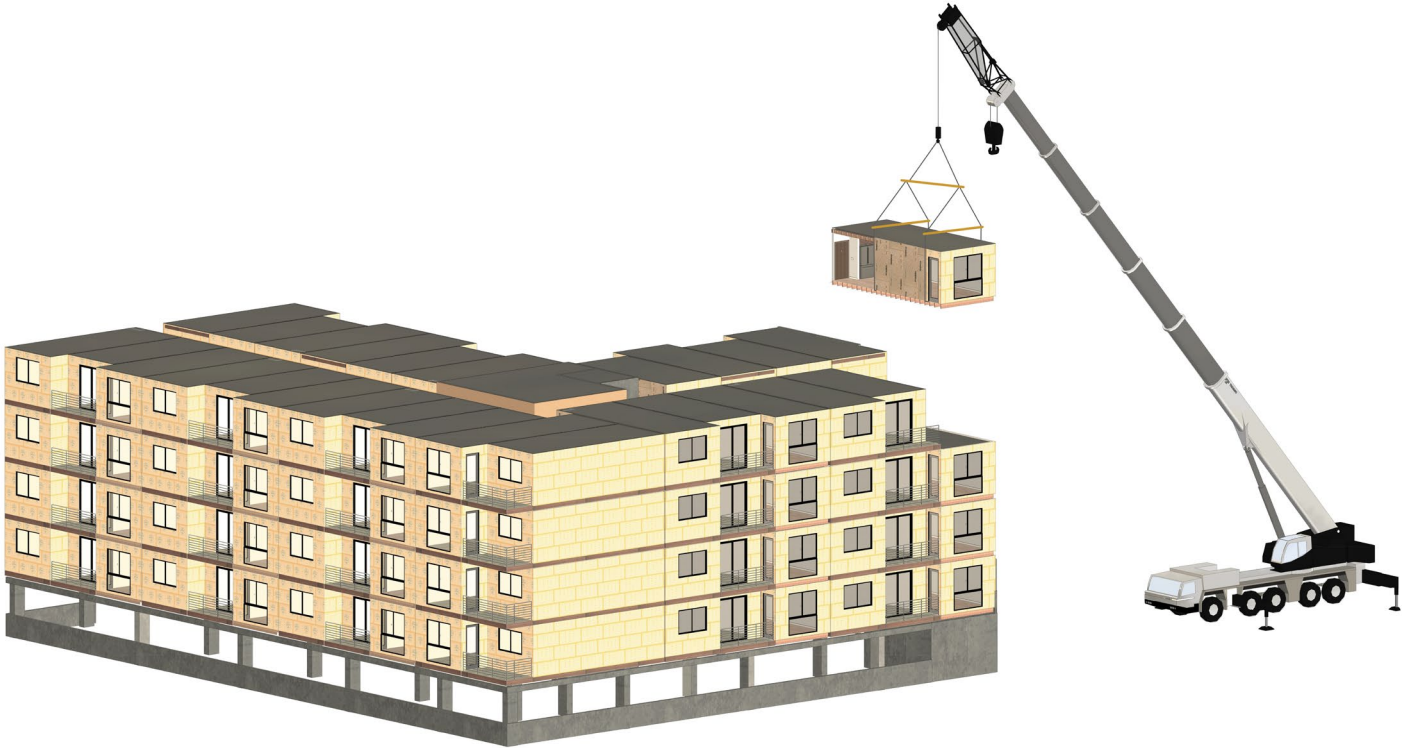
Rigging & Crane

Sample wall panel install





Typical Scope Allocation for Modular & Hybrid



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Virtual Design & Construction (VDC)

- Plant Prefab creates a complete 3D model of your entire project, coordinating all structural, mechanical, electrical, plumbing, and sprinklers.
- Our in-house design and engineering teams work hand-in-hand with your architect and engineer of record to maximize the benefits of design for manufacturing.

See reference images for sample digital model view (page 22).

