

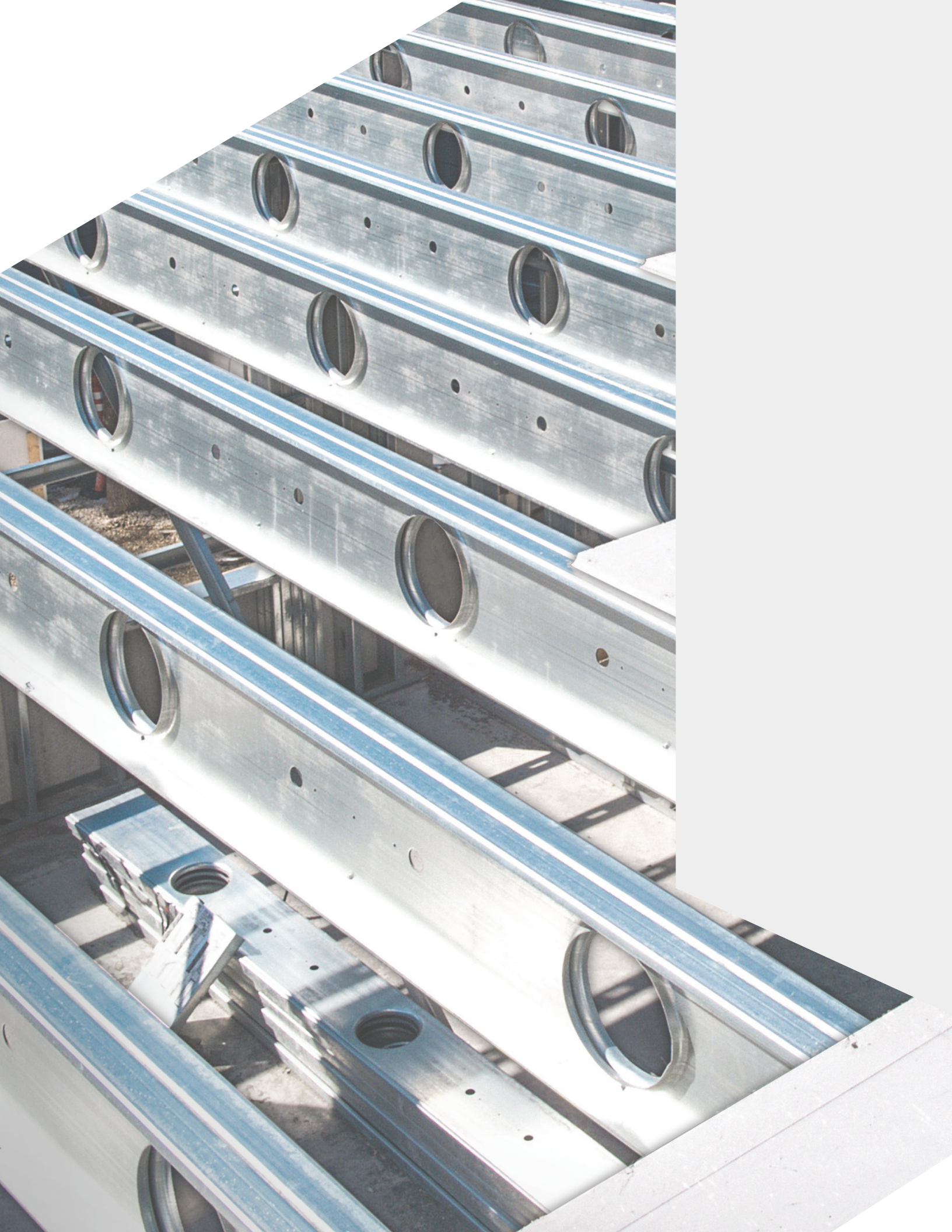
USG  
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## USG STRUCTURAL PANEL CONCRETE ROOF DECK

FIELD INSTALLATION GUIDE





# USG STRUCTURAL PANEL CONCRETE ROOF DECK CONTACT INFORMATION

## PRODUCT INFORMATION

See [usg.com](http://usg.com) for the most up-to-date product information.

## CUSTOMER SERVICE

800 621-9523

## TECHNICAL SERVICE

800 USG.4YOU (874-4968)

## SAMPLES, LITERATURE AND PRODUCT INFORMATION

[usg.com/structural](http://usg.com/structural)

## USG STRUCTURAL SOLUTIONS CONTACTS:

### Frank Pospisil

Technical Sales Manager

[fpospasil@usg.com](mailto:fpospasil@usg.com)

312 436-7618

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### Mike Inman

National Sales Manager

[minman@usg.com](mailto:minman@usg.com)

312 436-4270

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### Tim Lucas

Technical Sales Manager - Field

[tlucas@usg.com](mailto:tlucas@usg.com)

312 436-5748

[usgstructural@usg.com](mailto:usgstructural@usg.com)

# USG STRUCTURAL PANEL TOOLS

Efficiently cutting and fastening USG Structural Concrete Panels, also known as USG Structo-Crete® Panels, require the proper tools and accessories. These are suggested tools for use in applying USG Structural Panels. USG recommends that you review and follow all manufacturer guidelines for the use and care of any tools used to install our products and accepts no responsibility for their use or warranty. Model numbers subject to change by tool manufacturers. The recommendations provided are based on the control of dust during the cutting of the panels.

## **OSHA Respirable Crystalline Silica Standard for Construction - Rule 29 CFR 1926.1153**

As the cutting of our product is not specifically covered in Table 1, USG recommends that a competent person develop a written exposure control plan and follow the steps necessary to determine the exposure potential of workers and the control plan methods.

### **Cutting Tools**

For straight cuts, use a hand held circular saw with a carbide-tipped framing blade. A diamond or other specialty blade is not required.

- Blade examples:
  - Diablo D0724X - 7-1/4", 24 T Carbide-Tipped
  - Makita T-01426 - 6-1/2", 24 T Carbide-Tipped

Per OSHA Rule 29, saws used outside with blades 8" or less must be equipped with a dust collection port and a VDCS (vacuum dust collection device) rated at over 80 cubic feet per minute with a 99% or greater filter efficiency. For improved control of dust use a HEPA filter on the vacuum.

- Circular saw examples:
  - Makita - 5057KB 7-1/4" (Corded)
  - DeWalt - DWS520K 6-1/2" Track Saw (Corded)
  - SkilSaw - SPT67FMD-01 7-1/4" (Corded)
- VDCS examples:
  - Makita - VC410
  - DeWalt - DWV012

For making small openings, use the appropriate size hole saw or rotary tool with dust collector port and VDCS.

- Hole saw examples:
  - Milwaukee 49-56-3003 Carbide Tipped Hole Saw
  - Diablo Tools DHS3000 Bi-Metal Hole Saw
- Rotary tool examples:
  - Roto-Zip® XB-UL1, WD1, XB-TC1

### **Fastening Tools**

Steel Framing: Stand-up style, 2500 RPM or less variable speed screw gun is recommended. Do not use dry or wet lubricants in the drive head mechanism of stand-up drivers. Remove dust frequently with dry, clean compressed air, such as canned air.

- Stand-Up Drivers:
  - Grabber SuperDrive® 75
  - Simpson Quik Drive® Pro250
  - Muro HDVL71 Heavy Duty Driver
- Power Actuated Tools:
  - Aerosmith® HN120
  - DeWalt DFD270
  - Hilti DX 5-MX
- Wood Framing:
  - SencoSCN65XP Coil Nailer

## Fastener Drive Bits

Fastener selection is based on several criteria and will affect framing type, framing flange size, minimum end distance for fastener insertion, and driver/drive bit used. Only USG recommended fasteners should be used and must be inserted according to the fastener pattern specified.

Framing Type <sup>1</sup>	Fastener Manufacturer	Fastener Part Number	Fastener Description <sup>3</sup>	Drive Bit Part Number
<b>332 mil (20 ga) CFS</b>	Grabber Construction Products, Inc.	<a href="#">CM10178JBWRG</a>	#10 x 1-7/8" Flat Head DRIVALL® Pilot Point Self-Drilling Screw	T2178LN LOX® #2 (178 mm) <sup>5</sup>
<b>43 mil (18 ga) CFS</b>	Grabber Construction Products, Inc.	<a href="#">CGH8158LG</a>	#8 x 1-5/8" Winged Flat Wafer Head Self-Drilling Screw	T2178LN LOX® #2 (178 mm) <sup>5</sup>
<b>54 mil (16 ga) — 97 mil (12 ga) CFS</b>	Grabber Construction Products, Inc.	<a href="#">CGH8158LG</a>	#8 x 1-5/8" Winged Flat Wafer Head Self-Drilling Screw	T2178LN LOX® #2 (178 mm) <sup>5</sup>
	Simpson Strong-Tie Company, Inc.	<a href="#">CBSDQ158S</a>	#8 x 1-5/8" Winged Self-Drilling Screw	BIT2SU #2 (undersized sq.)
<b>1/4" (6.4 mm) A36 HRS"</b>	Grabber Construction Products, Inc.	<a href="#">CC12250LRG</a>	#12 x 2-1/2", Winged Self-Drilling Screw	T3178LN LOX® #3 (178 mm) <sup>6</sup>
	Simpson Strong-Tie Company, Inc.	<a href="#">TBG1260S</a>	#12 x 2-3/8", Flat Head, Strong-Drive® TB Wood-to-Steel Screw	BIT3SU #3 (undersized sq.)
	Muro North America, Inc.	<a href="#">RSM645WFL-GY</a>	M6.0 x 45 mm Winged Self-Drilling Screw	#3 SQ
<b>1/8 in (3.2 mm) — 1/2 in (13 mm) A36 HRS</b>	Aerosmith® Fastening	<a href="#">5324HPG</a>	.145 x 1-1/4" Helical PowerPin®	Tool Setting and Load will vary based on steel thickness and hardness
	DeWalt - Engineered by Powers, Inc.	<a href="#">50458-PWR</a>	0.157 in x 1-1/4" CSI Spiral Drive Powder Actuated Pin	
	Hilti, Inc.	<a href="#">X-U 32 MX</a>	0.157 in x 1-1/4" Knurled Shank Powder Actuated Fastener	
<b>SPF Lumber</b>	Grabber Construction Products, Inc.	<a href="#">C8200L2M</a>	#8 x 2", Flat Head, Type 17, Nibs, GrabberGard®	T2178LN LOX® #2 (178 mm) <sup>5</sup>
	Simpson Strong-Tie Company, Inc.	<a href="#">WSNTLG2S</a>	#8 x 2", Flat Head, Twin Threads, Nibs	BITX25 T-25 (6 lobe star)
	SENCO Brands, Inc.	<a href="#">GL24AABF</a>	8d Ring Shank Nails <sup>4</sup>	N/A

### Table Notes:

- CFS** = cold-formed structural steel **HRS** = hot-rolled structural steel **Lumber** = specific gravity 0.42 or greater. Gauge/thickness of steel, fastener end distance, and joist flange width is identified for each fastener and are minimums. Framing gauge, size & type is determined by the engineer, architect or design professional.
- 33 mil (structural 20 ga) is for gravity loads only.
- Any length of the same fastener is approved provided a minimum of 3 threads penetrate the steel framing.
- 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.
- Grabber SuperDrive® 75 uses the 178mm LOX® #2 drive bit. They also offer a 3" LOX® #2 drive bit for hand held drill use, Part # 3002L.
- Grabber SuperDrive® 75 uses the 178mm LOX® #3 drive bit. They also offer a 3" LOX® #3 drive bit for drill use, Part # 3003L.

