

ROOF_EVALUATION_AND_CLASS_A_COMPLIANCE PLAN CHECK RESPONSE

ROOF EVALUATION DOCUMENTATION HAS BEEN PROVIDED. THE PROPOSED ROOF CONSISTS OF NATURAL SLATE INSTALLED OVER 3/4-INCH USG STRUCTO-CRETE STRUCTURAL ROOF DECK PANEL, ITEM 87433. STRUCTO-CRETE IS A NONCOMBUSTIBLE STRUCTURAL ROOF DECK COMPLYING WITH ASTM E136, AS DOCUMENTED IN ICC-ES ESR-1792 AND THE ENCLOSED USG PRODUCT DATA.

NATURAL SLATE INSTALLED ON A NONCOMBUSTIBLE ROOF DECK IS RECOGNIZED AS A CLASS A ROOF ASSEMBLY UNDER LABC SECTION 1505.2, EXCEPTION 2 [OR THE CORRESPONDING SECTION OF THE CODE EDITION GOVERNING THIS PROJECT]. SEPARATE ASTM E108/UL 790 TESTING OF THIS CODE-RECOGNIZED ASSEMBLY IS THEREFORE NOT REQUIRED.

ICC-ES ESR-1697 AND POLYGLASS PRODUCT DATA ARE PROVIDED FOR THE PROPOSED ROOF UNDERLAYMENT COMPONENTS. THE CLASS A FIRE CLASSIFICATION IS BASED ON THE CODE-RECOGNIZED NATURAL SLATE/ NONCOMBUSTIBLE-DECK ASSEMBLY AND IS NOT DEPENDENT UPON UL LISTING TGFU.R25992.

FINAL POLYGLASS WRITTEN SUBSTRATE-COMPATIBILITY, PRIMER AND INSTALLATION REQUIREMENTS FOR APPLICATION OVER STRUCTO-CRETE WILL BE PROVIDED TO LADBS AS SUPPLEMENTAL DOCUMENTATION PRIOR TO ROOFING INSTALLATION.

Class A Fire Rating



Class A Roofing Material by Statute

The State of California, by statute, has defined slate to be a Class A roofing material. This includes roof assemblies which install slate over combustible decks covered with a fire-resistant underlayment.

California Building Code §1505.2 — Class A Roof Assemblies

Class A roof assemblies are those that are effective against severe fire test exposure. Class A roof assemblies and roof coverings shall be listed and identified as Class A by an approved testing agency. Class A roof assemblies shall be permitted for use in buildings or structures of all types of construction.

Exceptions:

1. Class A roof assemblies include those with coverings of brick, masonry or an exposed concrete roof deck.
2. Class A roof assemblies also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile or slate installed on noncombustible decks or ferrous, copper or metal sheets installed without a roof deck on noncombustible framing.
3. Class A roof assemblies include minimum 16 ounce per square foot (0.0416 kg/m²) copper sheets installed over combustible decks.
4. Class A roof assemblies include slate installed over ASTM D226, Type II underlayment over combustible decks.

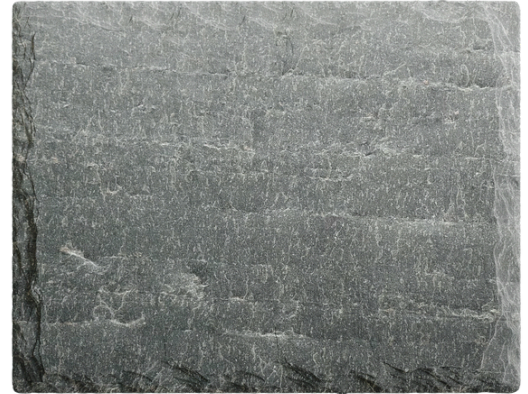


CALIFORNIA SLATE COMPANY

THE ENDURING BEAUTY OF
NATURAL SLATE ROOFING.

Sierra Gray is a consistent, medium-to-light gray slate sourced from Spain, known for its smooth surface and refined appearance. Its uniform color and subtle texture make it an ideal choice for projects that demand elegance and continuity. With excellent test results and a proven record of performance, Sierra Gray is widely used in high-end residential projects, restorations, and architectural designs that value both aesthetics and long-term durability.

TECHNICAL DETAILS SIERRA GRAY SLATE



Color representation is for reference only. Contact California Slate Company for accurate color samples before final selection. Contact us for tile selection guidance.

