



USG  Structural Panel

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USG STRUCTURAL PANEL CONCRETE SUBFLOOR

FIELD INSTALLATION GUIDE

USG STRUCTURAL PANEL CONCRETE SUBFLOOR CONTACT INFORMATION

PRODUCT INFORMATION

See 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

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USG STRUCTURAL PANEL RECOMMENDED FASTENERS

Fastening USG Structural Concrete Panels, also known as USG Structo-Crete™ Panels, properly to wood, cold-formed or hot-rolled steel framing is key to ensuring their long-term performance as a structural component. The recommended fasteners meet several criteria to insure they have adequate pull-out, pull-through, and slip performance. Furthermore, these fasteners 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, and when coupled with any moisture exposure, including high humidity, this may deteriorate a non-corrosion resistant fastener.

| Framing Type ¹ | Min. End Distance ⁴ | Min. Flange Width | Fastener Manufacturer | Part Number | Fastener Description ^{5, 6, 7} |
|---|--------------------------------|-------------------|-------------------------------------|--------------|--|
| 54-97 mil (16-12 ga) CFS² | 1/2" [13mm] | 1-5/8" [41mm] | Grabber Construction Products, Inc. | CGH8158LG | #8 x 1-5/8" Winged Flat Wafer Head Self-Drilling Screw |
| | | | Simpson Strong-Tie Company, Inc. | CBSDQ158S | #8 x 1-5/8" Winged Self-Drilling Screw |
| 33³-43 mil (20³-18 ga) CFS | 1" [25mm] | 2-5/8" [67mm] | Grabber Construction Products, Inc. | CGH8158LG | #8 x 1-5/8" Winged Flat Wafer Head Self-Drilling Screw |
| SPF Lumber | 5/8" [16mm] | 1-7/8" [48mm] | Grabber Construction Products, Inc. | C8200L2M | #8 x 2" Flat Head Type 17 Nibs, GrabberGard |
| | | | Simpson Strong-Tie Company, Inc. | WSNTLG2S | #8 x 2" Flat Head Twin Threads Nibs |
| | 1/2" [13mm] | 1-5/8" [41mm] | SENCO Brands, Inc. | GL24AABF | 8d Ring Shank Nails |
| 118 mil (10 ga) CFS & 1/4" A36 A36 HRS | 3/4" [19mm] | 1-7/8" [48mm] | Simpson Strong-Tie Company, Inc. | TBG1260S | #12 x 2-3/8" Flat Head, Strong-Drive® TB Wood-to-Steel Screw |
| | | | Muro North America, Inc. | RSM645WFL-GY | M6.0 x 45 mm Winged Self-Drilling Screw |

Table Notes:

- CFS = cold-formed structural steel; HRS = hot-rolled structural steel; Lumber = specific gravity 0.42 or greater. Gauge/thickness of steel, fastener min. end distance, and joist min. flange width is identified for each fastener. Project specific framing gauge, size and type is determined by the engineer, architect or design professional of record.
- Cold-formed steel shall comply with AISI-General, with a minimum 54 mils or .0538-inch base metal thickness (No.16 gauge) and a minimum C60 galvanized coating.
- 33 mil (structural 20 ga) is for gravity loads only.
- Represents the minimum distance from the end (square cut) of the panel a fastener may be inserted.
- Fastener pull-through is 581 lbs. (264 kg) and is 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).
- Any length of the approved fasteners may be used provided a minimum of 3 full 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.

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

PRODUCT INFORMATION

See 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.

KEEP OUT OF REACH OF CHILDREN.

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Notes:

- In accordance with code reports: [PER-13067](#) for Subfloor, [PER-14076](#) for Roof Deck, [PER-15092](#) for Foundation Wall, and [ESR-1792](#) for Subfloor.
- Use only fasteners recommended by USG and are corrosion resistant for use with USG Structural Panels to insure the system being installed will perform as expected as a structural component of your project.
- Install using the recommended spacing and distance from the ends (square cut) and edges (tongue & groove) of the panel.
- Do not use a larger diameter fastener unless specified by the design professional of record for the project.

Tips:

- Use a stand-up screw gun for ease of installation.
- Allow the gun and screw to do the work – don't force it.
- Change drive bits regularly.
- Fasteners should be set flush with the surface of the panel.
- Insert fasteners as close to vertical as possible.
- Do not use hex head screws on surfaces where USG Structural Panels will be applied to prevent panel damage. Use pan heads or similar.
- Clean stand-up gun head regularly with clean, dry air. No oil, graphite or other lubricants.

USG.4YOU
800 (874-4968)
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

SCP95-USA-ENG/rev. 4-19
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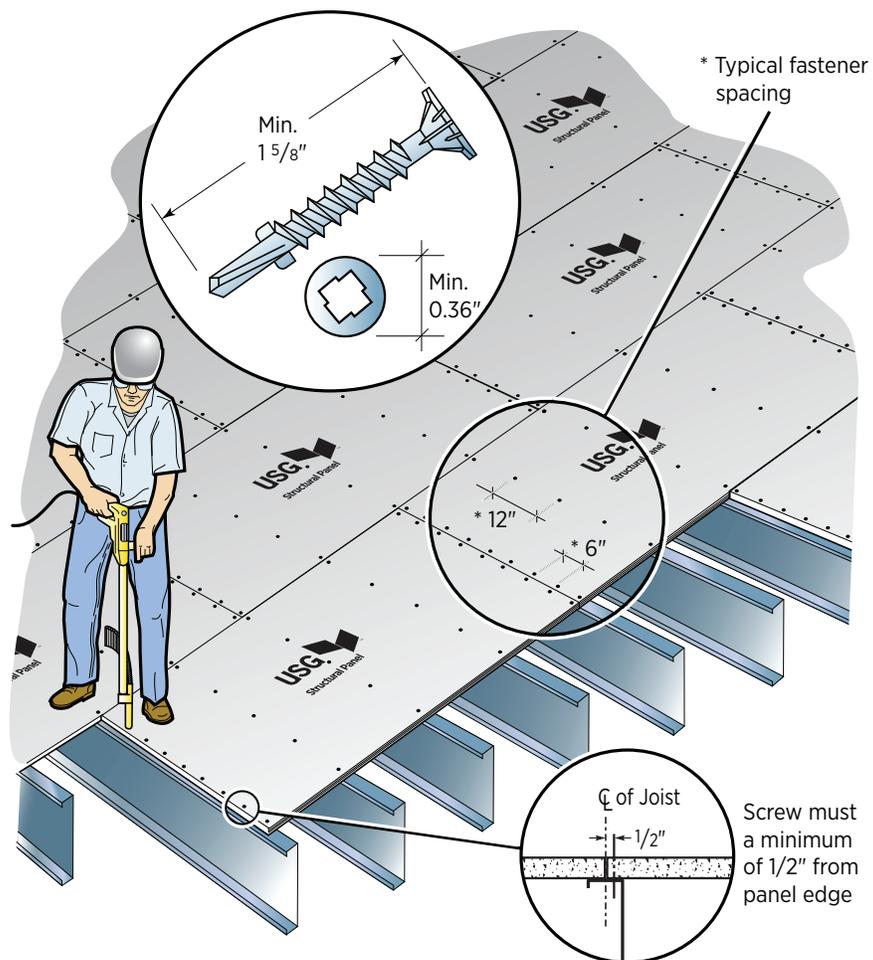
USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL LAYOUT BASICS