### General Note:

In accordance with [PER-13067](#) (Subfloor) and [PER-14076](#) (Roof Deck), the minimum screw pattern is 6 in. (153 mm) o.c. along the perimeter and 12 in. (305 mm) o.c. in the field of the panels. Refer to [PER-15092](#) for Foundation Wall fastener schedules.

USG.4YOU  
800 (874-4968)  
[usg.com/structural](http://usg.com/structural)

Manufactured by  
United States Gypsum Company  
550 West Adams Street  
Chicago, IL 60661

**MSRP based upon full truckload delivered to jobsite:**  
**Subfloor: \$4.50/sf**  
**Roof Deck: \$5.40/sf**  
**Foundation Wall SD: \$4.90/sf**  
**Foundation Wall XD: \$7.50/sf**

SCP96-USA-ENG/rev. 2-20  
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**A qualified architect or engineer should review and approve calculations, framing, and fastener spacing for all projects.**

### PRODUCT INFORMATION

See [usg.com](http://usg.com) for the most up-to-date product information.

### DANGER

The following are warnings when installing the panels. Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause respiratory irritation. May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use only in a well-ventilated area, wear a NIOSH/MSHA approved respirator. Wear protective gloves/protective clothing/eye protection. If in eyes: rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Immediately call a poison center/doctor. If on skin: wash with plenty of water. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. If skin irritation or rash occurs, or otherwise exposed or concerned: get medical attention. Store locked up. Dispose of in accordance with local, state, and federal regulations. For more information call Product Safety: 800 507-8899 or see the SDS at [usg.com](http://usg.com). **KEEP OUT OF REACH OF CHILDREN.**

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ROTOZIP is a trademark of Robert Bosch Tool Corporation.  
QUIK-DRIVE and STRONG-DRIVE are trademarks of the Simpson Strong-Tie Company, Inc.

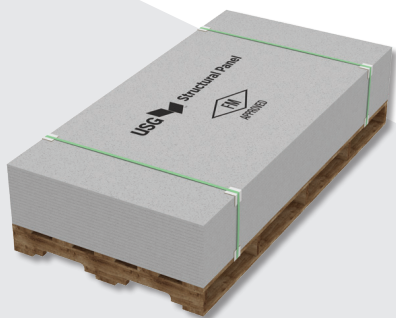
### NOTICE

We shall not be liable for any special, incidental or consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from the date it was or reasonably should have been discovered.

### SAFETY FIRST!

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

# USG STRUCTURAL PANEL CONCRETE ROOF DECK



## DESCRIPTION

USG Structural Panel Concrete Roof Deck, also known as USG Structo-Crete® Panels, mechanically fastened to cold-formed steel joists, trusses or wood framing members; to create a structural substrate ideal as low- and steep-slope roof systems, canopies and/or balconies. This roof system is designed to carry gravity and lateral loads. Roof membranes may be applied directly over USG Structural Panel Concrete Roof Decks. For retrofit or renovation projects, Concrete Roof Deck can also be installed on wood-joists, trusses or bar joists. See [USG Structural Recommended Fasteners \(SCP95\)](#).

USG Structural Panel Concrete Roof Decks can carry a total load, live and dead, of 150 psf (7.2 kPa) on cold-formed steel framing is spaced 48 in. (1220mm) o.c.

USG Structural Panel Concrete Roof Decks have a linear variation with change in moisture content of less than 0.10%. This means that the panels will not buckle or warp like wood sheathing.

Cutting USG Structural Panel Concrete Roof Decks require a carbide-tipped saw blade and a circular saw equipped with dust collection or suppression and control of airborne dust. Fastening is also conventional, using a screw gun and self-drilling No. 8-gauge screws. Because these panels are so durable, they may be installed in most weather conditions, including mild precipitation (rain or snow) and temperatures from 0°F to 125°F (-18°C to 52°C).

Refer to roof system manufacturer's written instructions, local code requirements and Factory Mutual Global (FMG) and/or Underwriters Laboratories (UL) requirements for proper installation techniques. For the attachment of shingles, USG recommends the use of electro-galvanized collated roofing nails installed by a professional grade pneumatic nailer with an air supply between 100 to 120 psi.

## FIRE PERFORMANCE

- UL Classified (Type USGSP) for noncombustibility in accordance with active ASTM standard E136 (CAN/ULC-S114)
- UL Classified (Type USGSP) as to Surface Burning Characteristics in accordance with ASTM E84 (CAN/ULC-S102). — Flame Spread 0 and Smoke Developed 0
- Class A, in accordance with UL790 (CAN/ULC-S107). See the *UL Building Materials Directory* for more information

## SYSTEM PERFORMANCE

Description	Reference
FM Approved	Complies with requirements of FM 4472
Meets FM Class 1	
Code Report	<a href="#">PER-14076</a>
Ultimate Uniform Load <sup>a</sup>	150psf (7.2kPa) @ 48" o.c. (1220mm). See Table
Shear Diaphragm Ratings	1641plf <sup>b</sup> (23.9kN/m)
UL 1-, 1.5-, 2-Hour Fire Resistance Designs	P561, P562, P573
UL Roofing System, Uplift Resistance	TGIK.R25352

(a) On steel framing.

(b) Joists spaced 48" (1219.2mm) o.c. and fasteners spaced 4" (102mm) o.c. at the perimeter and 12" (305mm) o.c. in field, fully blocked. See the Progressive Engineering Inc. Product Evaluation Report [PER-14076](#).



## WARNING

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USG Structural Panel Concrete Roof Decks should not be left in service without an appropriate roof, or weather-resistive membrane covering.

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## INSTALLATION

To perform in the expected manner, USG Structural Panel Concrete Roof Decks must be installed according to USG specifications, using only the listed materials and components. For a complete set of specifications, email [usgstructural@usg.com](mailto:usgstructural@usg.com).

As with all types of construction, appropriate safety procedures must be followed to protect installers from personal injuries resulting from lifting incorrectly, falling, and eye, hand and lung irritation.

Care must be taken when placing pallets of USG Structural Panel Concrete Roof Decks on roof framing. A pallet of USG Structural Panel Concrete Roof Decks consists of 20 sheets of our 3/4 in. x 4 ft. x 8 ft. panels (19mm x 1220mm x 2440mm) nominal [The T&G panels have an actual width of 47-3/4 in. (1213mm)], and weighs approximately 3,400 lbs. (1542 kg). Do not exceed limits when loading pallets or panels on open framing or completed roof assemblies. Store units next to structural walls where the joists meet the wall. See [USG Structural Panel Concrete Roof Deck Field Installation Guideline \(SCP43\)](#) for additional information.

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## RECOMMENDED FASTENERS

Refer to [USG Structural Recommended Fasteners \(SCP95\)](#) for specific fastener recommendations for the various types of framing used for installing USG Structural Panel Concrete Roof Deck. The recommended fasteners meet several criteria to insure they have adequate pull-out, pull-through, and slip performance. These fasteners also meet or exceed 1000 hours corrosion resistance requirement when tested in accordance with ASTM B117. High corrosion resistance is critical because of the panel pH level. When coupled with any moisture exposure, including high humidity, this elevated pH may deteriorate a non-corrosion resistant fastener.

**General Note:** 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.**

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## FRAMING

The steel roof framing must be designed to meet the strength and deflection criteria specified in the contract documents. The attachment flange or bearing edge must be a minimum 1-5/8 in. (41mm) wide with at least 3/4 in. (19mm) of the panel bearing on the supporting flange. Metal framing must be a minimum 16 gauge (54 mils, or 0.0538 in. [1.36mm]) and spaced no greater than 48 in. (1220mm) o.c. Follow the contract documents and the steel framing manufacturer's recommendations for the proper installation and bracing of the framing.

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## TRAFFIC PROTECTION

Place sheathing materials (i.e. additional layer of USG Structural Panel or plywood) on the roof in high traffic areas to protect newly installed concrete roof decks. See [USG Structural Panel Concrete Roof Deck Field Installation Guideline \(SCP43\)](#) for additional information.

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## APPLICATION

Cut panels to size with a circular saw equipped with carbide-tipped blade and a dry dust collection device or a water-dispensing device that limits the amount of airborne dust. Wear safety glasses and a NIOSH-approved N95 dust mask when cutting this panel. Dispose of collected dust in a safe manner and in compliance with local, state and federal ordinances.

## APPLICATION CONT.

Install USG Structural Panel Concrete Roof Decks with the long edges perpendicular to the framing. Apply the panel with the print markings facing up toward the installer. Fasten each panel after it has been placed following the fastening schedule listed in the contract documents. Install panels in a running bond pattern so that end joints fall over the center of the framing members and are staggered by at least two supports from where the end joints fall in the adjacent rows. **Tongue and groove joints should be free of debris and fitted tightly without any gapping.** For all panels less than 24 in. (610mm) wide, all edges must be supported by blocking. Blocking must be cold-formed from steel complying with AISI General, with a minimum 54 mils (0.0538 inch or 1.36mm) base metal thickness (no. 16 gauge) and a minimum G60 galvanized coating. The attachment flange or bearing edge must be at least 1-5/8 in. (41mm) wide and at least 3/4 in. (19mm) of the panel must bear on the supporting flange or edge. See [USG Structural Panel Concrete Roof Deck Field Installation Guideline \(SCP43\)](#) for additional information.