Pre-Delivery / Factory Fabrication

Plant Prefab provides factory fabrication of fully-assembled volumetric modules, including:

- **Floor Panels**
 - Wood I-joists, solid-sawn finger-jointed Douglas fir, LVL, or open-web joists
 - Tongue and groove subfloor sheathing
 - Insulation
- **Exterior Wall Panels**
 - Finger-jointed, wane-free Douglas fir 2x studs and plates
 - Insulation
 - OSB wall sheathing with weather-resistant barrier (WRB) and joints taped as much as feasible in factory
 - Exterior-grade gypsum board (optional)
 - Drywall
- **Interior Wall Panels**
 - Finger-jointed, wane-free Douglas fir 2x studs and plates
 - Sound insulation
 - Drywall
- **Ceiling & Roof Panels**
 - Wood I-joists, solid-sawn finger-jointed Douglas fir, LVL, or open-web joists
 - OSB roof sheathing with joints taped as much as feasible in factory
 - Insulation
 - Drywall
 - Temporary TPO for dry-in at setting
- **Windows**
 - Installed with flashing in factory (stickers left on for field verification by local official/owner)
 - We can buy direct and get preferred pricing on Andersen and Plygem, but we can also use Marvin, Jeld-Wen, or others.
- **Exterior Doors**
 - Shipped loose or installed in factory; scope TBD based on building design
- **Interior Doors**
 - Installed in factory
- **Decks, Balconies, Pergolas, Stairs**
 - Pre-assembled in factory
 - Can fabricate from lumber (pressure-treated aka “PT” or other rot-resistant lumber) or steel
- **Structural Steel & Hardware**
 - Beam and column assemblies can be integrated into modules in factory.
 - Holdowns and other hardware provided (some installed, some shipped loose with locations identified).

- **Insulation**
 - Blown-in cellulose standard for thermal insulation
 - Mineral wool and fiberglass batts as required
 - Wood fiberboard continuous exterior insulation (optional)
- **MEP**
 - Routing, knock-outs and drilling coordinated in 3D model prior to production
 - All mechanical, plumbing and electrical systems, outlets, and hookups within the module installed and third-party tested in factory
 - Whips and crossovers accessible for on-site connection to primary systems
 - Mitsubishi or equal standard HVAC units
 - Uponor or equal PEX-A standard piping and connections
 - Copper and other piping as required
 - Ducted or radiant heating and cooling systems as required
 - Fixtures and controls installed in factory as much as feasible
- **Fire Protection**
 - All piping and sprinkler heads within modules installed and third-party tested in factory; carried in GC scope, coordinated with Plant Prefab for in-factory install and testing.
 - Stub-outs to common chases for on-site connections to primary system
 - NFPA 13 & 13R systems
- **Finishes**

All modules can have the following installed and inspected in the factory:

 - Flooring (typically wood, tile, or vinyl)
 - Drywall
 - Wall tile and shower enclosures
 - Interior trim
 - Paint
 - Cabinets and countertops
 - Millwork
- **Fixtures**

All modules can have the following installed and inspected in the factory:

 - Recessed and surface mounted light fixtures (pendants shipped loose)
 - Smoke detectors and alarms
 - A/V and security systems
 - Lighting and security controls
 - Plumbing fixtures (floor-mount toilets shipped loose)
 - Accessories (paper holder, towel bars, etc.) and required blocking in walls
- **Equipment**
 - HVAC equipment, ducting, and piping within module installed and tested in factory with access openings for crossovers.
 - Appliances (refrigerator, dishwasher, etc.) shipped loose; outlets and hookups installed and tested in factory.
- **Labeling & Loading**
 - All modules inspected and sealed in factory by applicable state's factory-built housing program-certified third-party inspector.
 - All components numbered for reference in installation instructions.
 - All components shrink-wrapped and loaded onto truck.
 - Transport coordinated with transport company and GC.

See reference images for construction details (pages 23-26).

Storage

- Storage at Plant Prefab available.
- Offsite storage can be coordinated with transport company and GC.

Transport

- Contract with Plant Prefab, transport company, or setting company.
- Transport from the factory can be directly to the site for setting, or to a temporary storage facility or staging area close to the site. Logistics will be defined on a project-specific basis.
- Plant Prefab will provide dimensions and weights of all loads along with optimal load sketches calculated by our BIM and VDC software to reference for quoting and coordination.
- Ship-loose materials can be shipped on flatbeds or in separate box trucks. The methods will be defined on a project-specific basis, taking into consideration transport costs, safe transport, and installation efficiencies.