- T&G must run perpendicular to framing
 - Every non-T&G joint must be supported by framing.
 - Any panel not at least 24" wide must be supported by katz blocking or fall on framing member.
 - Every panel must span 2 frame openings, falling on 3 framing members.
 - Firmly engage T&G edges and butt panel ends together prior to fastening.
 - Panels must bear a minimum of 3/4" on framing.
 - Damaged ends and edges up to 10% of their length may be repaired per SCP76 USG Structural Panel Concrete Subfloor Repair Manual (www.USG.com/StructuralRepairManual)
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USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL FASTENING

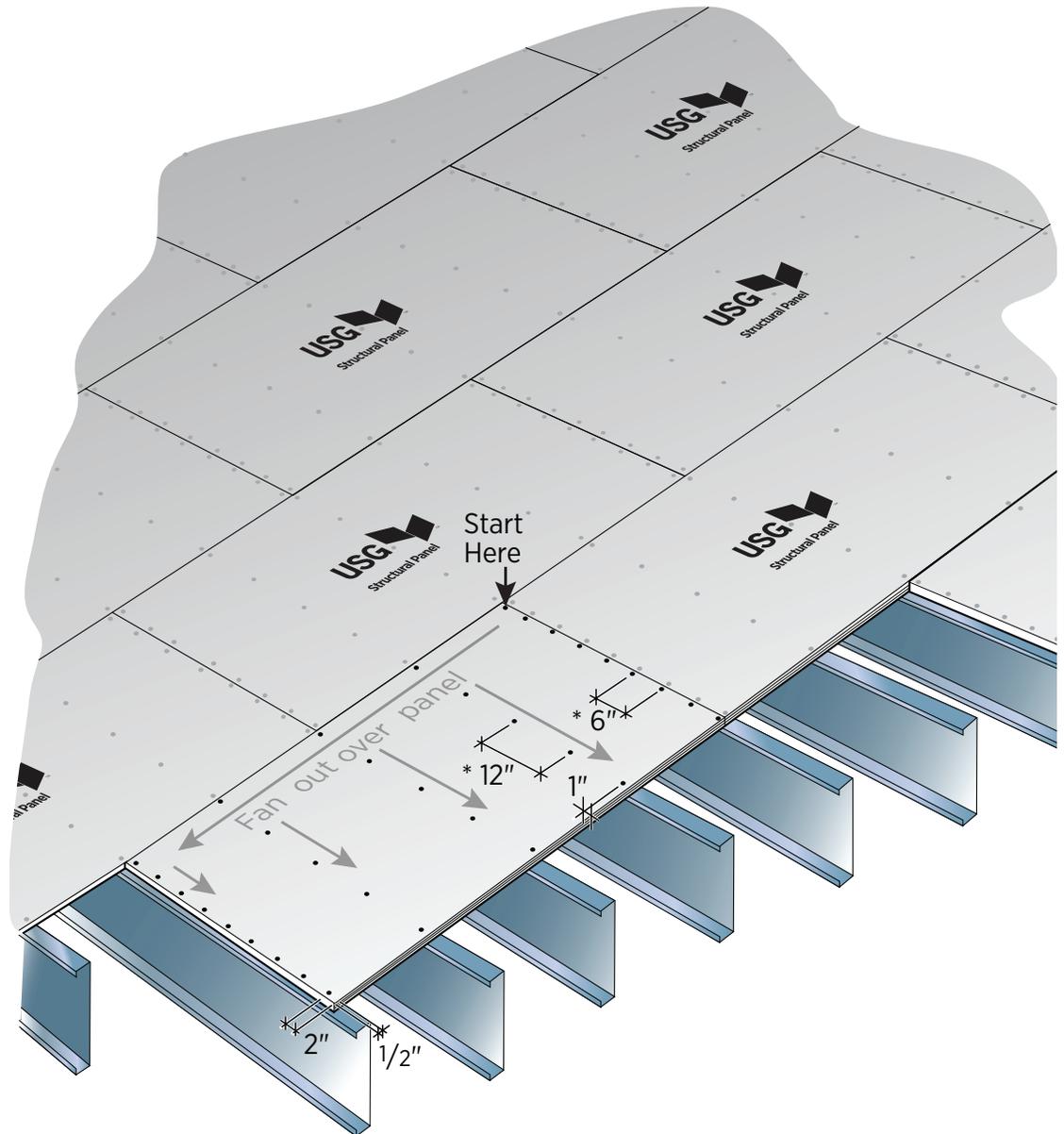
- Use only USG recommended fasteners
- Proper fall restraint equipment required
- Use only #8 screw with 1-5/8" (41 mm) joist flange
- Apply screws with a stand-up gun to reduce fatigue
- Follow fastening schedule in contract documents