KEY FEATURES

Color & Texture:

- True medium-to-light gray with a moderately smooth texture and subtle clefing.

Durability:

- Strong, non-fading slate with excellent resistance to weathering and freeze-thaw cycles.

Workability:

- Easy to cut and shape with standard tools; consistent thickness supports efficient installation.

Longevity:

- Rated for 100+ years of service life with minimal maintenance.

Standards:

- Meets ASTM C406 (S1 Grade) for strength, absorption, and weather resistance.

Cool Roof:

- Meets Title 24 requirements (high Solar Reflectance Index).

TECHNICAL DETAILS:

Size:

16" x 10" to 16" x 8"

Thickness:

1/4" to 3/8" (7 to 8mm)

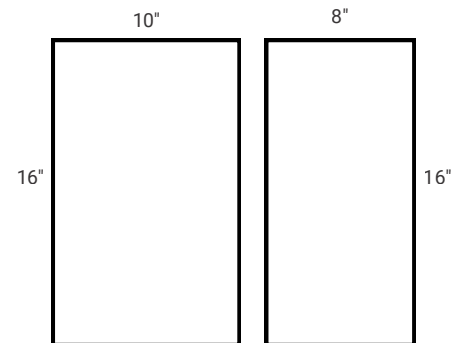
Weight:

960 lbs/sq.

Provenance:

Spain

Traditional Slate Tile Sizes



Sheen: Matte finish

Solar Reflectance: 25%

SRI: 25

ASTM: S1

Sheen: Matte finish

Aged SRI: 30 (initial)

Meets LEED: No

Energy Star: No

CRRC: No

Cradle2Cradle: No



AUTHENTIC
SLATE



FIRE
RESISTANT



ECO-
FRIENDLY



CUSTOM
WIDTHS



VARIED
THICKNESS

Discover the SLATE2™ Difference Natural Lightweight Elegance.

At under 6 lbs. per square foot for standard applications, SLATE2™ often eliminates the need for costly structural reinforcement.

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additional details.



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Title 24 Cool Roof Requirements for Single-Family Residential Roofs (2025 California Energy Code – applies to permits as of 1-1-2026)

For a **single-family residential building under the 2025 California Energy Code (Title 24, Part 6)**, the cool-roof requirement for a **steep-slope roof** is based on climate zone. The 2025 code applies to permit applications submitted on or after **January 1, 2026**.

2025 Title 24 — Steep-Slope Residential Roofs

A steep-slope roof is generally $\geq 2:12$. Under the prescriptive residential requirements, a cool roof is required only in **Climate Zones 10–15**. Climate Zones 1–9 and 16 are exempt from the steep-slope cool-roof requirement.

California Climate Zone	Steep-Slope Cool Roof Required?	3-Year Aged Solar Reflectance	Thermal Emittance	Minimum SRI
CZ 1	No	—	—	—
CZ 2	No	—	—	—
CZ 3	No	—	—	—
CZ 4	No	—	—	—
CZ 5	No	—	—	—
CZ 6	No	—	—	—
CZ 7	No	—	—	—
CZ 8	No	—	—	—
CZ 9	No	—	—	—
CZ 10	Yes	0.20	0.75	16
CZ 11	Yes	0.20	0.75	16
CZ 12	Yes	0.20	0.75	16
CZ 13	Yes	0.20	0.75	16
CZ 14	Yes	0.20	0.75	16
CZ 15	Yes	0.20	0.75	16
CZ 16	No	—	—	—

The CEC's 2025 Single-Family Residential Compliance Manual gives the prescriptive steep-slope requirement as **0.20 aged solar reflectance + 0.75 thermal emittance, or SRI 16** for CZ 10–15.

ICC-ES Evaluation Report

ESR-1792

Reissued January 2026

This report also contains:

- [City of LA Supplement](#)
- [CA Supplement w/DSA and OSHPD](#)

For references to other reports.

