A concrete roof deck that can be combined with other structural noncombustible materials to achieve one- and two-hour fire-rated roof-ceiling assemblies.

- The only cementitious structural panel approved by Factory Mutual (FM) — FM Approval Standard 4472
- Strong, durable concrete panel; great uplift ratings
- Dimensionally stable; panel will not buckle or warp like wood sheathing; no moisture issues like structural concrete
- Installs fast and easy with appropriate dust collection
- Meets the criteria of ASTM E136-16 for use in all types of noncombustible construction
- Made in the USA

USG Structural Panels Concrete Roof Deck are an innovative technology designed to provide a structural roof sheathing mechanically attached to structural framing, without the need for thermal barriers, pouring, setting or curing.

There are five basic components to a low-slope roof assembly:

- Structural framing (or joists), which can be cold formed steel, wood or open web steel trusses
- Concrete Roof Deck, serving as the noncombustible, nonrotting, dimensionally stable, structural sheathing
- Insulation, including polyisocyanurate (ISO), extruded polystyrene (XPS) or expanded polystyrene (EPS)
- Roof cover board installed between the insulation and the roofing membrane to protect the insulation and support the membrane, improving fire protection, traffic and hail resistance, and wind-uplift performance
- A membrane or membrane system, which can be built-up roofing (BUR), single-ply or modified bitumen

The following are for illustration purposes only. USG Structural Panels and USG Securock® Brand high-performance roof boards are engineered to perform within a properly designed roof system. The use of USG Securock high-performance roof boards as a roofing component is the responsibility of the design professional. Consult roofing system manufacturers for specific instructions on the application of their products to USG Securock high-performance roof boards. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.
USG Structural Panel Concrete Roof Deck is a substrate for direct applied roof systems. Whether Hot Asphalt (Hot Mop), or Adhesively applied, Concrete Roof Deck will serve as a noncombustible structural sheathing. Concrete Roof Deck is a dimensionally stable panel that does not need to be gapped. As an inorganic, termite-resistant per AWPA Standard E1-13, nonrotting, substrate, its ideal for membrane direct applications.

Concrete Roof Deck is a structural substrate when using ISO, XPS or EPS insulations, and does not require the use of a thermal barrier. The use of USG Securock high-performance roof board placed directly below the roofing membrane, providing primary support for the membrane and protecting the underlying insulation layer from damage during installation, foot traffic and hail.

Refer to Table 2 in our Assembly Report: AER-17108 for approved membranes and adhesives direct to Deck Roof Systems

Refer to Table 6 and Table 7 for approved membranes and adhesives to Securock Gypsum Fiber Roof Cover Boards

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock® Brand Glass-Mat Roof Board recommended for mechanically attached membrane.
Concrete Roof Deck provides the structural sheathing over Cold Formed Steel or Open Web Joists, without the need for a thermal barrier. USG Securock high-performance roof board provides an optional thermal barrier in conjunction with a standing-seam metal or tile roofing system. It also provides noise reduction and hail resistance. Thermal barriers reduce thermal “shock” and slow heat escape from building and act as a fire barrier for internal fire.

**METAL OR TILE ROOF**

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock Glass-Mat Roof Board recommended for mechanically attached Metal or Tile Roof.

<table>
<thead>
<tr>
<th>Metal or tile roof</th>
<th>Vapor retarder</th>
<th>USG Securock® Brand Glass-Mat Roof Board</th>
<th>Insulation</th>
<th>USG Structural Panel Concrete Roof Deck</th>
<th>Steel joist</th>
</tr>
</thead>
</table>

**VEGETATIVE OR GREEN ROOF**

Concrete Roof Deck provides the structural sheathing over Cold Formed Steel or Open Web Joists, without the need for a thermal barrier. It can be a suitable substructure for Vegetative or Green Roofs.

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock Gypsum-Fiber Roof Board recommended for fully adhered membrane.

<table>
<thead>
<tr>
<th>Plants</th>
<th>Growing medium</th>
<th>Retention mat</th>
<th>Drainage layer</th>
<th>Membrane w/ fasteners</th>
<th>USG Securock® Brand Gypsum-Fiber Roof Board</th>
<th>Insulation</th>
<th>USG Structural Panel Concrete Roof Deck</th>
<th>Steel joist</th>
</tr>
</thead>
</table>

**SOLAR ROOF**

Concrete Roof Deck provides the structural sheathing over Cold Formed Steel or Open Web Joists, without the need for a thermal barrier. It can be a suitable substructure for photovoltaic or solar panels.

USG Structural Panel Concrete Roof Deck over Cold Formed Steel with USG Securock Gypsum-Fiber Roof Board recommended for fully adhered membrane.