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



USG STRUCTURAL PANEL CONCRETE SUBFLOOR FASTENING THE PANEL

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



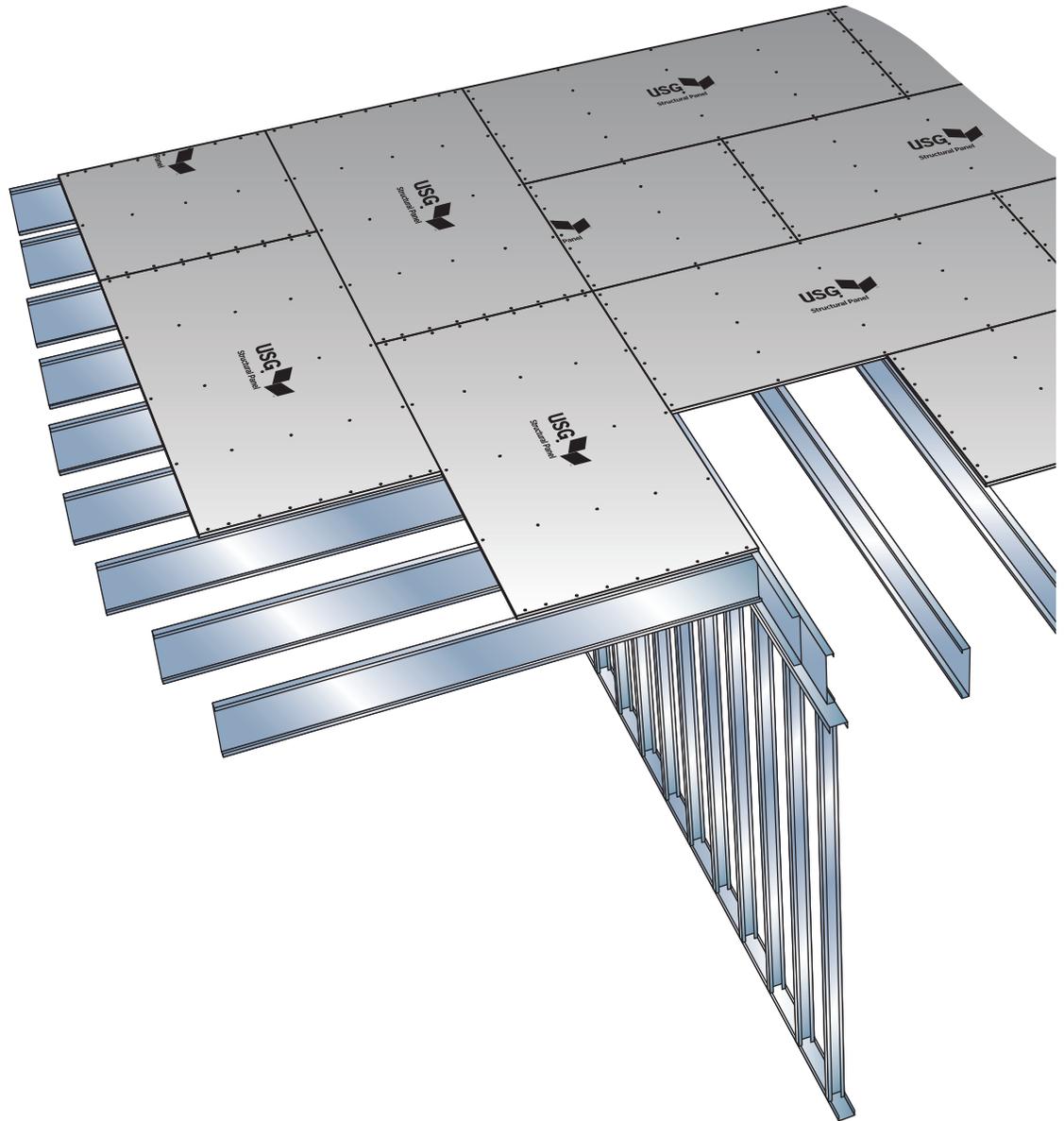
When connecting the tongue and groove, the tongue from the loose panel should be engaged into the groove of the already affixed panel.

To ensure proper panel application, be sure to:

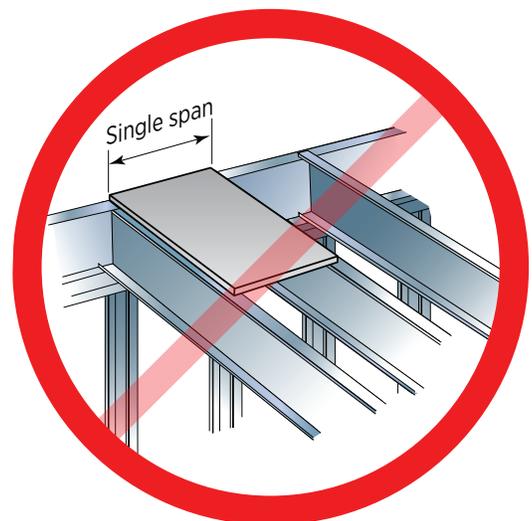
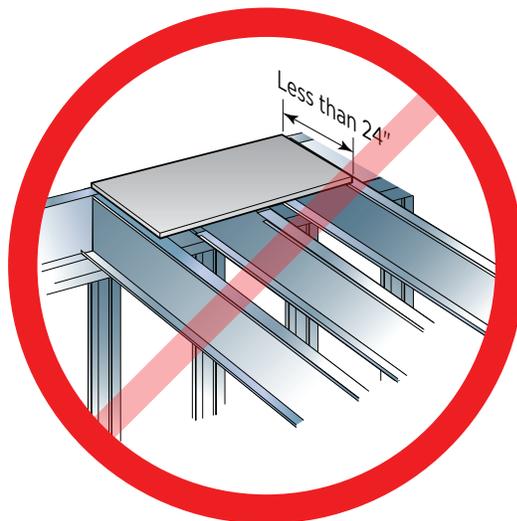
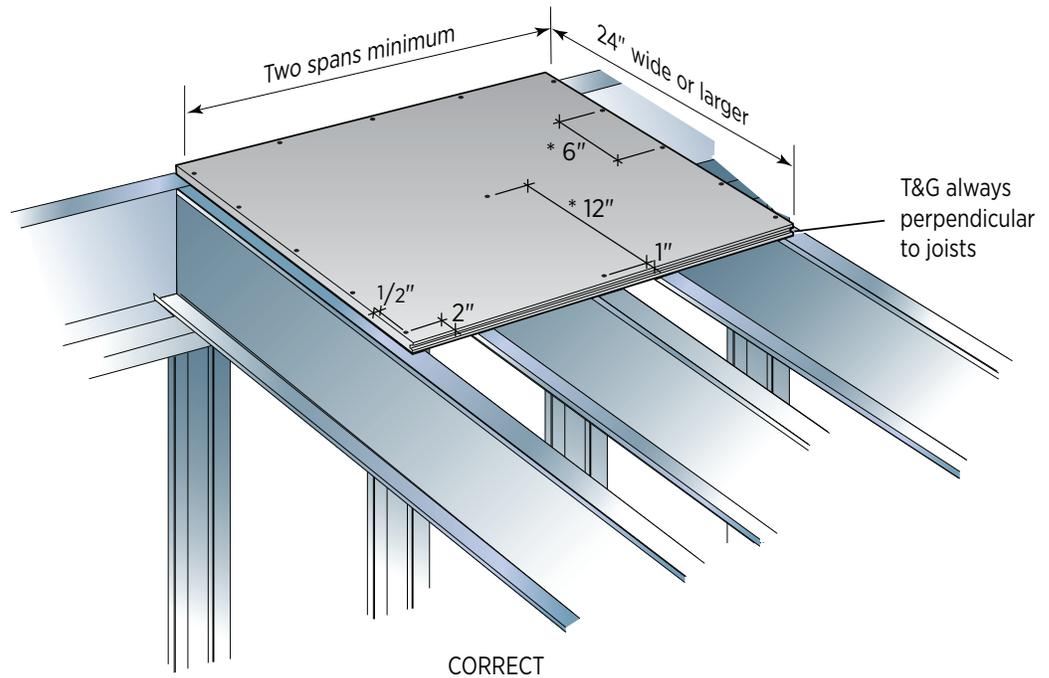
1. Lay board down adjacent to already fastened panel, careful to not damage T&G.
2. Butt square cut ends firmly together.
3. Engage T&G.
4. Fasten one corner and fan out over entire panel.
5. Fastener inset will vary based on the selected fastener but must be a minimum of 1/2" in from square cut ends and 1" in from T&G edges.