See [ESL-1421](#) for Canadian Code

Subject to renewal January 2027

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DIVISION: 06 00 00 — WOOD, PLASTICS AND COMPOSITES Section: 06 12 13 — Cementitious Reinforced Panels	REPORT HOLDER: USG CORPORATION	EVALUATION SUBJECT: USG STRUCTO-CRETE® PANELS PRODUCT DESIGNATIONS: • USG STRUCTO-CRETE® BRAND STRUCTURAL PANELS (aka USG STRUCTURAL PANEL CONCRETE SUBFLOOR) • USG STRUCTO-CRETE® BRAND STRUCTURAL ROOF DECK PANELS (aka USG STRUCTURAL PANEL CONCRETE ROOF DECK) • USG STRUCTO-CRETE® BRAND STRUCTURAL XTRA STRENGTH PANELS (aka USG STRUCTURAL PANEL CONCRETE FOUNDATION WALL XD)	
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1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2024, 2021, 2018, 2015 and 2012 [International Building Code® \(IBC\)](#)
- 2024, 2021, 2018, 2015 and 2012 [International Residential Code® \(IRC\)](#)
- 2013 *Abu Dhabi International Building Code (ADIBC)*[†]

[†]The ADIBC is based on the 2009 IBC as referenced under the ADIBC.

Properties evaluated:

- Structural
- Combustibility
- Fire propagation

1.2 Evaluation to the following green code(s) and/or standards:

- 2025 [California Green Building Standards Code \(CALGreen\)](#), Title 24, Part 11

Attributes verified:

- See Section 3.1.1

2.0 USES

USG STRUCTO-CRETE® Panels are noncombustible, cementitious sheathing panels used as combination subfloor and underlayment (single floor), as subfloor only, as roof deck or in above-grade and below-grade (foundation) wall applications. [Table 1](#) shows the evaluated applications for each panel type. When used in structures regulated under the IRC, floor, roof and wall systems using USG STRUCTO-CRETE® Panels must be designed in accordance with IRC Section R301.1.3.

2.1 USG STRUCTO-CRETE® Brand Structural Panels (aka USG Structural Panel Concrete Subfloor) are used as combination subfloor and underlayment (single floor), as subfloor only or as above-grade wall sheathing in weather-protected locations. *USG STRUCTO-CRETE® Brand Structural Panels* are fastened to cold-formed steel, hot-rolled steel or wood framing to form a structural floor. These systems resist gravity loads and act as horizontal shear diaphragms, resisting wind and seismic loads. These panels may also be used to support non-structural components which are anchored to the floor sheathing. When used as wall sheathing, the panels may be used as shear resisting elements of cold-formed steel framed shear walls in Seismic Design Categories A and B.

2.2 USG STRUCTO-CRETE® Brand Structural Roof Deck Panels (aka USG Structural Panel Concrete Roof Deck) are used as noted in Section 2.1 and as roof sheathing. When used as roof sheathing, the panels must be protected by an approved roof covering. *USG STRUCTO-CRETE® Brand Structural Roof Deck Panels* are fastened to cold-formed steel, hot-rolled steel, bar joists or wood framing to form a structural roof system. These systems resist gravity and uplift loads and act as horizontal shear diaphragms, resisting wind and seismic loads.

2.3 USG STRUCTO-CRETE® Brand Structural Xtra Strength Panels (aka USG Structural Panel Concrete Foundation Wall XD) are used as noted in Sections 2.1 and 2.2 and in below grade (foundation) wall applications. These panels are fastened to cold-formed steel, hot-rolled steel, or wood framing to form a foundation wall system.

3.0 DESCRIPTION**3.1 USG STRUCTO-CRETE® Panels:**

USG STRUCTO-CRETE® Panels are formed from a composite consisting of glass fibers, cementitious materials and aggregate. USG STRUCTO-CRETE® Panels are nominally $\frac{3}{4}$ inch (19.1 mm) thick, 4 feet (1219 mm) wide, and 8 feet (2428 mm) long with tongue-and-groove edges along the length of the panel. The panels are also available with square edges. The panels weigh approximately 5 psf (24.4 kg/m²). The panels are available with or without a glass mat surface.

The panels are noncombustible when tested in accordance with ASTM E136. The panels have a flame-spread index of 0 and a smoke-developed index of 0 when tested in accordance with ASTM E84.

The physical and mechanical properties of USG STRUCTO-CRETE® Panels are listed in [Table 2](#) of this report.

3.1.1 CALGreen: The attributes of the USG STRUCTO-CRETE® Panels have been verified as conforming to the provisions of CALGreen Sections 4.504 and 5.504 for compliance with the California Department of Public Health, “Standard Method for Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers” Version 1.1, February 2010 (also known as Specification 01350).

Note that conditions on compliance for CALGreen rest with the user of this report, see Section 5.8 for compliance conditions.