Installation Manual and Ship Kit

- Plant Prefab will provide an installation manual that is coordinated with the module and component labeling. The manual will define sequencing, means, and methods for the entire installation.
- A ship kit booklet will be provided that describes quantities and location of ship-loose materials.

Rigging and Crane

- Typically carried by GC or setting company.
- Plant Prefab will provide dimensions and weights of all loads for crane plan and crane size.

Setting and Structural Connections

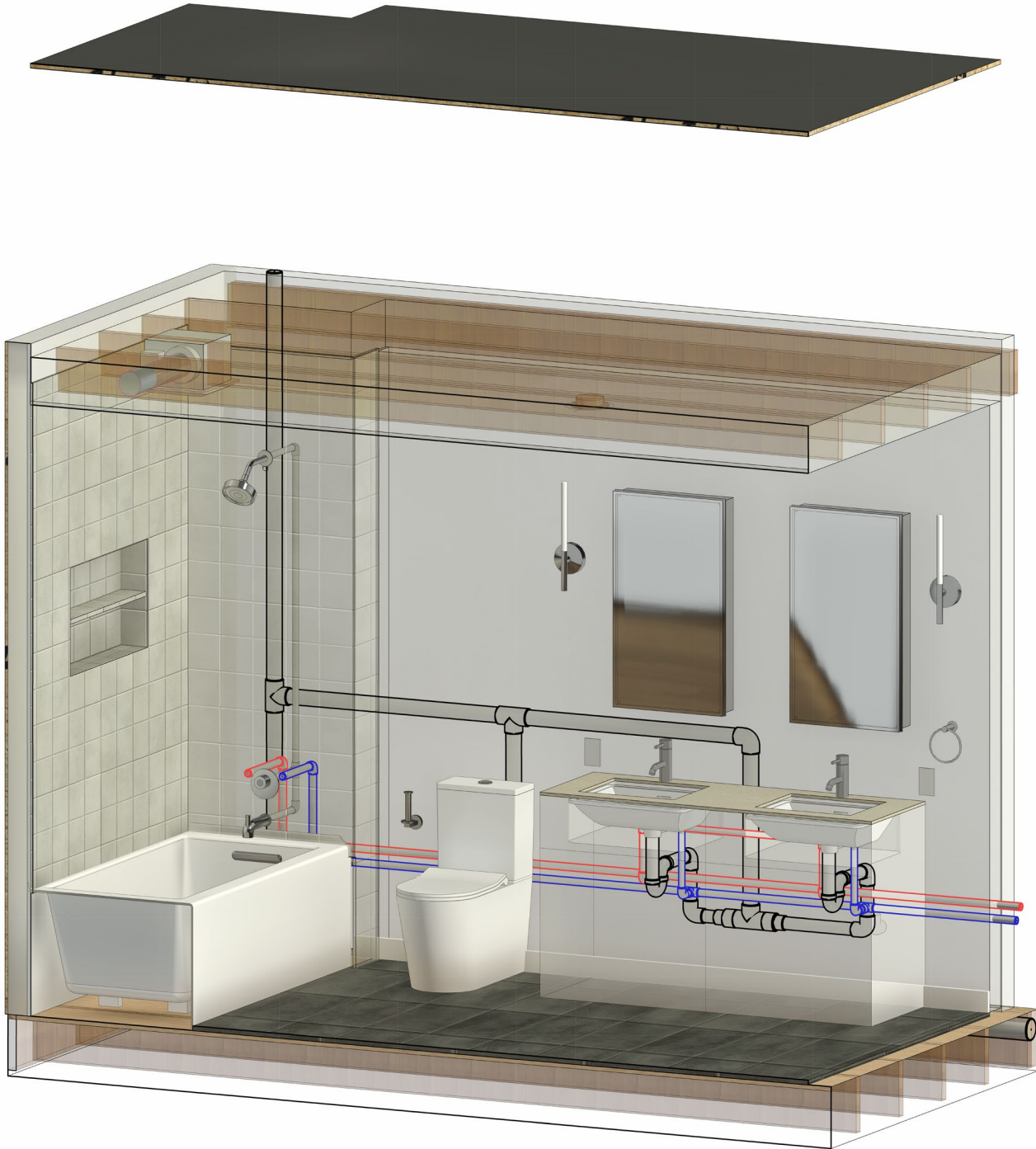
- Scope completed by setting company contracted separately or under GC, or by GC's set crew.
- Plant Prefab will provide OSB "leave-off" strips, hardware, fasteners, and seam tape for mod-to-mod connections.
- GC will provide and install any required embedded hardware in the foundation.
- Set crew will make all structural connections and tape all remaining seams in exterior sheathing for a weathertight enclosure.
- GC is responsible for making MEP and fire protection installation of and connection to main systems outside of modules.