Installed panels shall not be exposed to weather for more than 90 days. Care must be taken to avoid accumulation of snow and/or ice on installed panels. Brooms should be used for snow removal whenever possible. Excessive shoveling or scraping may damage installed panel surface.

In the event of significant accumulations of snow and/or ice, use indirect heat from temporary space heaters to melt the affected areas. To prevent damage to USG Structural Panel Concrete Roof Decks, never expose the panels to direct flame for the purpose of snow removal and/or deicing efforts. At no time should salts, fertilizers or other chemicals be used on the panels for anti-icing and/or deicing purposes.

## ROOFING SYSTEM

Follow the contract documents and the roof system manufacturer's recommendations for the application of roof materials. Before the application of roof materials, ensure that all panels are properly fastened, with the fastener head driven flush or slightly below the surface of the panels.

## PRODUCT DATA

**Sizes and Packaging:** 3/4 in. x 4 ft. x 8 ft. (19 mm x 1220 mm x 2440 mm) panels. Each panel weighs approximately 170 lbs. (77kg) and is intended to be handled by two people. USG Structural Panel Concrete Roof Decks are packaged in 20-piece units.

**Availability:** USG Structural Panel Concrete Roof Decks are sold through any USG distributor. Email [usgstructural@usg.com](mailto:usgstructural@usg.com) for information on availability and a dealer in your area.

**Storage:** USG Structural Panel Concrete Roof Decks are shipped in 20-piece units. Panels should be stored in a horizontal position and uniformly supported. Panels must be covered when stored in unprotected areas.

Excessive moisture and freezing temperatures may result in panels sticking together within the units. Therefore, care should be taken to ensure units of USG Structural Panel Concrete Roof Decks are not exposed to excessive moisture, ice and snow. In the event that panels do become frozen together within a unit, the unit needs to be brought to a temperature above 32°F (0°C) to allow the ice to melt naturally. Never physically pry panels apart. Salt, fertilizer or other deicing agents should not be used at any time. Covering the units completely with tarps or similar coverings is an easy way to avoid panels freezing together.

**Maintenance:** USG Structural Panel Concrete Roof Decks do not require any regular maintenance except to remove standing water and repair damage from abuse. Any cracked or broken panels should be replaced with sound USG Structural Panel Concrete Roof Decks that are secured following the fastening schedule prescribed in the original installation documents. The replacement panels must be a minimum of 24 in. (610mm) wide and must span a minimum of two supports. If not, the replacement panel must be fully blocked on all sides. See [USG Structural Panel Concrete Roof Deck Field Installation Guideline \(SCP43\)](#) for additional information.

## TEST DATA

Physical and Mechanical Properties	Test Standard	Typical Values Standard (Metric)
Noncombustibility	ASTM E136 (unmodified) CAN/ULC-S114	Passed
Surface-burning characteristics (flame spread/smoke developed)	ASTM E84 CAN/ULC-S102	0/0
Weight at 3/4 in. (19 mm) thickness	ASTM D1037	5.3 lbs./ft. <sup>2</sup> (26 kg/m <sup>2</sup> )
Density <sup>a</sup>	ASTM C1185	75 lbs./ft. <sup>3</sup> (1,201 kg/m <sup>3</sup> )
Mold resistance	ASTM D3273 ASTM G21	10 0
Termite resistance	AWPA Standard E1-13	9.8
Low VOC emissions	CDPH/EHLB/Standard Method V1.1-2010 <sup>b</sup>	Compliant



## TEST DATA CONT.

Physical and Mechanical Properties	Test Standard	Typical Values Standard (Metric)
Concentrated load	ASTM E661	550 lbs. (2.45 kN) static 0.108 in. (2.7mm) max. deflection @ 200 lbs. (0.89 kN)
Fastener lateral resistance <sup>c</sup>	ASTM D1761, Sec. 10.2	>210 lbs. (0.93 kN) dry >160 lbs. (0.71 kN) wet
pH value	ASTM D1293	10.5
Linear variation with change in moisture (25% to 90% relative humidity)	ASTM C1185, Sec. 8	<0.10%
Thickness swell	ASTM D1037, B	Max. 3.0%
Freeze/thaw resistance	ASTM C1185	Passed (50 cycles)
Water absorption <sup>d</sup>	ASTM C1185, Sec. 5.2.3.1	<15.0%
Long-term durability	ASTM C1185, Sec. 13	Min. 75% retention of physical properties
Water durability	ASTM C1185, Sec. 5	Min. 70% retention of physical properties

- (a) Density measured at equilibrium conditioning per Section 5.2.3.1., 28 days after manufacturing.  
 (b) Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (Emission testing method for CA Specification 01350).  
 (c) Fastener lateral resistance measured with #8, 1-5/8 in. (41mm), winged, self-drilling screw.  
 (d) Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours.

## LOAD TABLE

The following table represents the Load Capacity of USG Structural Panel Concrete Roof Decks. The uplift capacities in this table represent the attachment of the Concrete Roof Deck to the structural framing members. The values for a roofing system are obtained from the roofing system manufacturer's testing and specific installation instructions. For the most up-to-date load tables, see the Progressive Engineering Inc. report, [PER-14076](#). For technical questions, email [usgstructural@usg.com](mailto:usgstructural@usg.com). **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

### Ultimate Load Capacity for USG Structural Panel Concrete Roof Deck

Joist Spacing - inches (mm)	Uniform Load - psf (kPa) <sup>1,2,3</sup>	Uplift Capacity - psf (kPa) <sup>1,2,3</sup>			
		Fastener spacing (edge/field)			
		8/12	8/8	6/6	4/4
<b>12 inch (304.8mm)</b>	1320 (63.2)	513 (24.6)	770 (36.9)	1026 (49.1)	1320 (63.2)
<b>16 inch (406.4mm)</b>	744 (35.6)	385 (18.4)	557 (27.6)	744 (35.6)	744 (35.6)
<b>24 inch (609.6mm)</b>	330 (15.8)	257 (12.3)	330 (15.8)	330 (15.8)	330 (15.8)
<b>32 inch (812.8mm)</b>	240 (11.5)	192 (9.19)	240 (11.5)	240 (11.5)	240 (11.5)
<b>48 inch (1219mm)<sup>4</sup></b>	150 (7.2)	128 (6.1)	150 (7.2)	150 (7.2)	150 (7.2)

**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.  
 (3) Ultimate Uniform Load Table for general reference only.  
 For complete load capacities, consult Progressive Engineering Inc. Product Evaluation Report [PER-14076](#)  
 (4) Blocking at all joints perpendicular to framing to be a minimum of 16 gauge (54 mils, or 0.0538 inch [1.37 mm]), 3-5/8 in (92 mm) wide track. For sheathing 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.

### PRODUCT INFORMATION

See usg.com for the most up-to-date product information.

### DANGER

Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause respiratory irritation. May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use only in a well-ventilated area, wear a NIOSH/MSHA approved respirator. Wear protective gloves/protective clothing/eye protection. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. If skin irritation or rash occurs, or otherwise exposed or concerned: Get medical attention. Store locked up. Dispose of in accordance with local, state, and federal regulations. For more information call Product Safety: 800 507-8899 or see the SDS at usg.com. **KEEP OUT OF REACH OF CHILDREN.**

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### SAFETY FIRST!

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## SUBMITTAL APPROVALS

Job Name	
Contractor	Date

800 USG.4YOU  
 800 (874-4968)  
[usg.com/structural](http://usg.com/structural)

Manufactured by  
 United States Gypsum Company  
 550 West Adams Street  
 Chicago, IL 60661

**MSRP based upon full truckload delivered to jobsite:  
 Roof Deck: \$5.40/sf**

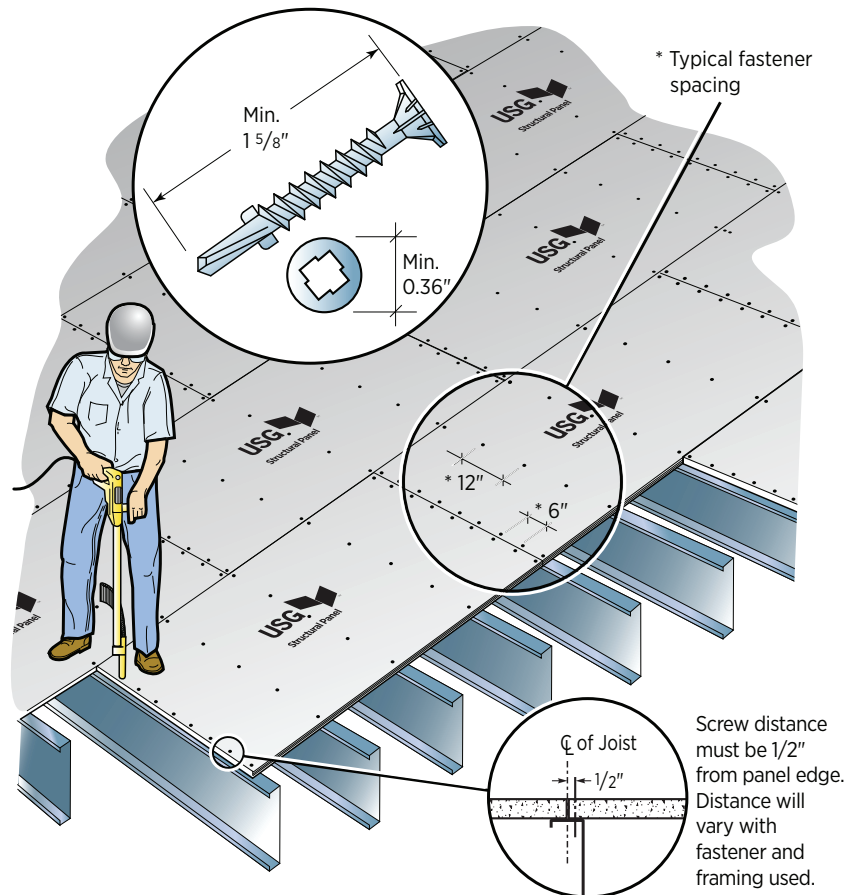
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# USG STRUCTURAL PANEL CONCRETE ROOF DECK PANEL FASTENING

- Proper fall restraint equipment required.
- Use only USG recommended fasteners, which can be found at [www.usgscp95.com](http://www.usgscp95.com).
- Apply screws with a stand-up gun to reduce fatigue.
- Follow fastening schedule in contract documents.