USG STRUCTURAL PANEL CONCRETE SUBFLOOR FRAMING DIRECTION CHANGE

- Always lay panels perpendicular to supporting joists.



USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL LAYOUT: TWO-SPAN CONDITION



See Panel Blocking—Page 9

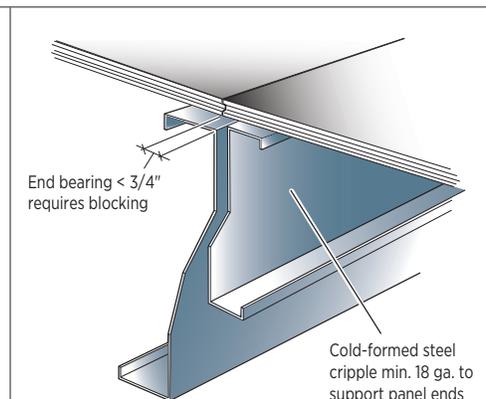
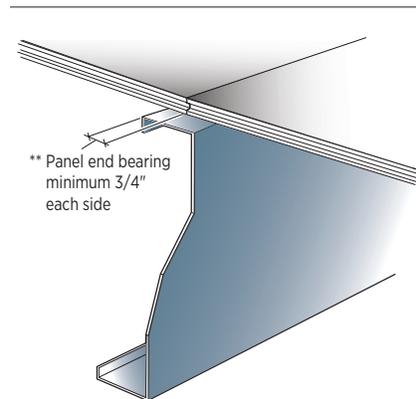
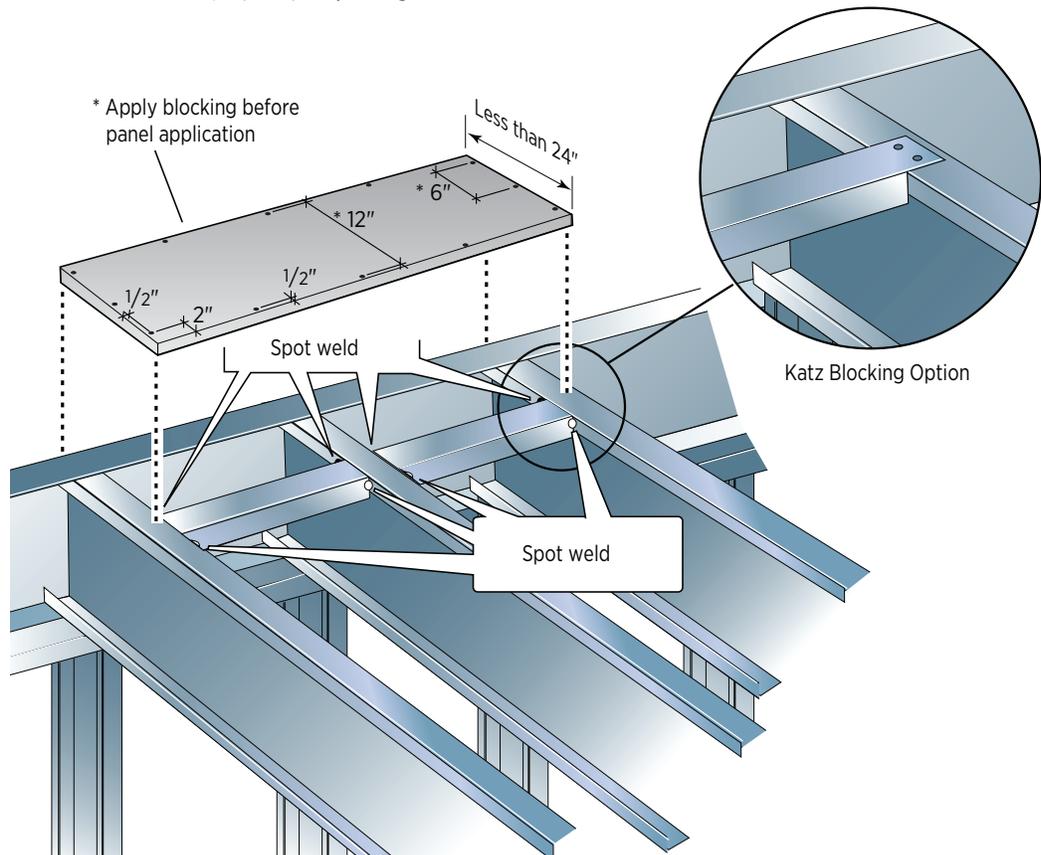
USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL BLOCKING

- Block edges that are less than 24" (610 mm) wide
- Spot weld method used with structural stud blocking is only intended to hold stud in place until panel is fastened through it.
- Field welding to cold-formed framing members must be performed by certified welder and approved by structural engineer of record
- Katz blocking is not fastened independently. Position katz blocking evenly between adjacent panels, place panels over blocking and framing, and fasten through the panel & blocking into joist with a recommended fastener.