<table>
<thead>
<tr>
<th>Solar panels</th>
<th>Membrane w/ fasteners</th>
<th>USG Securock® Brand Gypsum-Fiber Roof Board</th>
<th>Insulation</th>
<th>USG Structural Panel Concrete Roof Deck</th>
<th>Steel joist</th>
</tr>
</thead>
</table>
There are four basic components to a steep-slope roof assembly:

- A structural framing (or joists), which can be cold formed steel, or wood trusses
- Concrete Roof Deck, serving as the noncombustible, nonrotting, dimensionally stable, structural sheathing
- Membrane or roof felt and underlayment
- A Exterior Cladding or roof covering, Shingles, Standing-Seam Metal or Clay tile

USG Structural Panel Concrete Roof Deck over Cold Formed Steel Truss. USG Structural Panel Concrete Roof Deck over Wood Truss.

The following are for illustration purposes only. USG Structural Panels are engineered to perform within a properly designed roof system. The use of USG Structural Panel Concrete Roof Deck as a roofing component is the responsibility of the design professional. Consult roofing system manufacturers for specific instructions on the application of their products to USG Structural Panel Concrete Roof Deck. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

Concrete Roof Deck provides the structural sheathing over Cold Formed Steel or wood trusses, without the need for a thermal barrier. Its inorganic core, results in a noncombustible, nonrotting, dimensionally stable substrate ideal for a variety of exterior grade coverings, such as:

USG Structural Panel Concrete Roof Deck over Cold Formed Steel Truss with Clay Tile. USG Structural Panel Concrete Roof Deck over Cold Formed Steel Truss with Standing Seem Roof.

USG Structural Panel Concrete Roof Deck over wood Truss with Asphalt Shingles.

The following are for illustration purposes only. In addition to the previous applications, USG Structural Panels Concrete Roof Deck can be the structural sheathing for balconies and canopies. The use of USG Structural Panel Concrete Roof Deck as a decking component is the responsibility of the design professional. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.
The following table represents the uniformly distributed load capacity of USG Structural Panel Concrete Roof Decks.

For the most up-to-date load tables, see the Progressive Engineering Inc. report, PER-14076. For technical questions, email usgstructural@usg.com. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

**Ultimate Uniform Load for USG Structural Panel Concrete Roof Deck**

<table>
<thead>
<tr>
<th>Joist Spacing - inches (millimeters)</th>
<th>Uniform Load - psf (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot; (305 mm)</td>
<td>1,320 psf (63.2 kPa)</td>
</tr>
<tr>
<td>16&quot; (406 mm)</td>
<td>744 psf (35.6 kPa)</td>
</tr>
<tr>
<td>24&quot; (610 mm)</td>
<td>330 psf (15.8 kPa)</td>
</tr>
<tr>
<td>32&quot; (813 mm)</td>
<td>240 psf (11.5 kPa)</td>
</tr>
<tr>
<td>48&quot; (1,220 mm)</td>
<td>150 psf (7.2 kPa)</td>
</tr>
</tbody>
</table>

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

1. **Ultimate Load Values** have no safety factor included.
2. Two framing spans minimum per panel piece. See SCP43, page 6 for single span framing recommendations.
3. Uniform Load Table for general reference only.
5. Blocking at all joints perpendicular to framing to be a minimum of 16 gauge 3-5/8" wide track. For shelling installation where a single span condition exists, additional track blocking is required perpendicular to the framing located mid-way between the edges of the panel.

**Recommended Fasteners**

- **Grabber Construction Products, Inc.**
  - CGBS180LG: 581 lb. (264 kg)
  - CB200L2M: 581 lb. (264 kg)
  - C200L2R: 581 lb. (264 kg)
  - CC122S0LRG: 581 lb. (264 kg)

- **Simpson Strong-Tie Company Inc.**
  - CBSDQ158S: 581 lb. (264 kg)
  - WSNTLG2S: 581 lb. (264 kg)
  - TG2160S: 581 lb. (264 kg)

- **SENCO**
  - — GL24AABF3: 581 lb. (264 kg)
  - — — — — — — — —

1. Fastener pull-through capacities are based upon the minimum average ultimate tested capacity for all tabulated fasteners. The engineer or designer of record shall apply an appropriate safety factor (ASD) or resistance factor (LRFD).
2. SENCO 8d ring shank nails are manufactured with a length of 2-3/8 in., head diameter of 0.266 in., and a Shank diameter of 0.113 in. Equivalent 8d ring shank nails meeting these dimensional requirements may be utilized when approved by the engineer or designer of record.
3. Minimum edge distance for nails is 1/2 in.

**General Notes:** In accordance with PER-14076, the minimum screw pattern is 6 in. (153 mm) o.c. along the perimeter of the panels and 12 in. (305 mm) o.c. in the field of the panels. Do not use a larger size screw unless specified by the structural engineer. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

**Additional Applications Cont.**

**RECOMMENDED FASTENERS**

**LOAD TABLE**

**USG Structural Panel Concrete Roof Deck in balcony application.**

**USG Structural Panel Concrete Roof Deck In canopy system.**