**Note:** \*Fastener schedule is to be specified by designer of record.



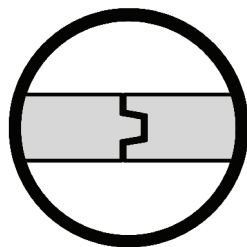
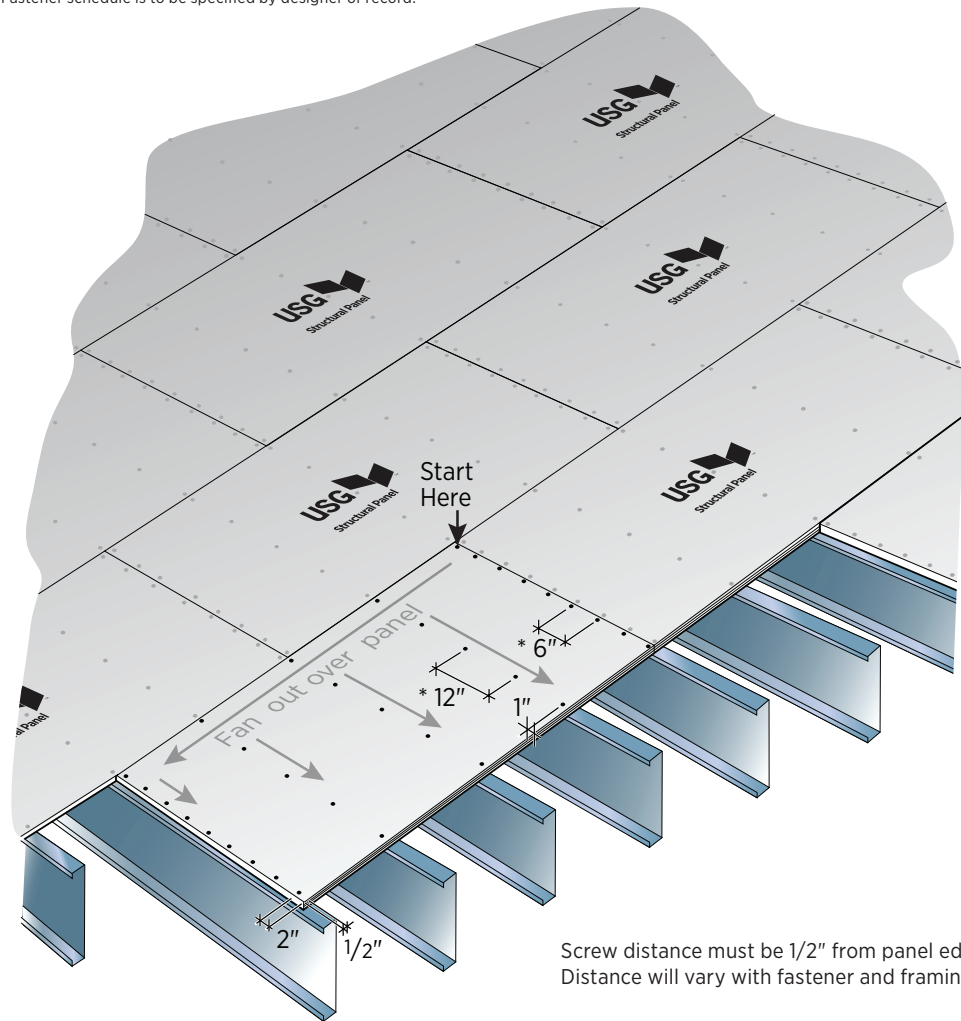
Reference *USG Structural Panel Recommended Fasteners (SCP95)* for current fastener information. Visit [www.usgscp95.com](http://www.usgscp95.com).

**General Note:** 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.

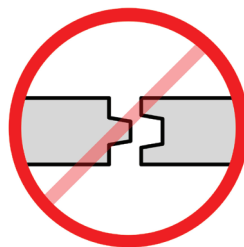
**A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

# USG STRUCTURAL PANEL CONCRETE ROOF DECK FASTENING THE PANEL

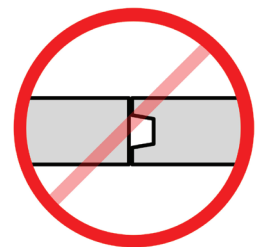
**Note:** \*Fastener schedule is to be specified by designer of record.



CORRECT



INCORRECT



INCORRECT

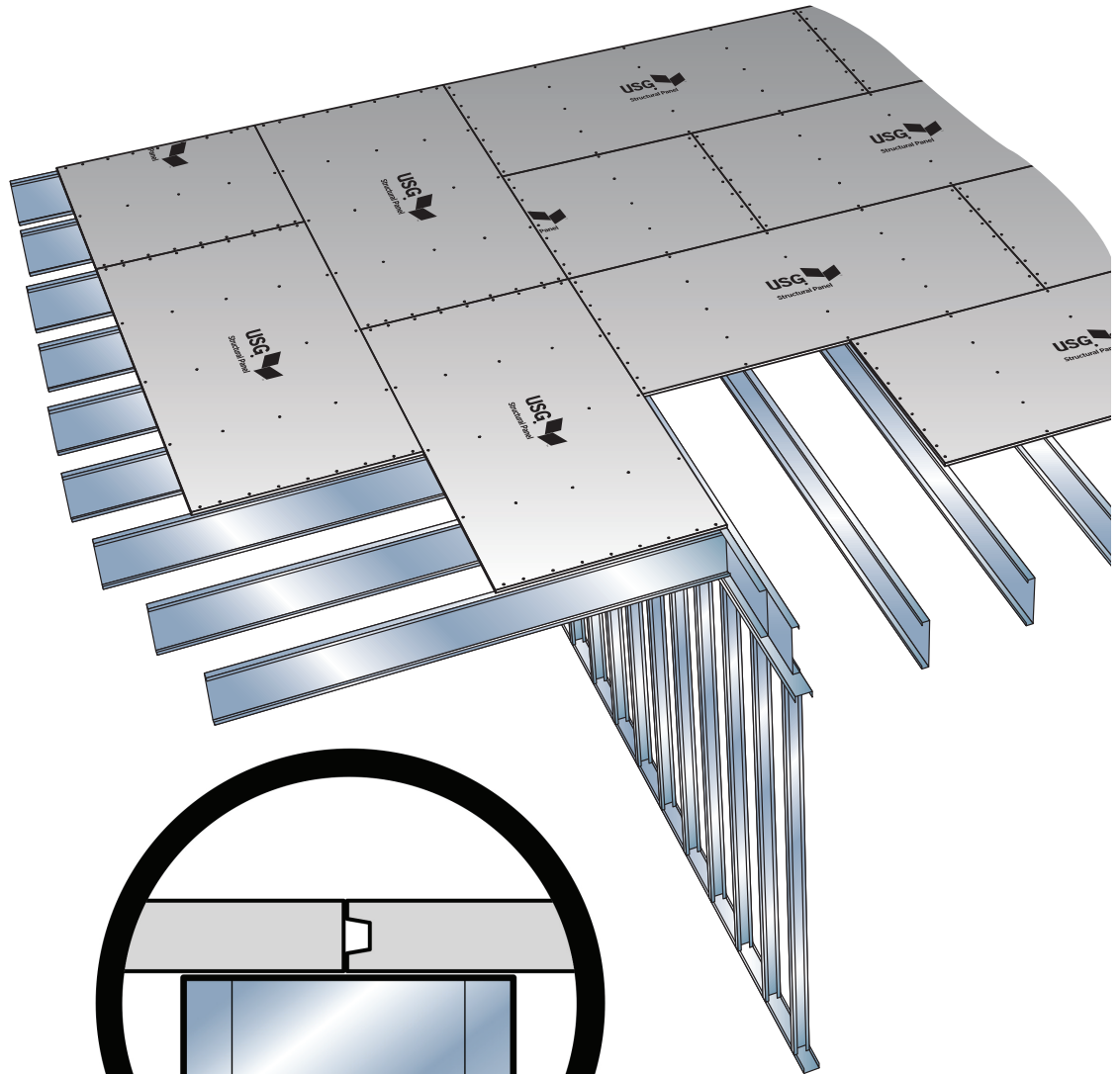
When connecting the tongue and groove, the tongue from the loose panel should be engaged into the groove of the already affixed panel.