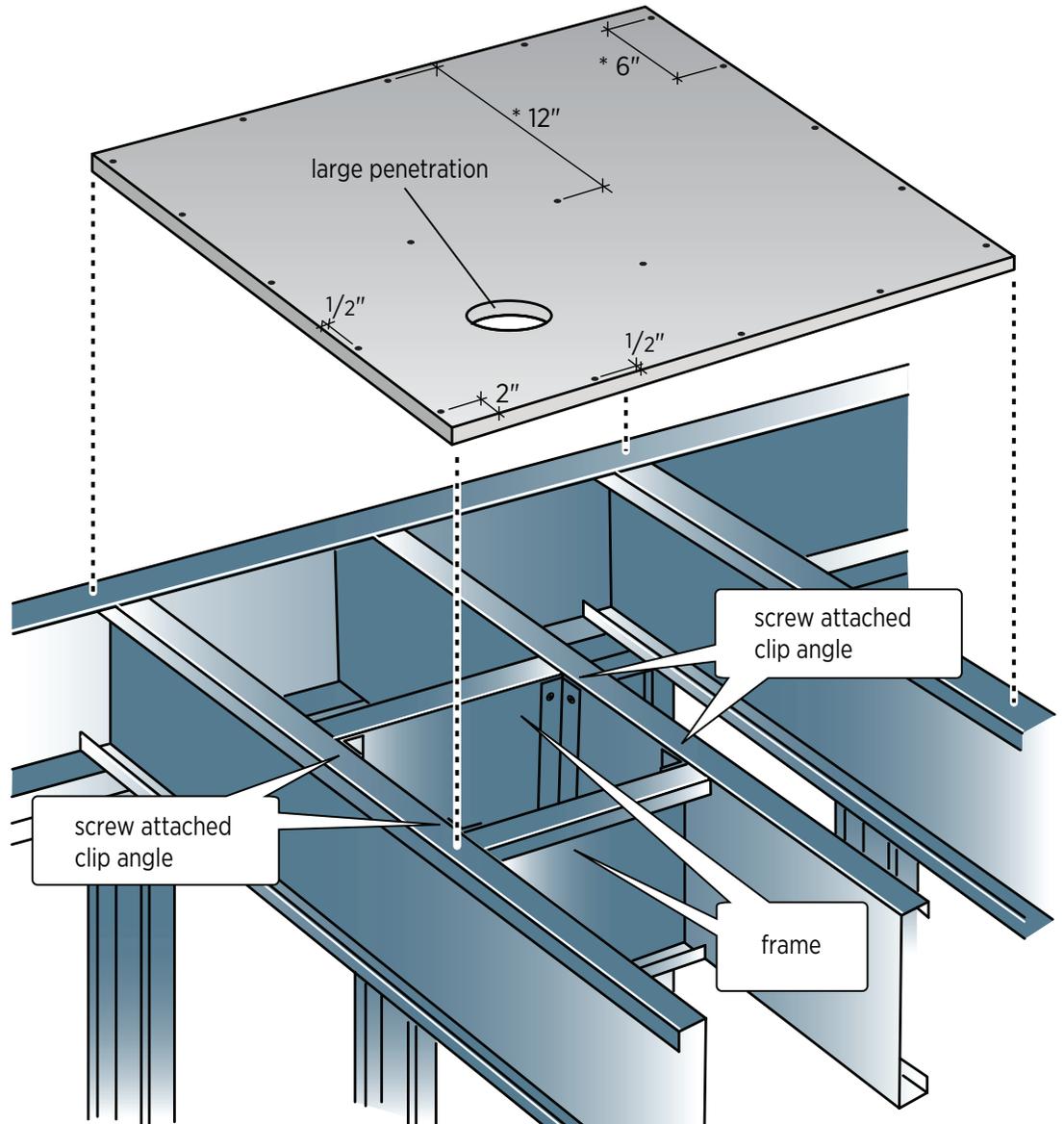
Note:

*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 SUBFLOOR 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.

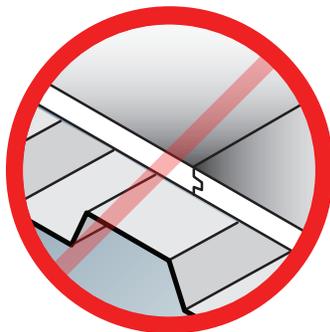
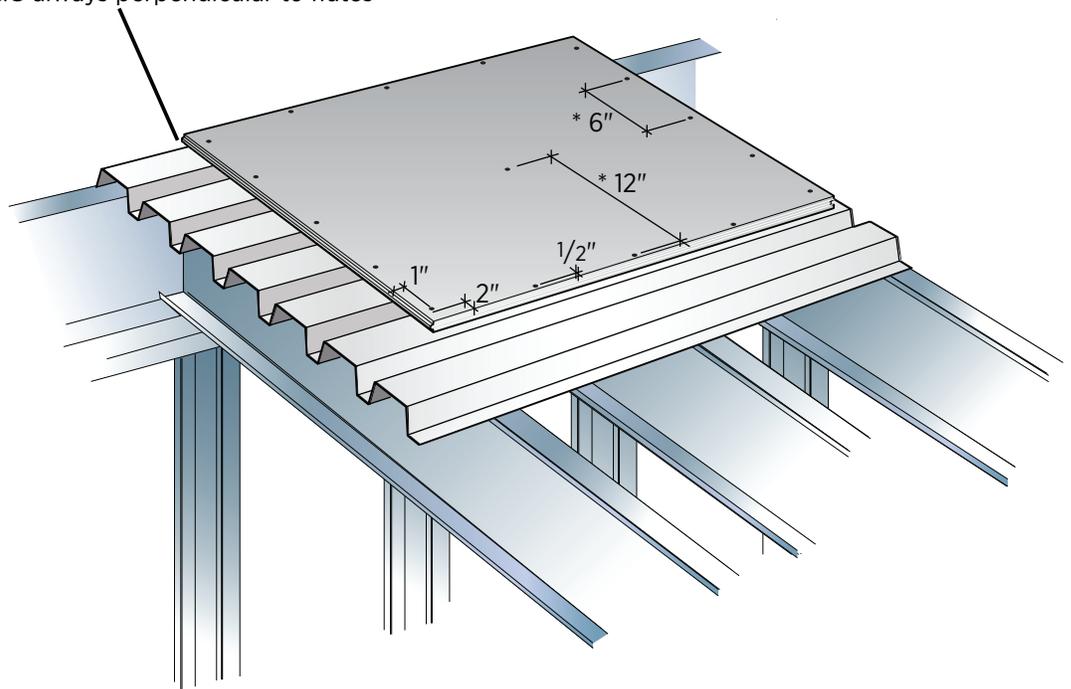
Reinforced Penetrations

- An opening of any shape with a dimension in any direction 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.

