USG STRUCTURAL PANELS

SIMPLE 2-HOUR MODULAR NONCOMBUSTIBLE FIRE DESIGN UL® H501®

- Three Easy steps: lay, fasten, finish
- Completely dry application, no pouring, setting or curing.
- An alternative to poured concrete slabs for noncombustible permanent modular assemblies meeting latest active ASTM standard E136
- Nonrotting, mold-, moisture- and termite-resistant
- Higher productivity with less layers
- Fast installation/dimensionally stable
A NEW WAY TO THINK ABOUT MODULAR CONSTRUCTION.

With USG Structural Panels, you can build faster, gain more interior space and meet the most stringent requirements for Permanent Modular Construction. USG Structural Panels, also known as USG Structo-Crete™, allow for the design flexibility and versatility of wood or cold-formed steel-framed structures, while providing the durability and long-lasting benefits of traditional, time-consuming systems. They are truly noncombustible when tested in accordance with latest active ASTM standard E136.

**USG Structural Panel Concrete Subfloor**
- Great shear diaphragm and uniform load capacities
- Moisture-, mold- and termite-resistant
- Fire-tested: one-, two- and three-hour UL fire-resistant load-bearing wall systems
- Thinner profile and faster installation than other panelized or modular systems

**Typical applications:**
- Low-slope or steep-slope roofs
- Balconies
- Decorative soffits
- Canopies

**USG Structural Panel Concrete Subfloor (for wall applications)**
- Load-bearing capacities (axial and shear)
- Moisture-, mold- and termite-resistant
- Factory-manufactured, quality-controlled structural subfloor
- Lightweight, no curing
- Fire-tested: two-hour UL fire-resistant floor/ceiling assembly (H501®)

**USG Structural Panel Concrete Roof Deck**
- FM Approved
- Fewer steps to a finished roof
- Fire-tested: one- and two-hour UL fire-resistant roof/ceiling assemblies
- Great uplift capacity
- Membranes can adhere directly to the panels

**Typical applications:**
- Low-slope or steep-slope roofs
- Balconies
- Decorative soffits
- Canopies

An Ultra-Thin 2-hour fire-rated Assembly allows you to build more

A total system thickness of 12-5/8" high allows for design flexibility, more floors for the same building height or taller interior ceiling space, without sacrificing floor/ceiling fire-resistance.
UL® Design H501®

As the thinnest UL® Certified Assembly for Modular Construction, H501® allows for taller interior spaces within a module; or building more floors when limited to a maximum building height.

Multiple Attachment Details

*Clip angles can be screw-attached or welded connections

**OPTION 1 - EXTENDED CLIP ANGLE**

Floor Segment Perimeter supported by minimum W6x9

- 3/4” USG Structural Panel Concrete Subfloor
- 6” Steel C-Joists, clip attached to perimeter frame.
- 3-1/2” deep insulation held in place by wire-netting

**OPTION 2 - WELDED CLIP ANGLE**

- Steel joist
- Steel beam
- Furring channel
- USG Sheetrock® Brand Firecode® C Gypsum Panel
- Clip angle
- Steel plate

Ceiling Segment Perimeter supported by minimum W4x13

- 4” Steel C-joists, clip attached to perimeter frame
- 1/2” Resilient Channel or equivalent
- 5/8” USG Sheetrock® Brand Firecode® C Gypsum Panels

**OPTION 3 - WEB TO WEB CLIP ANGLE**

- USG Structural Panel Concrete Subfloor
- Steel joist
- Steel beam
- Clip angle
- Wire-netting

Additional Advantages

- Unrestrained assembly allows for larger open spaces
- Insulation under floor section only allows for the spacing of Resilient Channels at maximum of 16” on center
- H501® has no mandatory floor covering or underlayment, giving the designer flexibility, without compromising on the fire-resistance-rating
- Ceiling segment loaded allows for mechanical, electrical, HVAC and suppression services
A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