**To ensure proper panel application, be sure to:**

1. Lay board down.
2. Engage tongue and groove (T&G).
3. Fasten one corner.
4. Fan out over the panel.

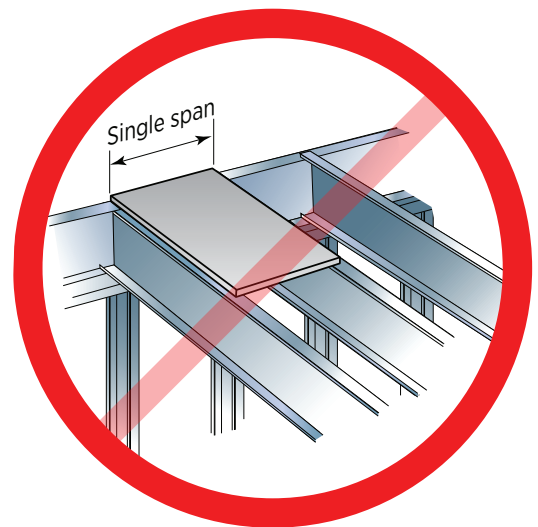
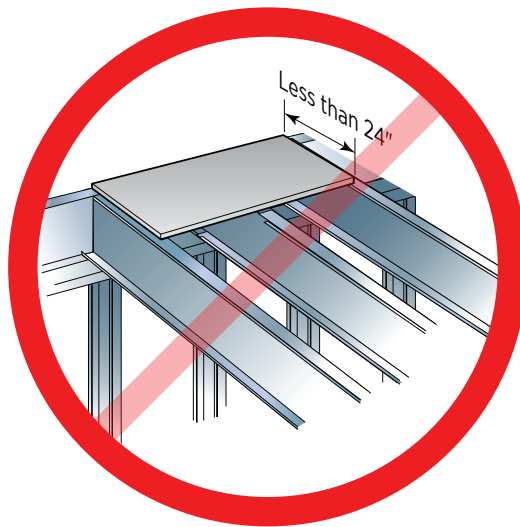
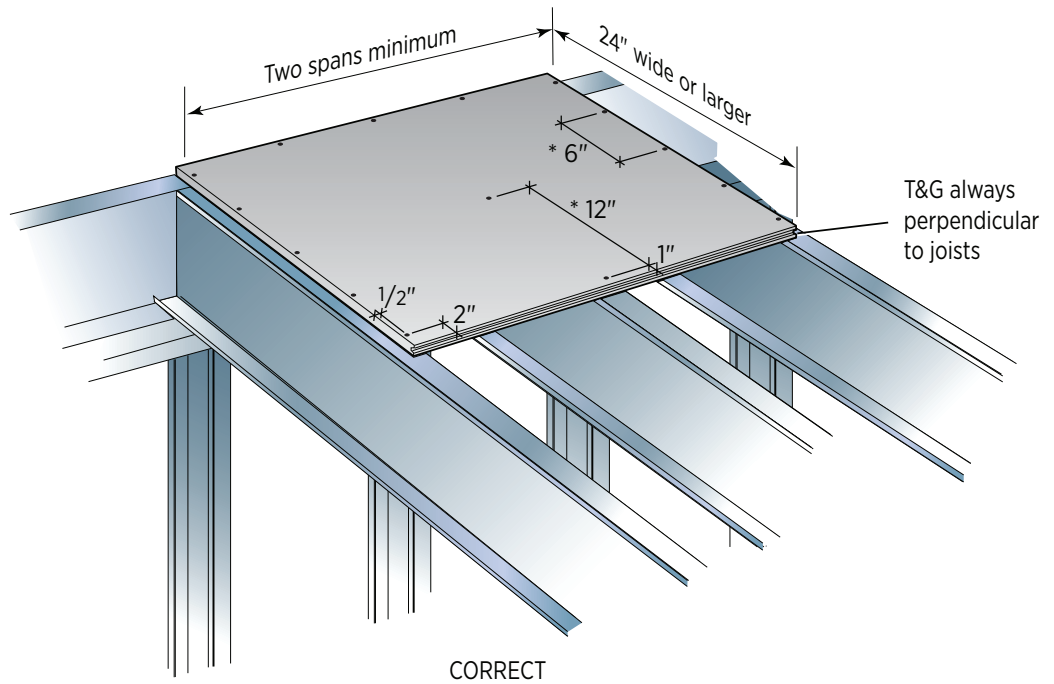
# USG STRUCTURAL PANEL CONCRETE ROOF DECK FRAMING DIRECTION CHANGE

- Always lay panels perpendicular to supporting joists.



CORRECT

# USG STRUCTURAL PANEL CONCRETE ROOF DECK PANEL LAYOUT: TWO-SPAN CONDITION



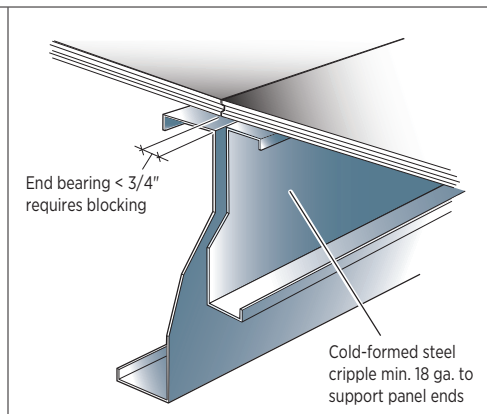
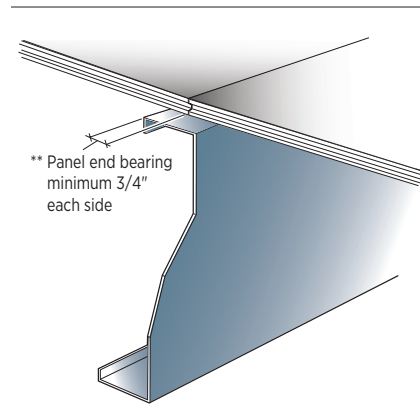
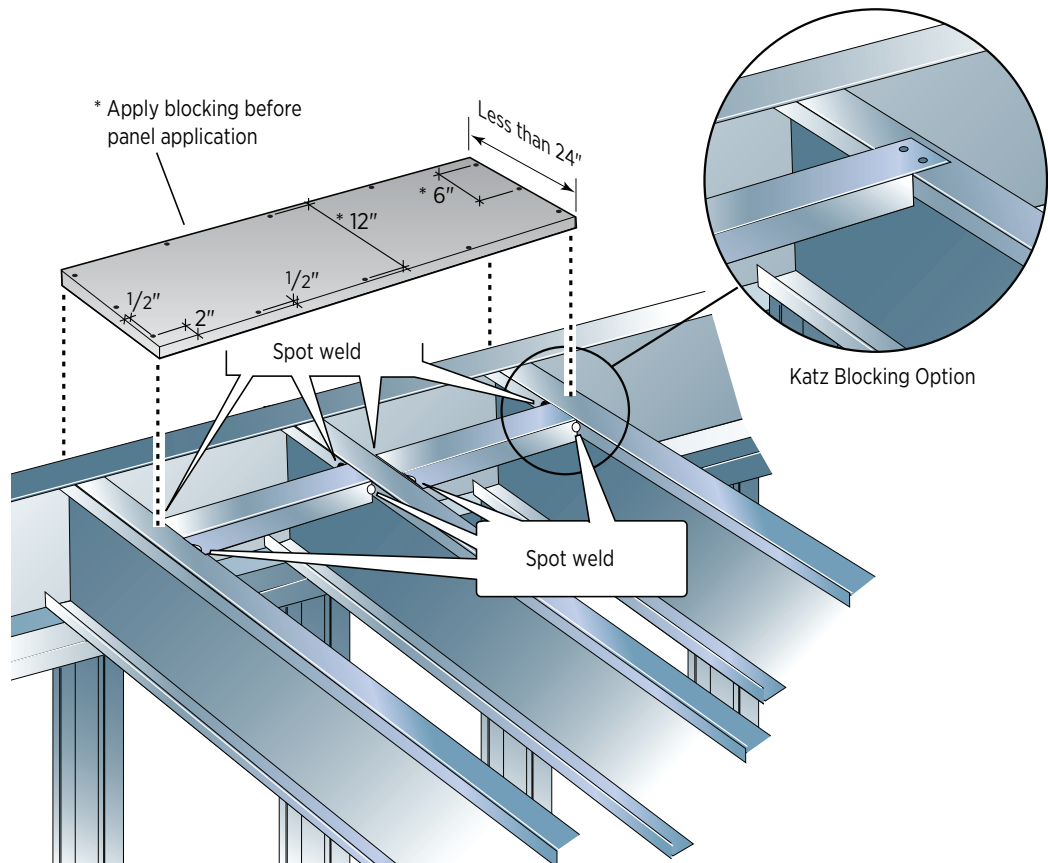
See Panel Blocking—Page 12

# USG STRUCTURAL PANEL CONCRETE ROOF DECK PANEL BLOCKING

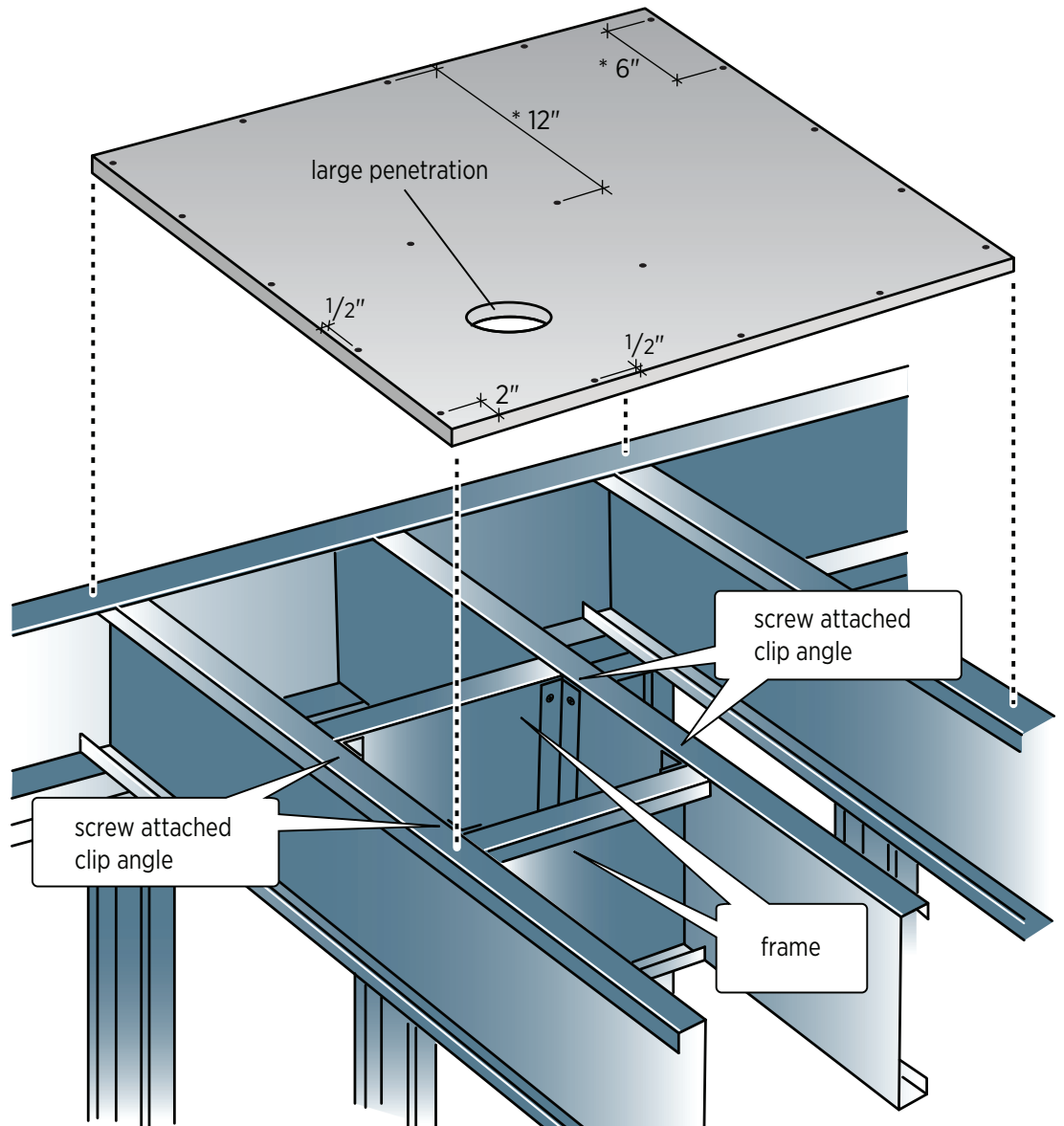
- Block edges that are less than 24" (610 mm) wide.
- Field welding to cold-formed framing members must be performed by certified welder and approved by structural engineer of record.
- If screws are used, do not use hex head screws, as they will raise the panel.