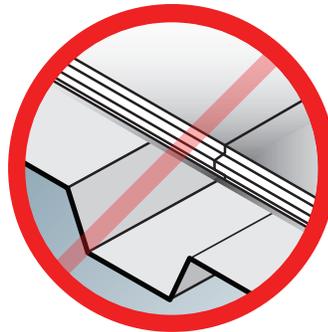
USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL LAYOUT: OVER FLUTED DECK

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

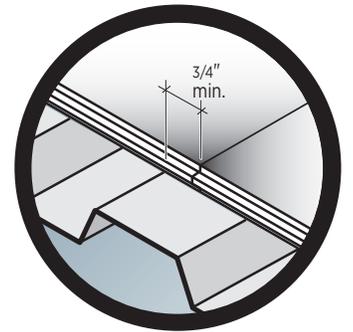
T&G always perpendicular to flutes



INCORRECT



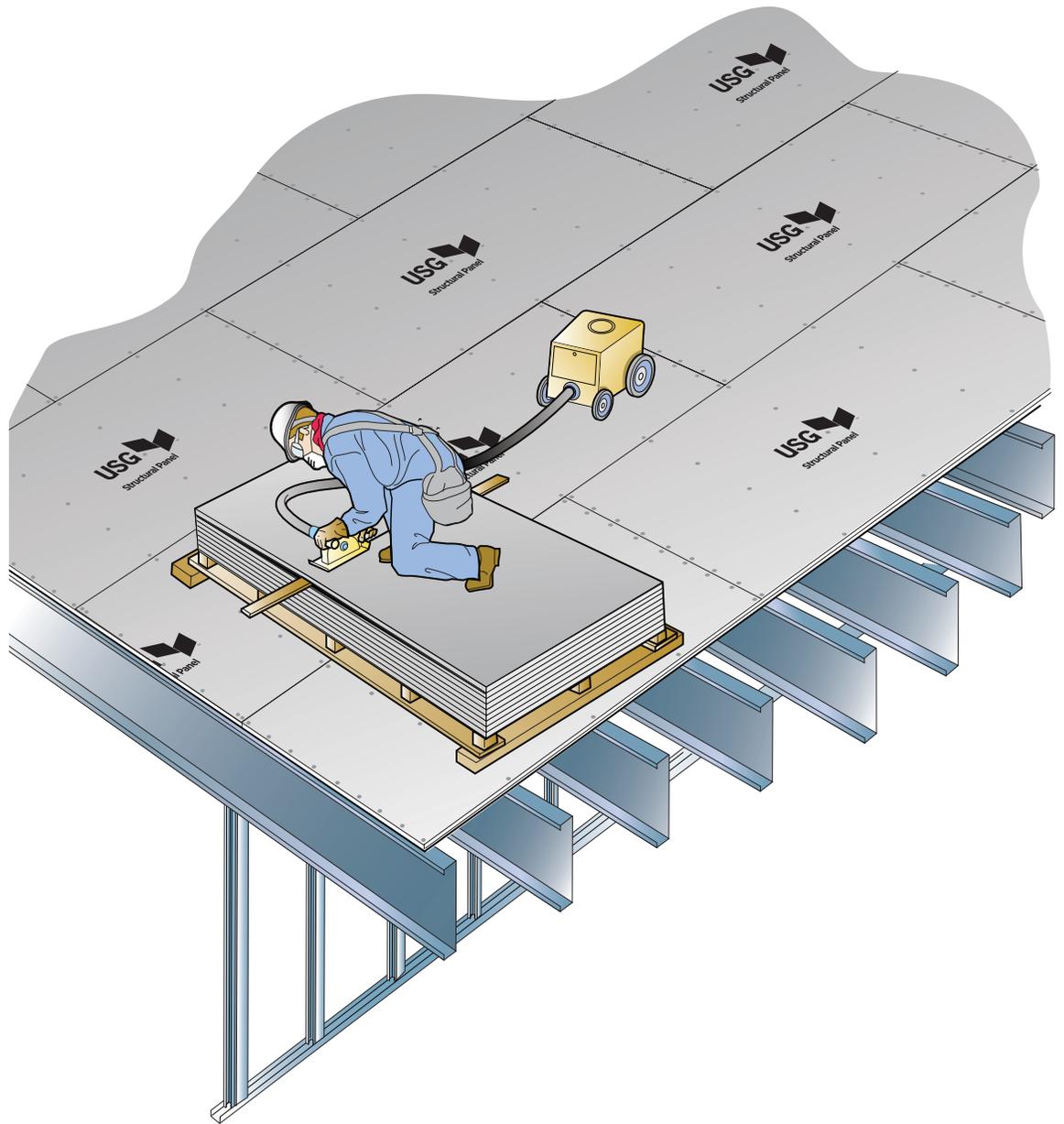
INCORRECT



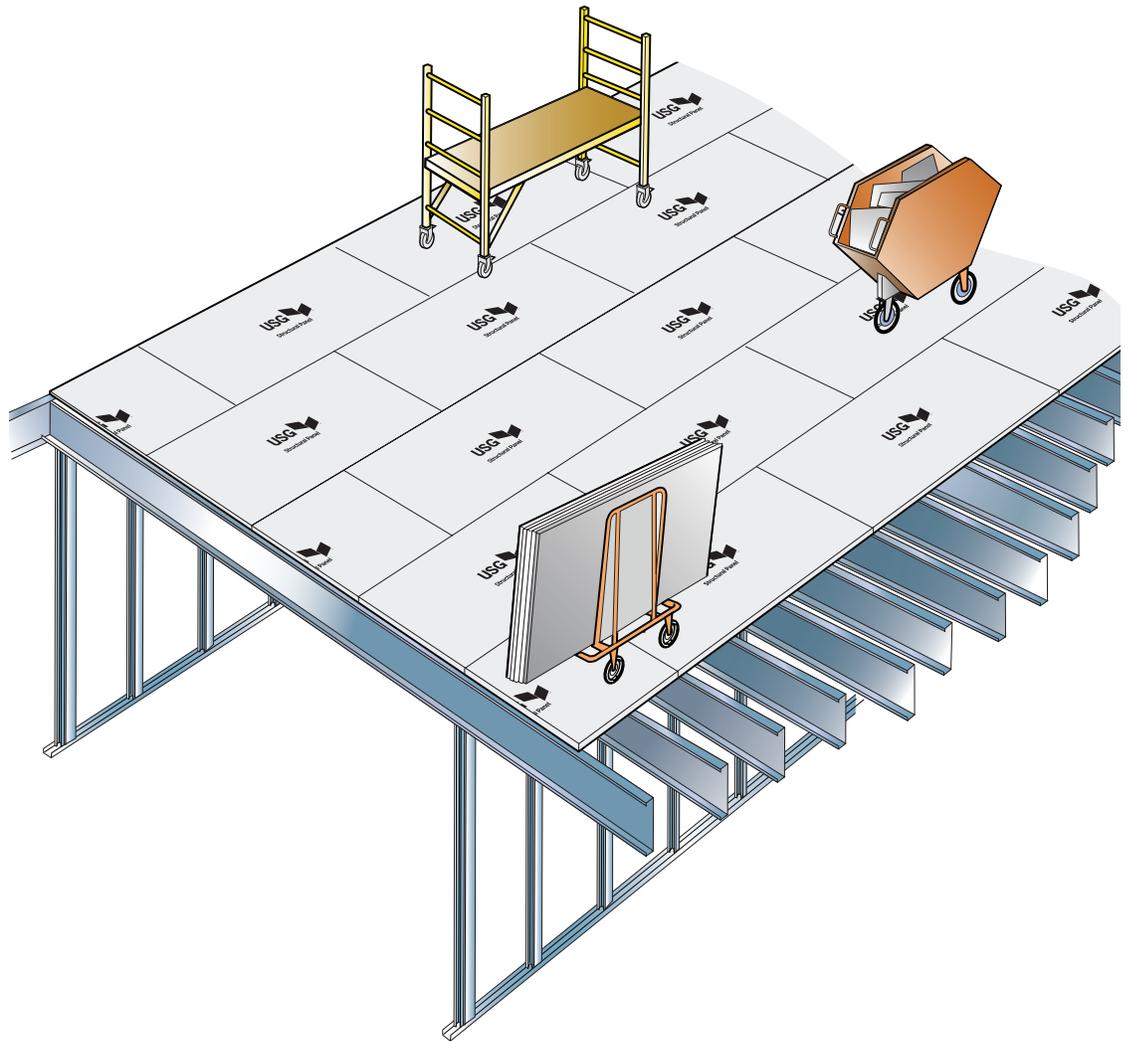
CORRECT

USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL CUTTING

- Use a circular saw with a standard carbide tipped framing blade and a dust collection system.