**TYPICAL APPLICATIONS**

- Hotels
- Permanent Modules
- Lofts
- Classrooms
- Restaurants
- Emergency Pods
- Roof Deck
- Subfloor
- Modules
- Pods
- Corporate Training Rooms

(1) Floor Finish: USG Structural Panel Concrete Subfloor must be designed to the suitable intended use. In some instances, uses such as high corrosive or hazardous environments must be designed accordingly. Follow the contract documents and the floor finish manufacturer’s recommendations for the application of finished flooring. Note that most floor finishes will require an underlaymemt. Before the application of floor finish materials, ensure that all panels are properly fastened, with the fastener head driven flush or slightly below the surface of the panels.

(2) Storage, traffic and equipment might be limited based on the concentrated load limitation of USG Structural Panels.

(3) A qualified engineer should review and approve all lift designs and transport arrangements so that the structural integrity of the modules is not compromised during loading, transport and unloading.

A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

**TEST DATA**

<table>
<thead>
<tr>
<th>Physical and Mechanical Properties</th>
<th>Test Standard</th>
<th>Test Result Values (Metric)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrated Load</td>
<td>ASTM E661</td>
<td>804 lb (3.58kN) static 0.066&quot; (1.7mm) max. deflection @ 200 lb. (0.89 kN)</td>
</tr>
<tr>
<td>Mold Resistance</td>
<td>ASTM D3273, ASTM G21</td>
<td>10, &lt;1</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>ASTM C1185, Sec. 5.2.3.1</td>
<td>&lt;9%</td>
</tr>
<tr>
<td>Noncombustibility</td>
<td>ASTM E119 (unmodified)</td>
<td>Passed</td>
</tr>
<tr>
<td>CAN/ULC-S104</td>
<td>ASTM E84, CAN/ULC S102</td>
<td>0/0</td>
</tr>
<tr>
<td>Termite Resistance</td>
<td>AWPA Standard E-13</td>
<td>9.8</td>
</tr>
<tr>
<td>Low VOC Emissions</td>
<td>CDPH/EHLB/Standard Method V11-2010</td>
<td>Compliant</td>
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</table>

(a) Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours.


**SYSTEM PERFORMANCE**

<table>
<thead>
<tr>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL® Type Designation</td>
<td>USGSP; STRUCTO-CRETE*</td>
</tr>
<tr>
<td>City Code Approvals Los Angeles</td>
<td>LARR #25682</td>
</tr>
<tr>
<td>Code Reports</td>
<td>PER-13067; PER-14076</td>
</tr>
<tr>
<td>UL® 2-Hour Fire-Resistance Design</td>
<td>HS01; G556; P561; P562; V465; V471</td>
</tr>
</tbody>
</table>

(a) For the most up-to-date UL®/ULC Designations, visit www.USGStructuralUL.com

**LOAD TABLE**

The following table represents the load-carrying capacity of USG Structural Panel. For the most up-to-date load tables, see the Progressive Engineering Inc. Product Evaluation Report PER-13067. For technical questions, email usgstructural@usg.com. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

<table>
<thead>
<tr>
<th>Ultimate Uniform Load 1 for USG Structural Panel Concrete Subfloor</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Joist Spacing 1st - inches (millimeters)</td>
<td>12&quot; (305 mm)</td>
</tr>
<tr>
<td>Uniform Load 1st - psf (kPa)</td>
<td>1566 psf (75 kPa)</td>
</tr>
<tr>
<td></td>
<td>879 psf (42.1 kPa)</td>
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<tr>
<td></td>
<td>390 psf (18.7 kPa)</td>
</tr>
</tbody>
</table>

For SI: 1 in. = 25.4 mm, 1 psf = 47.88 Pa.

(1) Ultimate Load Values have no safety factor included.

(2) Two framing spans minimum per panel piece.


**STRUCTURAL FASTENERS**


**SAFETY FIRST!**

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.