Taping, Flashing and Weatherproofing

- Plant Prefab will tape/flash any seams and window openings in exterior wall panels that can be taped/flushed in the factory.
- Seams at mate lines between wall panels, on roof, and all other areas that cannot be taped/flushed in the factory will be taped/flushed on-site by set crew or GC.
- Plant provides shipped loose tape for seams.
- A temporary, 45-mil TPO weatherproofing layer will be installed on the roof sheathing of the uppermost modules in the factory.
- TPO shipped loose material provide by Plant and installed by GC in the field to cover seams at mate lines.

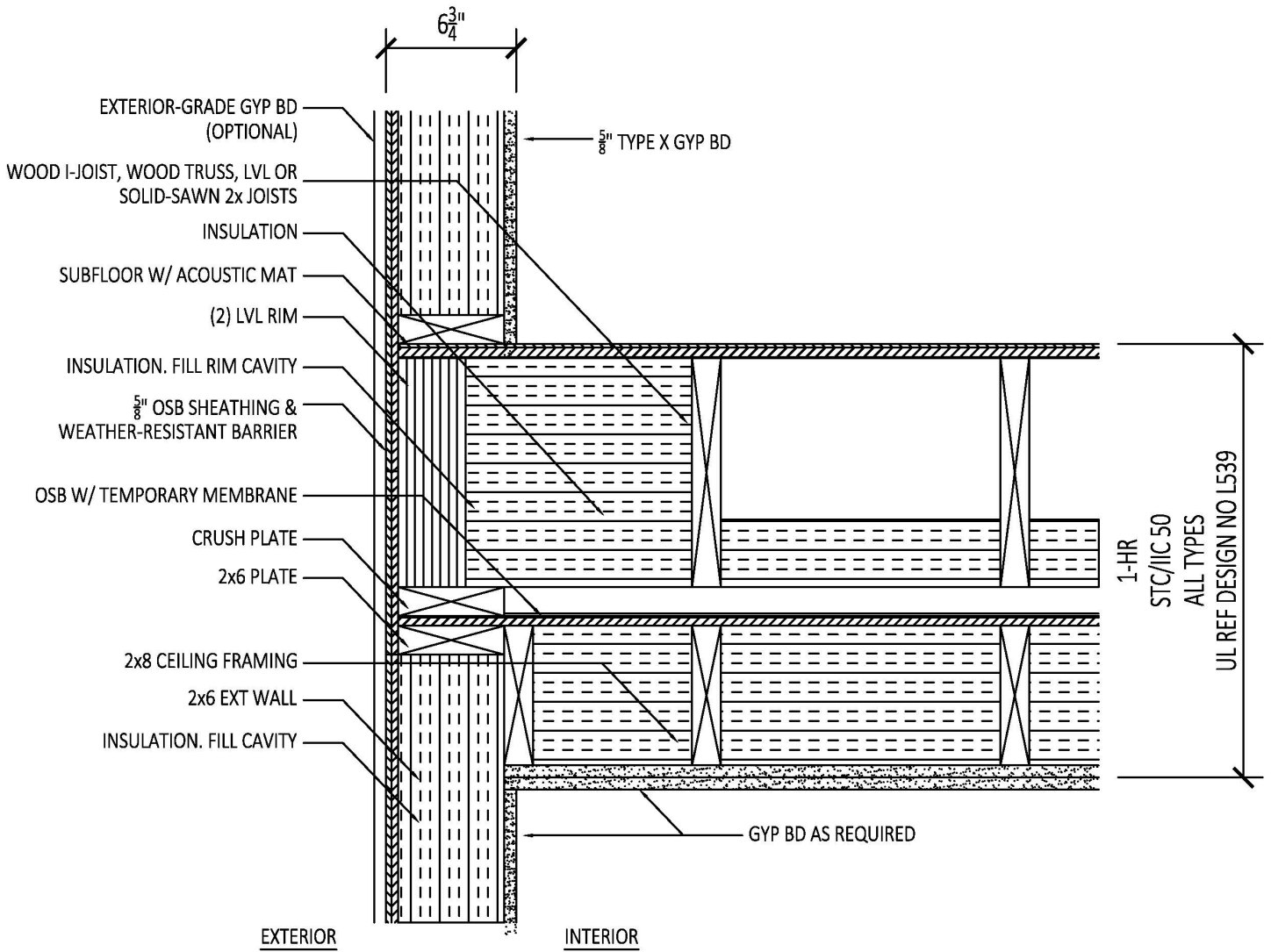
Virtual Design & Construction (VDC)