- 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 SUBFLOOR EQUIPMENT LOADING



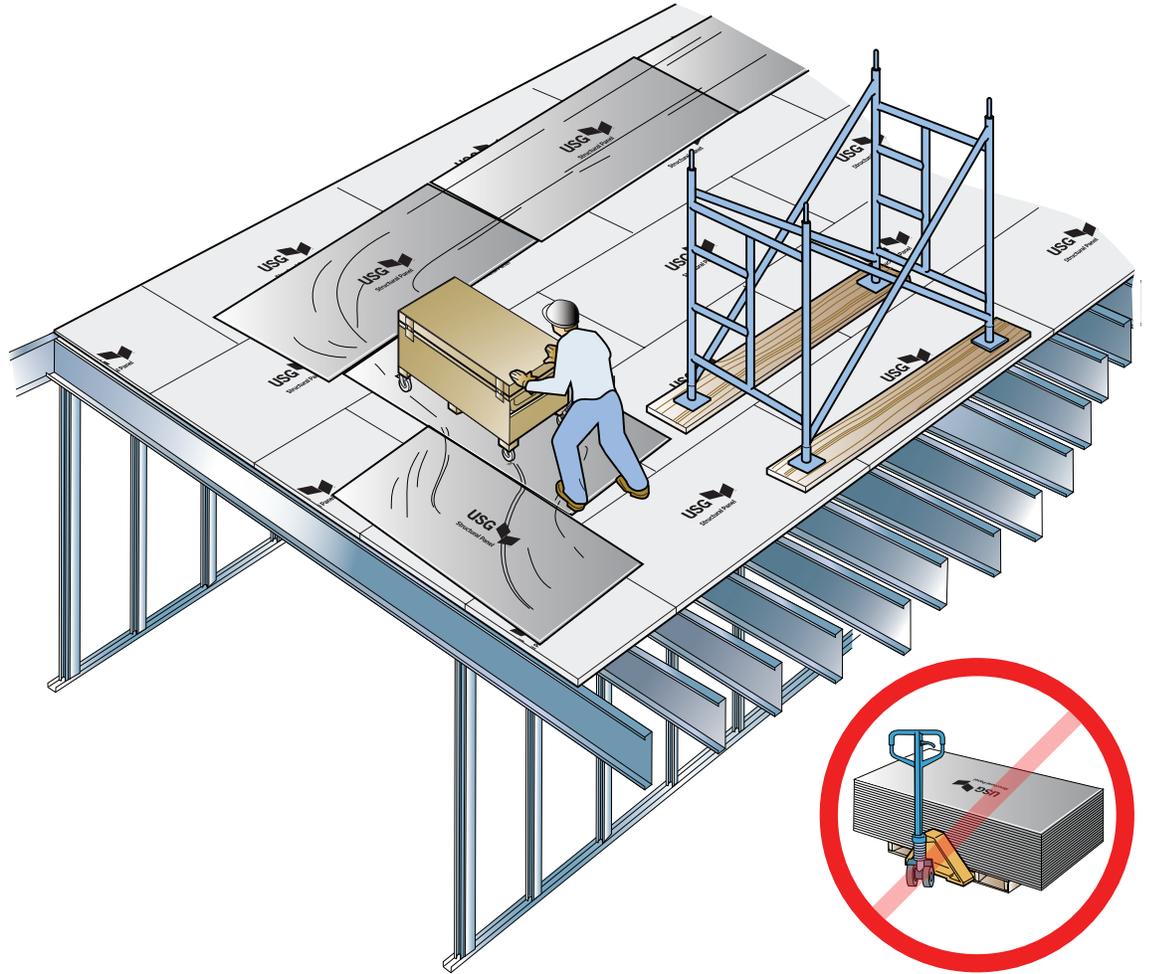
Typical Construction Equipment*

| | |
|----------------------------|---|
| Drywall Carts | 10 Sheets of 5/8" x 4' x 12' (16 mm x 1220 mm x 3660 mm) Gypsum Panels max. 1,200 lbs. (544 kg) |
| | 7 Sheets of 3/4" x 4' x 8' (19 mm x 1220 mm x 2440 mm) USG Structural Panels max. 1,200 lbs. (544 kg) |
| Rolling Trash Carts | 1,000 lbs. max. (453 kg) |
| Rolling Scaffolds | 750 lbs. max. (340 kg) |