3.2 Floor and Roof Framing (Sections 2.1 and 2.2 applications):

Floor and roof framing, web stiffeners, and blocking must be cold-formed from steel complying with AISI S100, with a minimum base-metal thickness of 43 mils [0.043 inch (1.09 mm)], a minimum yield strength of 50 ksi (345 MPa), and a minimum G60 galvanized coating. The supporting flange of the framing member must be at least 1.625 inches (41 mm) wide. Alternate types of framing members listed in [Table 4A](#) of this report may be used as indicated in this evaluation report. Wood framing members must be designed in accordance with the applicable provisions in IBC Chapter 23. Hot-rolled steel framing members must be designed in accordance with the applicable provisions in IBC Chapter 22.

3.2.1 Proprietary Cold-Formed Steel Trusses (Section 2.1 applications): Cold-formed steel floor trusses must be made from truss components described in ESR-2361. The truss components must be formed from Grade 50 steel with a minimum base steel thickness of 43 mils [0.043 inch (1.09 mm)], a minimum depth of

3.25 inches (83 mm) and a minimum flange width of 1.625 inches (41 mm). The minimum truss width is 3.25 inches (83 mm) and minimum truss depth is 12 inches (305 mm). The maximum truss spacing must not exceed 24 inches (610 mm) on center. The floor truss must be designed by registered design professional.

3.2.2 Blocking: When blocking is required, as shown in [Tables 5A, 5B, 6A and 6B](#) of this report, it must comply with the following requirements, as applicable:

3.2.2.1 Diaphragm Strap Blocking: Strap blocking must be minimum Grade 33 cold-formed steel straps which are 4 inches (102 mm) wide with a minimum base steel thickness of 43 mils [0.043 inch (1.09 mm)], and a minimum G60 galvanized coating.

3.2.2.2 Diaphragm Track Blocking: Track blocking must be minimum Grade 50 cold-formed steel C-shaped tracks which are 4 inches (102 mm) deep, have a minimum flange width of 1¹/₄ inches (32 mm), have a minimum base steel thickness of 43 mils [0.043 inch (1.09 mm)], and a minimum G60 galvanized coating. The track sections must be notched where they overlap the supporting joists.

3.2.2.3 Truss Framed Diaphragm Strap Blocking: Strap blocking for cold-formed steel truss diaphragms must be minimum Grade 33 cold-formed steel straps which are 3.5 inches (89 mm) wide with a minimum base steel thickness of 43 mils [0.043 inch (1.09 mm)], and a minimum G60 galvanized coating.

3.2.3 Fasteners: The panels must be fastened to the cold-formed steel framing, hot-rolled framing or wood framing and blocking as defined in [Table 4A](#).

When used with cold-formed steel trusses described in Section 3.2.1, the panels must be fastened with Grabber Construction Products, Inc., #8 x 1⁵/₈" winged self-drilling screws, Part No. CGH8158LG, addressed in [ESR-4223](#).

3.3 Above Grade Wall Framing (Section 2.1 and 2.2 applications): The framing and blocking must be as described in [Tables 8 and 9](#), as applicable.

3.4 Below Grade (Foundation) Wall Framing (Section 2.3 Applications):

3.4.1 General: Wall framing, web stiffeners, and blocking must be cold-formed from steel complying with AISI S100, with a minimum base-metal thickness of 54 mils [0.0538 inch (1.37 mm)], a minimum yield strength of 50 ksi (345 MPa), and a minimum G60 galvanized coating. The supporting flange of the framing member must be at least 1.625 inches (41 mm) wide. Alternate types of framing members listed in [Table 4B](#) of this report may be used as indicated in this evaluation report. Wood framing members must be designed in accordance with the applicable provisions in IBC Chapter 23. Hot-rolled steel framing members must be designed in accordance with the applicable provisions in IBC Chapter 22. Framing supporting panels must be designed by a registered design professional.

3.4.2 Blocking: Each foundation wall panel must be fully blocked at all panel edges.

3.4.2.1 Steel Strap Blocking: Steel strap blocking must be minimum 54 mils [0.0538-inch (1.37 mm)] thick by 4-inch (102 mm) width steel having a minimum 50 ksi (345 MPa) yield strength.

3.4.2.2 Lumber Blocking: Lumber blocking must be minimum nominal 2x4 [1.5 inches by 3.5 inches (38 x 89 mm)] Spruce Pine Fir lumber with the wider edge in-plane with the panels.

3.4.3 Fasteners: Acceptable fasteners for the applicable type of foundation wall framing members listed in [Table 4B](#) of this report may be used as indicated in this evaluation report.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: The framing components must be designed to comply with the strength and deflection requirements of the IBC and the project specifications. The design of the floor, roof or wall systems must address the selection of the framing members, the connections of the framing members to the supporting structure, the layout of the sheathing, and the fastening schedule for attaching the sheathing to the framing members.