Sample digital model view of a bathroom module



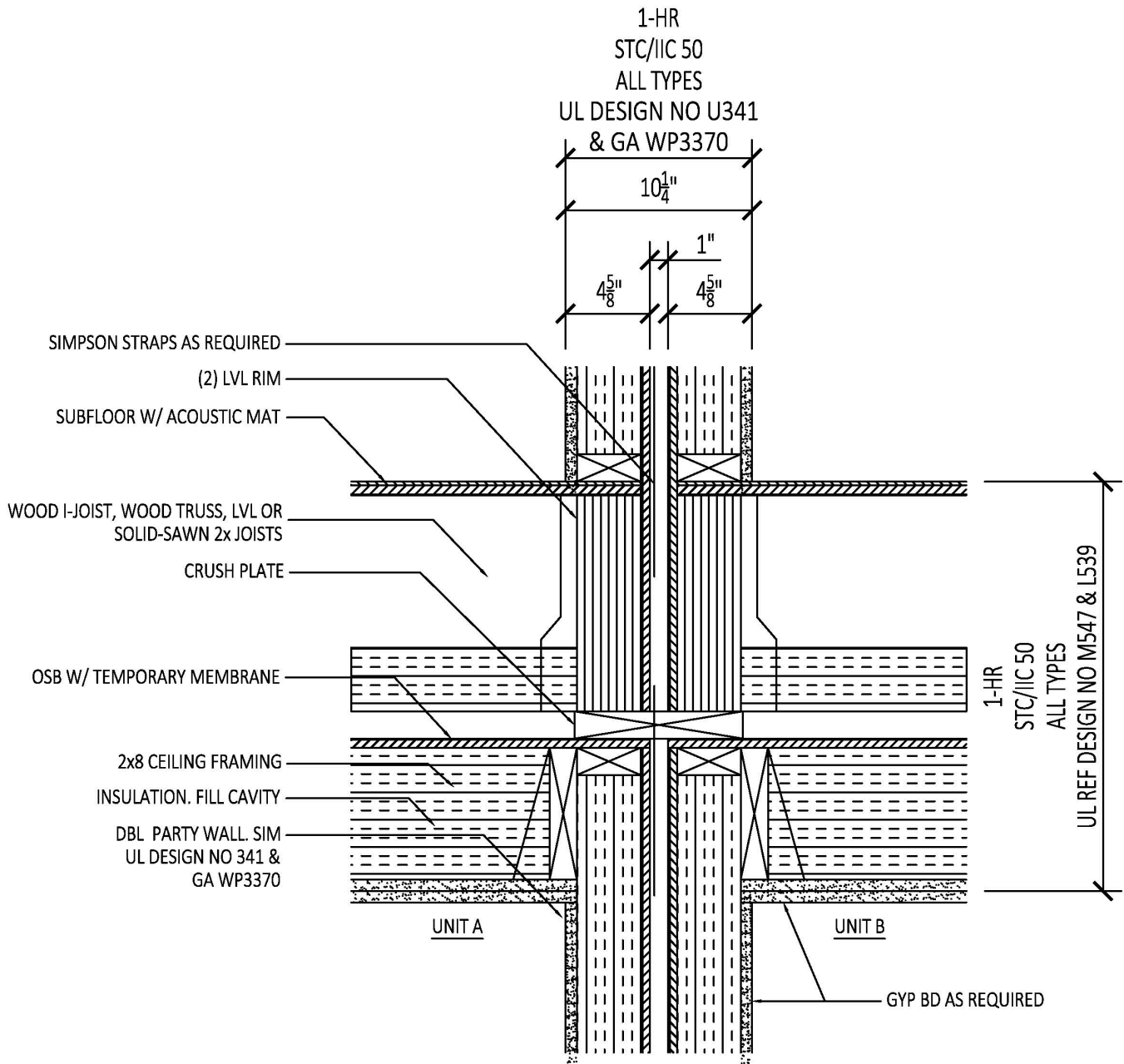
Pre-Delivery & Factory Fabrication

Sample exterior wall section detail



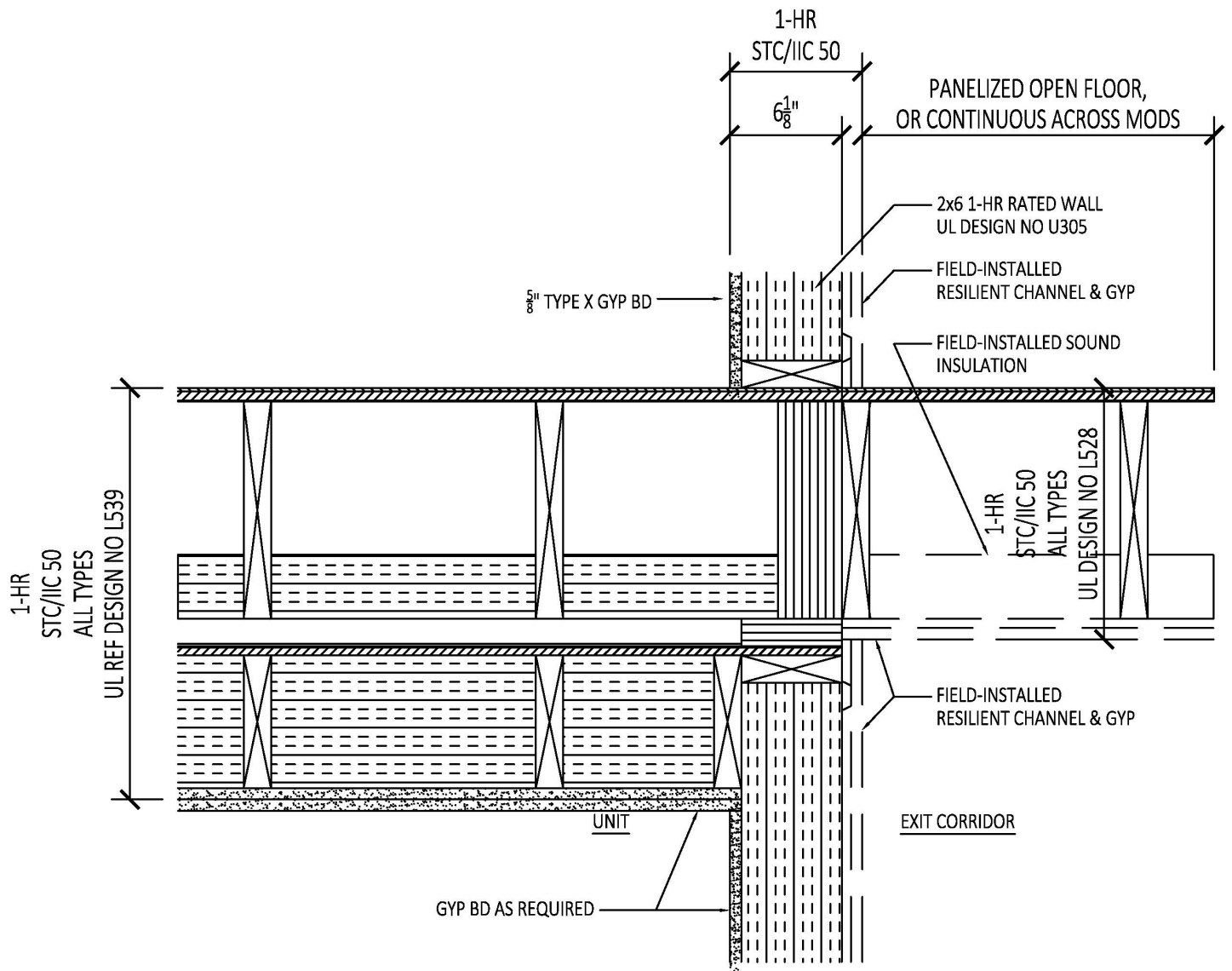