**Note:**

\*Panel Blocking must be specified by designer of record.  
\*\*Panels must bear at least 3/4" (19 mm) over joist flange.



# USG STRUCTURAL PANEL CONCRETE ROOF DECK PANEL PENETRATION



## Unreinforced Penetrations

- Unreinforced penetrations are limited to a maximum dimension of 6" (153 mm) and do not require supplemental framing or engineer analysis.
- Unreinforced penetrations are generally small openings through decks to accommodate lightly loaded plumbing/electrical runs.

## Reinforced Penetrations

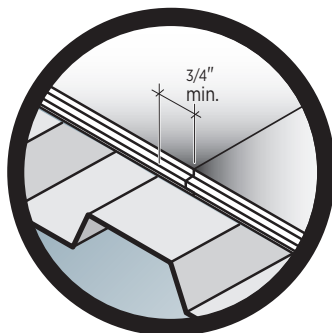
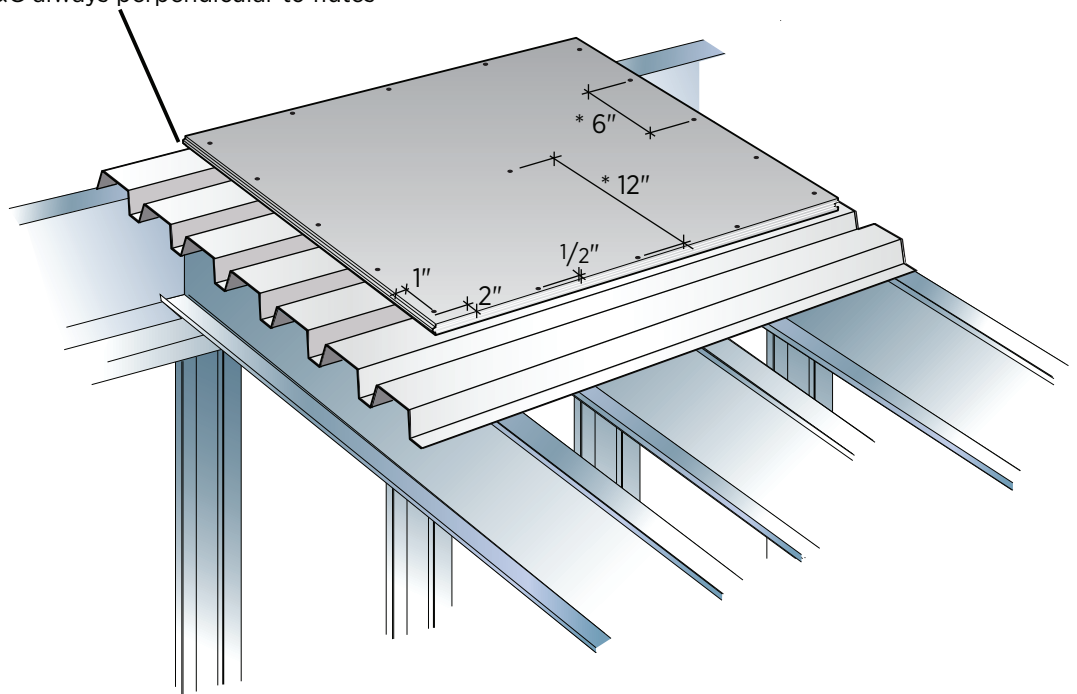
- An opening with a dimension greater than 6" (153 mm) requires reinforcement at the perimeter of the opening.
- The framing at reinforced penetrations, as a minimum, must have an equal profile and capacity as the adjacent primary framing (joists) members.
- The maximum penetration dimension is not limited to a single opening, but also includes group effect of multiple, closely spaced openings.

# USG STRUCTURAL PANEL CONCRETE ROOF DECK

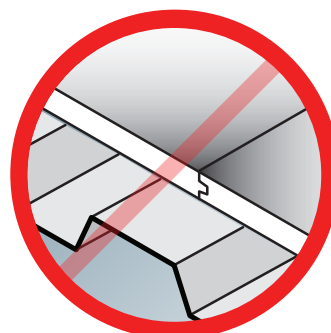
## PANEL LAYOUT: OVER FLUTED DECK

- The concrete roof deck on fluted deck is always considered an underlayment.
- The concrete roof deck is not considered a structural component.
- There is no composite action between fluted deck and the concrete roof deck.

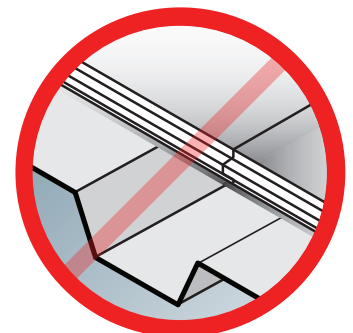
T&G always perpendicular to flutes



CORRECT



INCORRECT



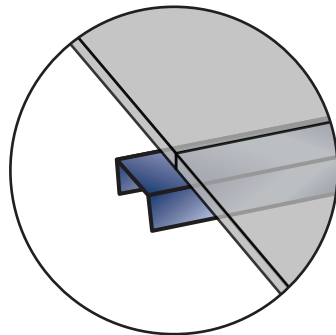
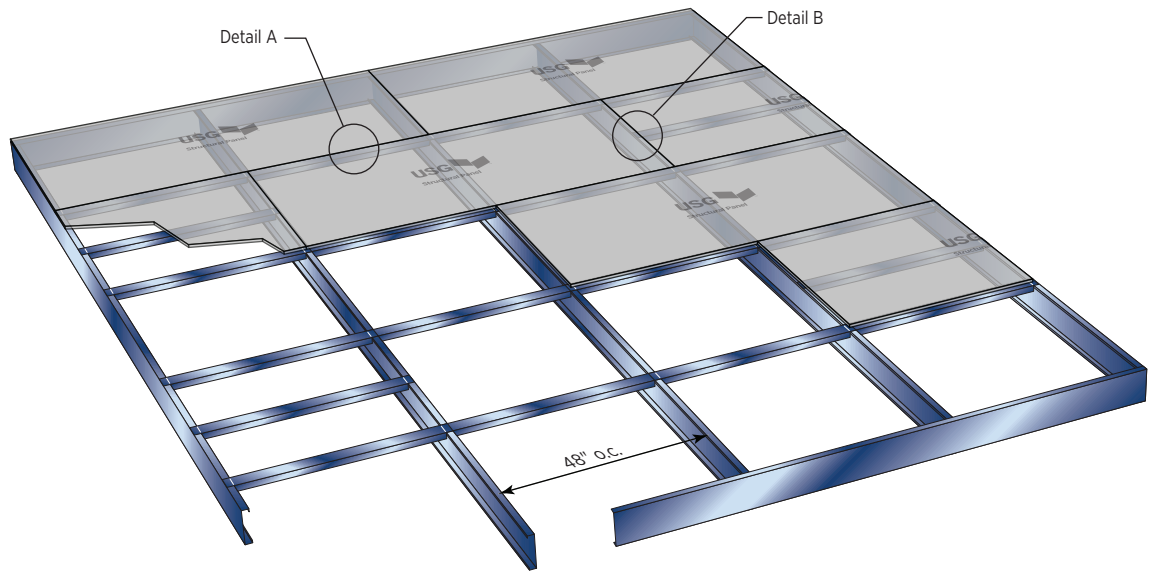
INCORRECT



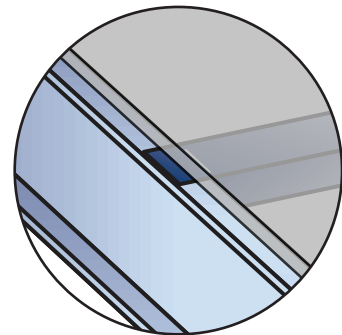
# USG STRUCTURAL PANEL CONCRETE ROOF DECK