4.1.2 Uniform Gravity and Uplift Loads for Floor or Roof Applications (Sections 2.1 and 2.2 of this report): The nominal uniform gravity loads for USG STRUCTO-CRETE[®] Panels used as floor sheathing are shown in [Table 3A](#). The nominal uniform gravity and uplift loads for USG STRUCTO-CRETE[®] Panels used as roof sheathing are shown in [Table 3B](#). The nominal values in [Tables 3A and 3B](#) must be adjusted for use in ASD or LRFD in accordance with the footnotes to [Tables 3A and 3B](#) of this report.

4.1.3 Concentrated Live Load for Floor or Roof Applications (Section 2.1 and 2.2 of this report): The USG STRUCTO-CRETE® Panels with tongue and groove edges are capable of supporting the 2,000 lbf (8.9 kN) concentrated live load defined in IBC Section 1607.4 and IBC Table 1607.1. The maximum framing spacing must not exceed 24 inches (610 mm). The capacity of the framing members resisting the concentrated live load is outside the scope of this report and must be determined by a registered design professional.

4.1.4 Diaphragm Loads for Floor or Roof Applications (Sections 2.1 and 2.2 of this report):

4.1.4.1 General: Diaphragm analysis must comply with the applicable requirements of IBC Chapter 16. For horizontal diaphragms constructed with the USG STRUCTO-CRETE® Panels, the length-to-width aspect ratio of the diaphragm must be no greater than 3:1 for unblocked diaphragms and 4:1 for blocked diaphragms. Diaphragm classification as flexible or rigid must be determined in accordance with Section 12.3.1 of ASCE 7. USG STRUCTO-CRETE® Panels used in unblocked diaphragms and diaphragms blocked with steel straps must have tongue-and-groove edges.

Diaphragm design must consider diaphragm loading parallel and perpendicular to the floor or roof framing. For select configurations, the results of testing of simple beam assemblies are shown in [Table 5A](#). These values are applicable when the diaphragm load is parallel to the framing members. Results of testing of cantilever assemblies are shown in [Table 6A](#). These values apply to diaphragm loads which are parallel or perpendicular to the framing, except where loading parallel to framing is addressed in [Table 5A](#). The values in [Tables 5A](#) and [6A](#) are nominal diaphragm shear values, which must be adjusted for use in ASD or LRFD in accordance with the footnotes to [Tables 5A](#) and [6A](#) of this report.

4.1.4.2 Deflections: Diaphragm deflection must be calculated as follows:

4.1.4.2.1 Based on Simple Beam Diaphragm Testing: Deflection of diaphragms loaded parallel to the framing, for which diaphragm strength is provided in [Table 5A](#), must be calculated as follows:

$$\Delta = \frac{5VL^3}{8EAb} + \frac{VL}{4Gt} + XLe_n$$

where:

- Δ = Diaphragm deflection, inch
- V = Unit shear parallel to the framing, plf
- L = Diaphragm length perpendicular to the direction of the applied load, feet
- E = Elastic modulus of steel rim members designed as diaphragm chords, 29,500,000 psi. Elastic modulus of wood-framed rim members must be determined in accordance with the AWC National Design Specification (NDS) for Wood Construction.
- A = Net area of rim chord cross section, in.²
- b = Diaphragm width parallel to the direction of the applied load, feet
- G = Shear modulus of sheathing, 285,714 psi
- t = Effective thickness of sheathing, 0.73 inch
- X = Slip coefficient from [Table 5A](#)
- e_n = Fastener slip, which is based on the ratio of V/S_u as follows:
 - e_n = 0.011 inch at $0.20S_u$
 - e_n = 0.019 inch at $0.33S_u$
 - e_n = 0.032 inch at $0.60S_u$
 - e_n = 0.084 inch at S_u

where:

S_u = Nominal shear strength given in [Table 5A](#)

Other values of e_n are permitted to be determined by interpolation.