Pre-Delivery & Factory Fabrication

Sample party wall section detail



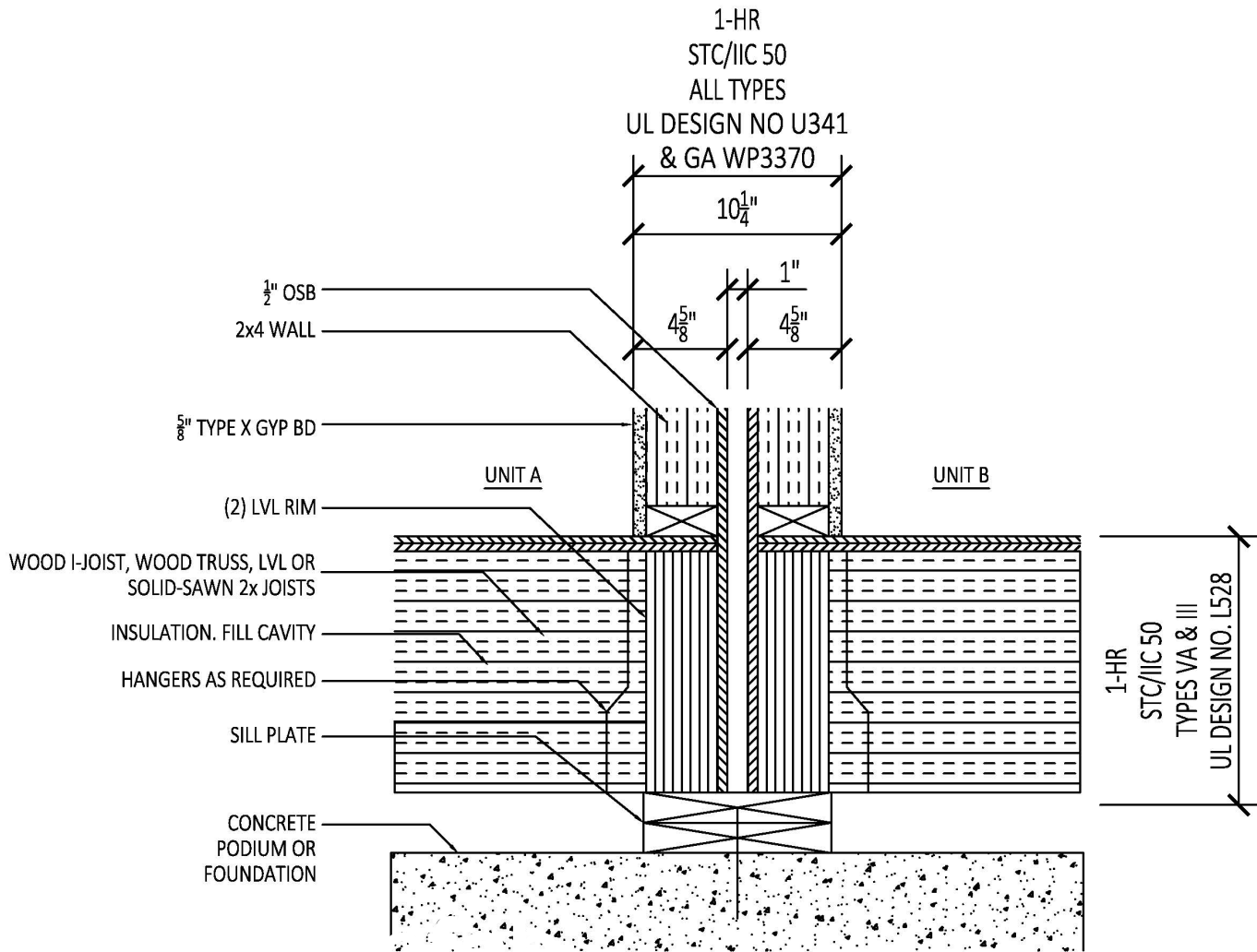
Pre-Delivery & Factory Fabrication

Sample exit corridor to unit wall section detail



Pre-Delivery & Factory Fabrication

Sample module to podium detail



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5805 Santa Elena Dr.
Arvin, CA 93203