## PANEL LAYOUT: 48" O.C. JOISTS

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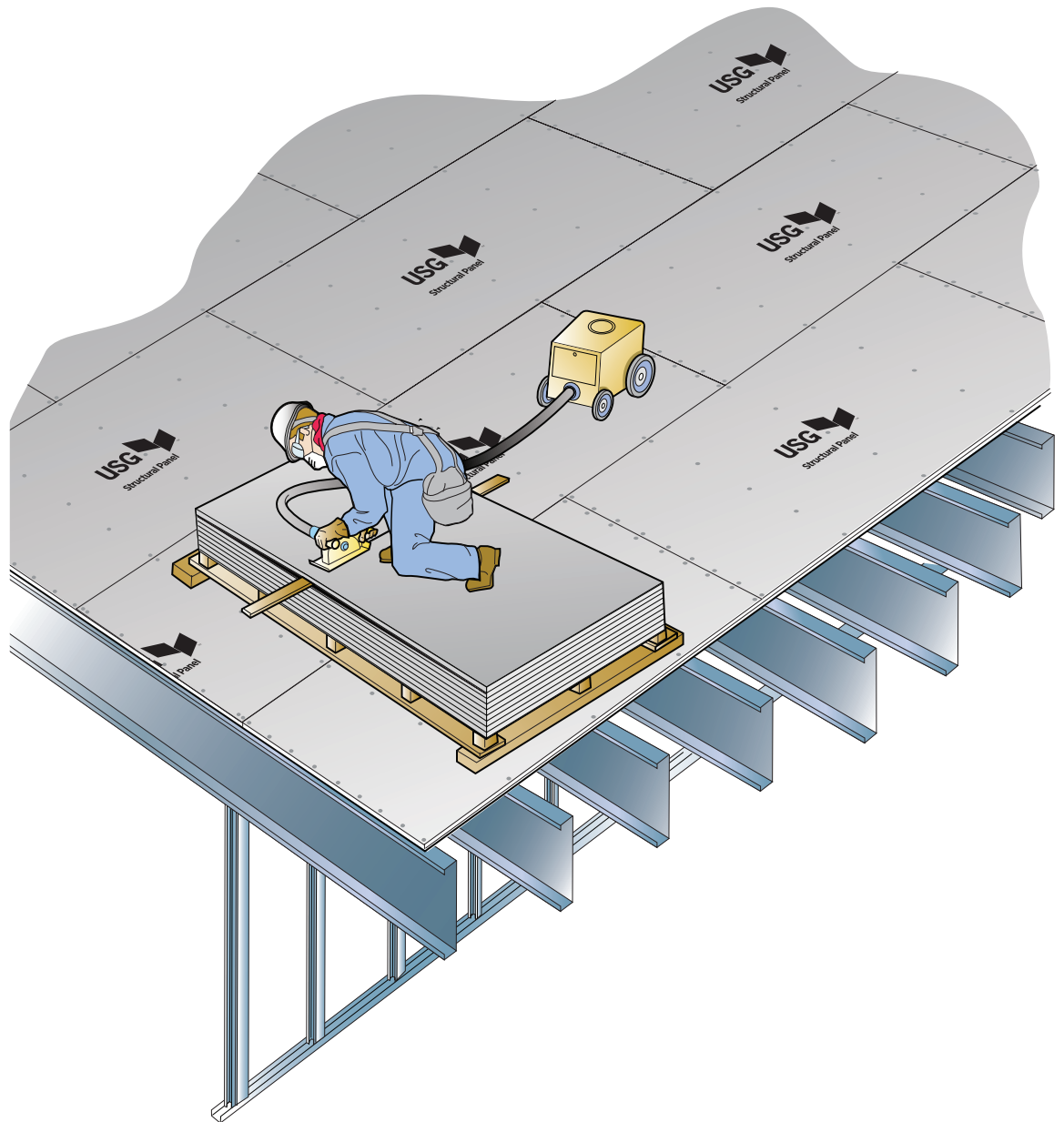
Detail A



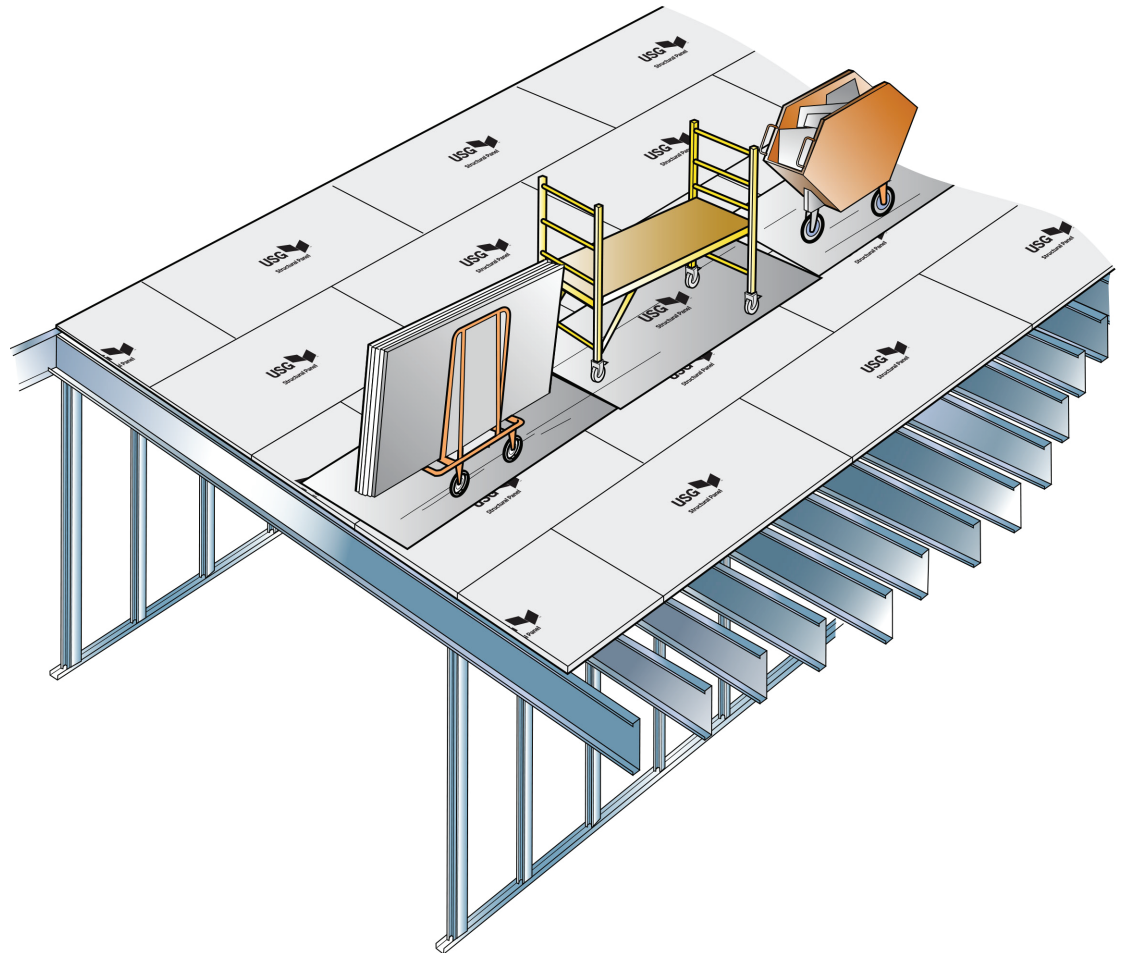
Detail B

# USG STRUCTURAL PANEL CONCRETE ROOF DECK PANEL CUTTING

- Use a dust vacuum.
- Wear appropriate respiratory protection.
- Wear safety glasses.
- Wear gloves.
- Proper fall restraint equipment required.
- Review the Safety Data Sheet (SDS) for use of proper Personal Protective Equipment (PPE).



# USG STRUCTURAL PANEL CONCRETE ROOF DECK EQUIPMENT LOADING

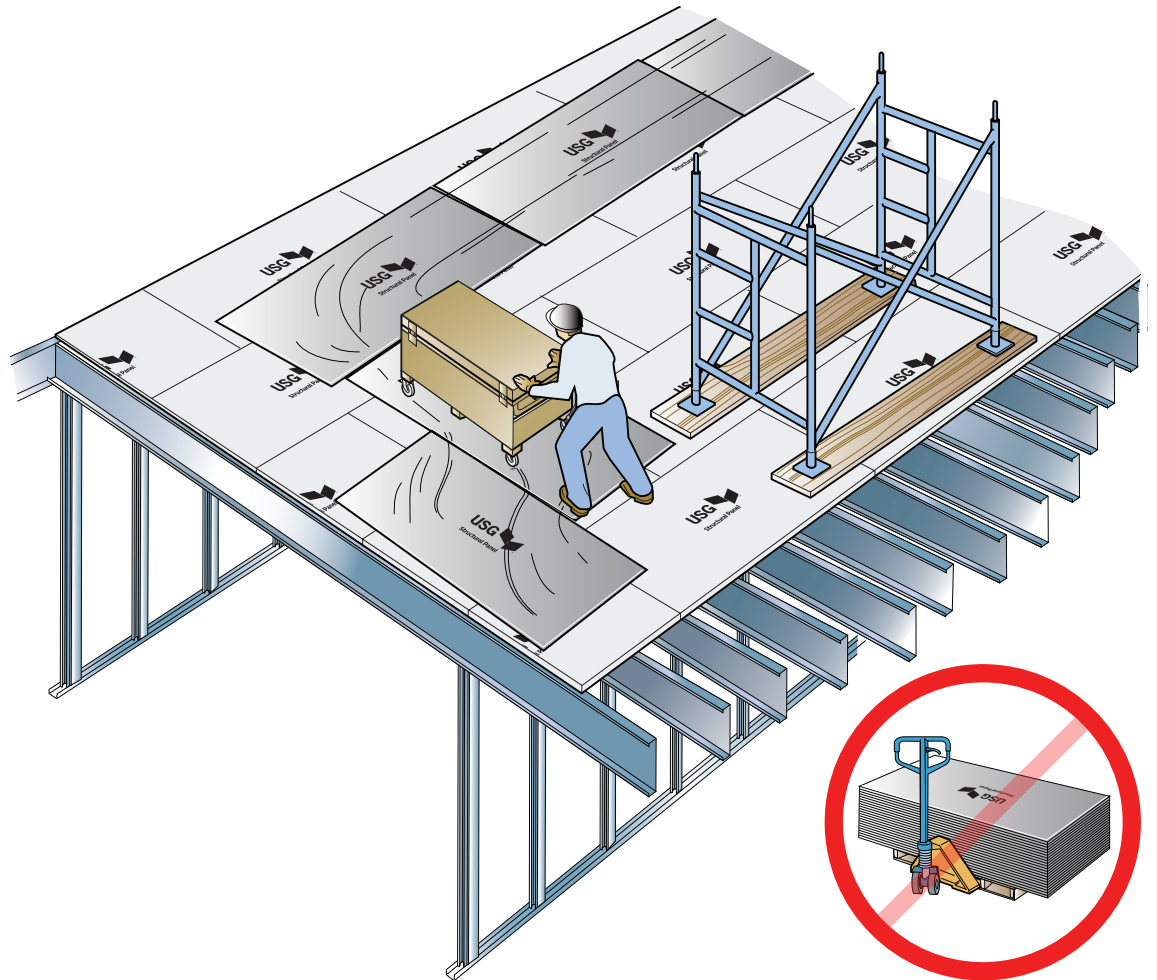


Typical Construction Equipment*	
<b>Drywall Carts</b>	10 Sheets of 5/8" x 4' x 12' (16 mm x 1,220 mm x 3,660 mm) Gypsum Panels max. 1,200 lb. (544 kg)
	7 Sheets of 3/4" x 4' x 8' (19 mm x 1,220 mm x 2,440 mm) USG Structural Panels max. 1,200 lb. (544 kg)
<b>Rolling Trash Carts</b>	1,000 lb. max. (453 kg)
<b>Rolling Scaffolds</b>	750 lb. max. (340 kg)