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

See Panel Protection—Page 14

USG STRUCTURAL PANEL CONCRETE SUBFLOOR PANEL PROTECTION

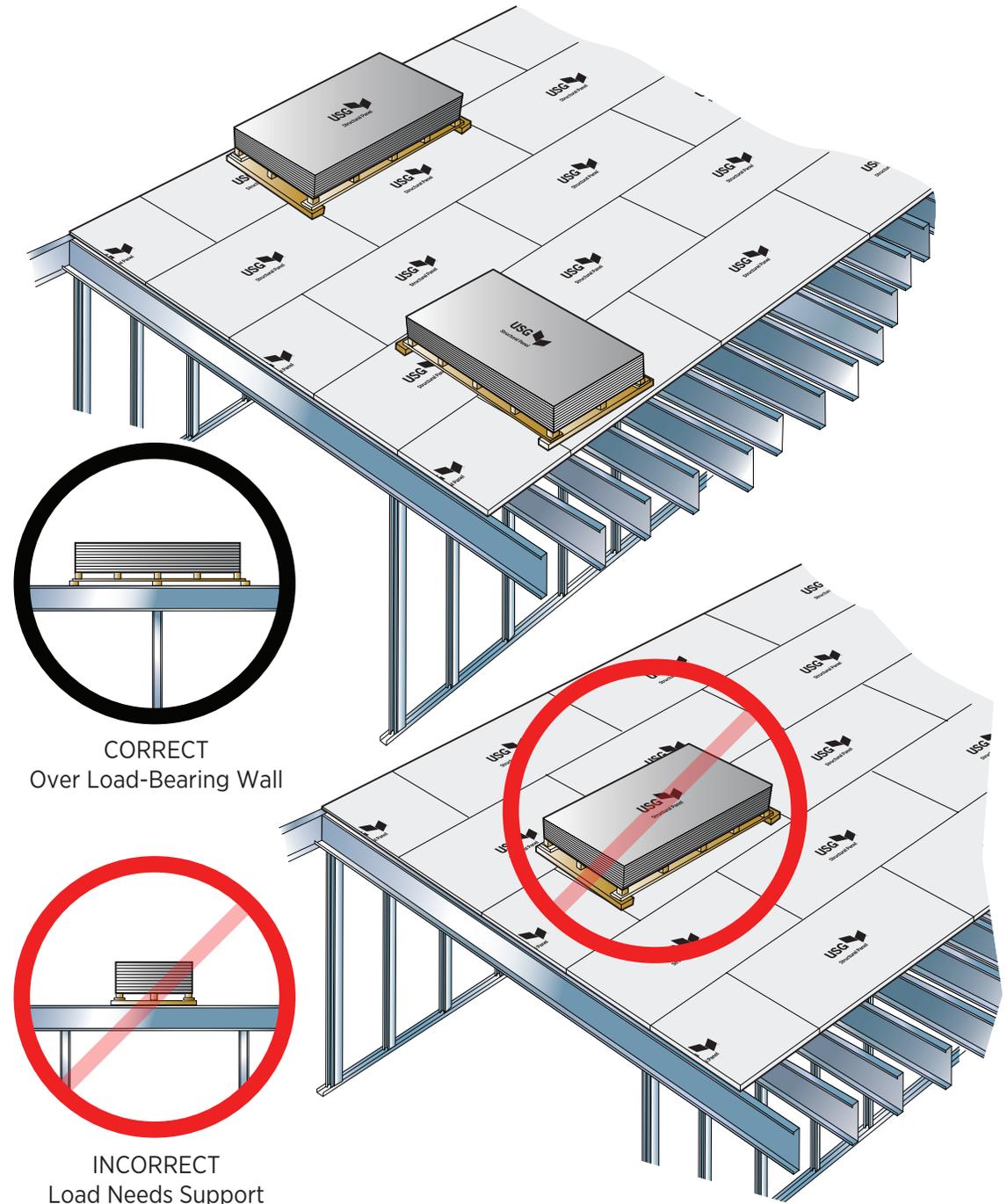


To protect installed panels during construction:

- Place load spreader planks perpendicular to joists for fixed scaffolding.
- Place additional USG Structural Panels or minimum 3/8" 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 floor.**
- Consult with designer of record for load limits and proper support for all construction loads.
- Proper fall restraint equipment required.

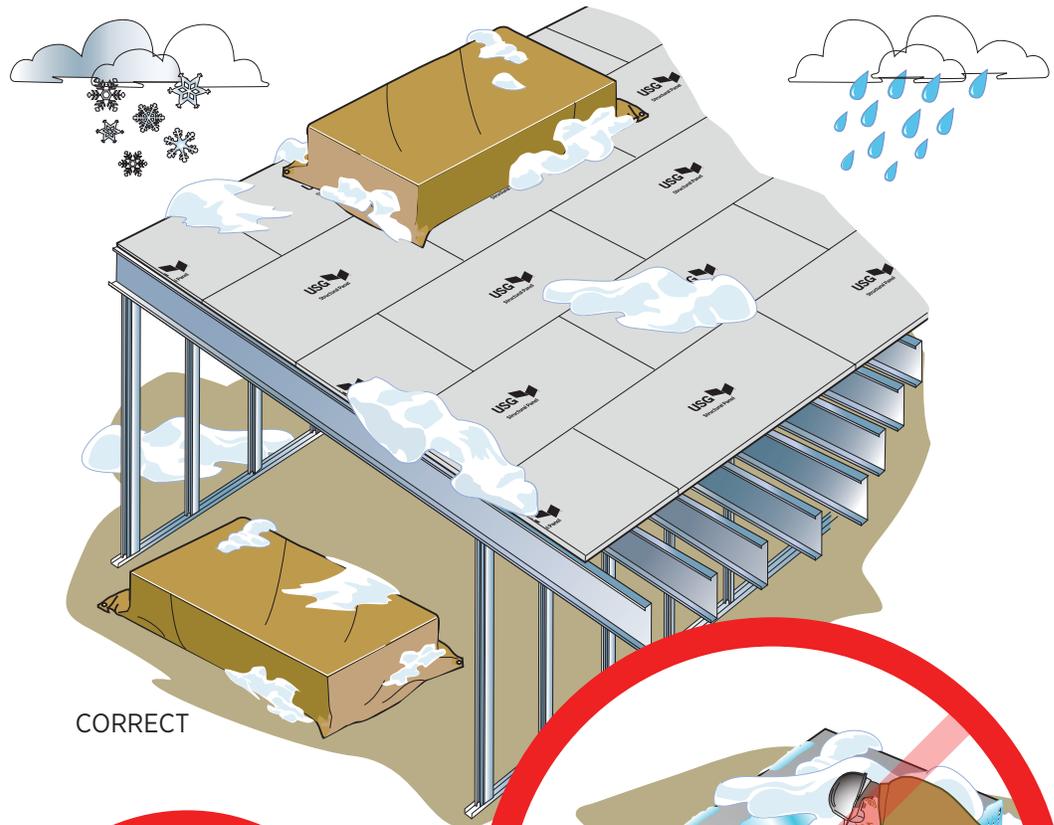
USG STRUCTURAL PANEL CONCRETE SUBFLOOR PALLET PLACEMENT*

Note: *Loading must be verified by a structural engineer



USG STRUCTURAL PANEL CONCRETE SUBFLOOR 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 for the most up-to-date product information.

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EMAIL

usgstructural@usg.com

WEBSITE

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

DANGER

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For more information call Product Safety: 800 507-8899 or see the SDS at 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.