**Note:** Secure the cart. \*Loads applicable to 24" (610 mm) o.c. maximum framing spacing.

See Panel Protection—Page 18

# USG STRUCTURAL PANEL CONCRETE ROOF DECK PANEL PROTECTION

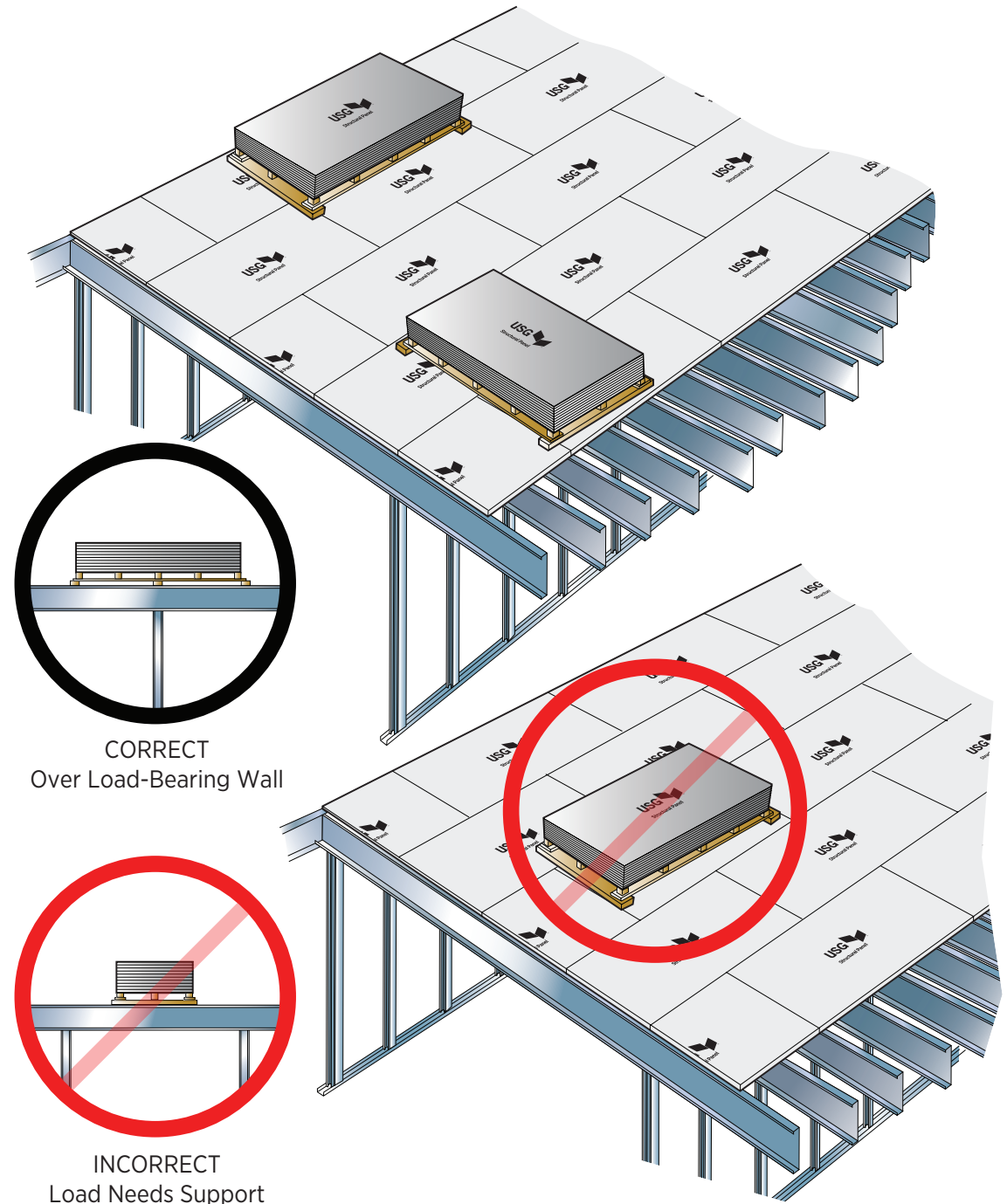


## To protect installed panels during construction:

- Place load spreader planks perpendicular to joists for fixed scaffolding.
- Place additional USG Structural Panels or plywood on the floor in high-traffic construction pathways for rolling gang boxes, two-wheel mason carts and trash boxes.
- Avoid rolling carts near protector panel edges.
- **Do not use a pallet jack on the roof deck.**
- Consult with designer of record for load limits and proper support for all construction loads.
- Proper fall restraint equipment required.
- High traffic areas must be protected, consider supporting T&G in corridors.
- If T&G is damaged, it must be fixed.

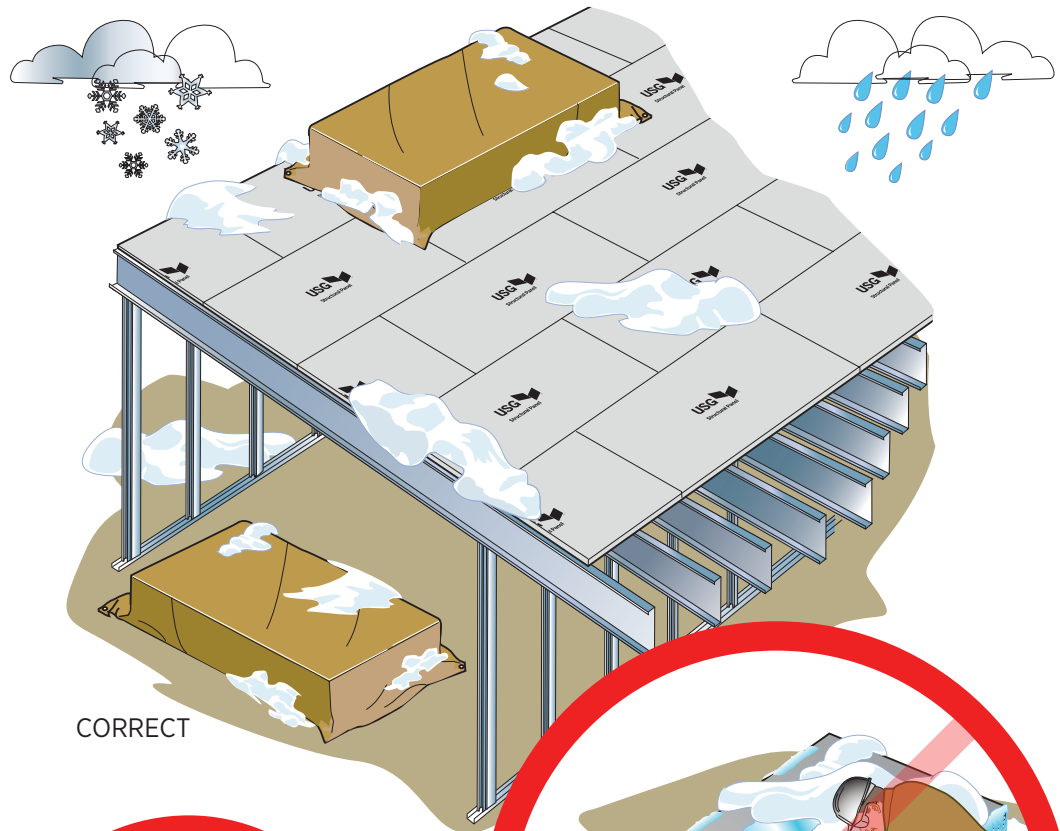
# USG STRUCTURAL PANEL CONCRETE ROOF DECK PALLET PLACEMENT\*

**Note:** \*Loading must be verified by a structural engineer.



# USG STRUCTURAL PANEL CONCRETE ROOF DECK PROPER PALLET STORAGE

- Ensure unit covers are secure.
- Use plastic edge shovel for snow removal.
- Freezing may result in panels sticking together.
- Allow panels to thaw naturally if frozen.
- **Only use sand when iced over. Do not use salt, fertilizer or ice melt.**



CORRECT



INCORRECT



INCORRECT



## PRODUCT INFORMATION

See [usg.com](http://usg.com) for the most up-to-date product information.

## TECHNICAL SERVICE

800 USG.4YOU (874-4968)

## EMAIL

[usgstructural@usg.com](mailto:usgstructural@usg.com)

## WEBSITE

[usg.com/structural](http://usg.com/structural)

## MANUFACTURED BY

United States Gypsum Company  
550 West Adams Street  
Chicago, IL 60661

MSRP BASED UPON FULL TRUCKLOAD DELIVERED TO JOBSITE:  
ROOF DECK: \$5.40/SF

### DANGER

Causes skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May cause respiratory irritation. May cause cancer by inhalation of respirable crystalline silica. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Use only in a well-ventilated area and wear a NIOSH/MSHA approved respirator. Wear protective gloves/protective clothing/eye protection. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses and continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. If skin irritation or rash occurs, or otherwise exposed or concerned: Get medical attention. Store locked up. Dispose of in accordance with local, state and federal regulations. For more information call Product Safety: 800 507-8899 or see the SDS at [usg.com](http://usg.com).

**KEEP OUT OF REACH OF CHILDREN.**


### NOTICE

We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by applications of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within 30 days from date it was or reasonably should have been discovered.

### SAFETY FIRST!

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

USG  Structural Panel

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