4.1.4.2.2 Based on Cantilever Diaphragm Testing: Deflection of diaphragms loaded parallel or perpendicular to the framing, for which diaphragm strength is provided in [Table 6A](#), must be calculated as follows:

$$\Delta = \frac{5V(2L)^3}{8EAb} + \frac{VL}{4Gt} + X(2L)e_n$$

where: Δ = Diaphragm deflection, inch V = Unit shear in the direction under consideration, plf L, E, A, b, G, t = See Section 4.1.4.2.1. X = Slip coefficient from [Table 6A](#) e_n = Fastener slip, which is based on the ratio of V/S_u as follows:

$$e_n = 0.011 \text{ inch at } 0.20S_u$$

$$e_n = 0.019 \text{ inch at } 0.33S_u$$

$$e_n = 0.032 \text{ inch at } 0.60S_u$$

$$e_n = 0.084 \text{ inch at } S_u$$

where:

 S_u = Nominal shear strength given in [Table 6A](#)Other values of e_n are permitted to be determined by interpolation.**4.1.5 Diaphragm Loads for Cold-formed Steel Floor Trusses:**

4.1.5.1 General: Diaphragm analysis must comply with the applicable requirements of IBC Chapter 16. For horizontal diaphragms constructed with the USG STRUCTO-CRETE® Panels, the length-to-width aspect ratio of the diaphragm must be no greater than 2:1 for unblocked and blocked diaphragms. Diaphragm classification as flexible or rigid must be determined in accordance with Section 12.3.1 of ASCE 7. USG STRUCTO-CRETE® Panels used in unblocked diaphragms and diaphragms blocked with steel straps must have tongue-and-groove edges.

Diaphragm design must consider diaphragm loading parallel and perpendicular to the floor truss. For select configurations, the results of testing of simple beam assemblies are shown in [Table 5B](#). These values are applicable when the diaphragm load is parallel to the truss members. Results of testing of cantilever assemblies are shown in [Table 6B](#). The values in [Tables 5B](#) and [6B](#) are nominal diaphragm shear values, which must be adjusted for use in ASD or LRFD in accordance with the footnotes to [Tables 5B](#) and [6B](#) of this report.

4.1.5.2 Deflections: Diaphragm deflection must be calculated as follows:

4.1.5.2.1 Based on Simple Beam Diaphragm Testing: Deflection of diaphragms loaded parallel to the truss member, for which diaphragm strength is provided in [Table 5B](#), must be calculated as follows:

$$\Delta = \frac{5VL^3}{8EAb} + \frac{VL}{4Gt} + XLe_n$$

where: Δ = Truss diaphragm deflection, inch V = Unit shear parallel to the truss, plf L = Diaphragm length perpendicular to the direction of the applied load, feet E = Elastic modulus of steel rim members designed as diaphragm chords, 29,500,000 psi. A = Net area of rim chord cross section, in.² b = Diaphragm width parallel to the direction of the applied load, feet G = Shear modulus of sheathing, 285,714 psi t = Effective thickness of sheathing, 0.73 inch X = Slip coefficient from [Table 5B](#) e_n = Fastener slip, which is based on the ratio of V/S_u as follows:

$$e_n = 0.006 \text{ inch at } 0.20S_u$$

$$e_n = 0.016 \text{ inch at } 0.40S_u$$

$$e_n = 0.038 \text{ inch at } 0.60S_u$$

$$e_n = 0.151 \text{ inch at } S_u$$

where:

S_u = Nominal shear strength given in [Table 5B](#)

Other values of e_n are permitted to be determined by interpolation.

4.1.5.2.2 Based on Cantilever Diaphragm Testing: Deflection of diaphragms loaded parallel or perpendicular to the framing, for which diaphragm strength is provided in [Table 6B](#), must be calculated as follows:

$$\Delta = \frac{5V(2L)^3}{8EAb} + \frac{VL}{4Gt} + X(2L)e_n$$

where:

Δ = Diaphragm deflection of cold-formed steel floor truss, inch

V = Unit shear in the direction under consideration, plf

L, E, A, b, G, t = See Section 4.1.5.2.1.

X = Slip coefficient from [Table 6B](#)

e_n = Fastener slip, which is based on the ratio of V/S_u as follows:

$e_n = 0.006$ inch at $0.20S_u$

$e_n = 0.016$ inch at $0.40S_u$

$e_n = 0.038$ inch at $0.60S_u$

$e_n = 0.151$ inch at S_u

where:

S_u = Nominal shear strength given in [Table 6B](#)

Other values of e_n are permitted to be determined by interpolation.

4.1.6 Design Loads for USG Foundation Wall Applications: The nominal uniform transverse loads for USG STRUCTO-CRETE® Brand Structural Xtra Strength Panels are shown in [Table 10](#). The nominal values in [Table 10](#) must be adjusted for use in ASD or LRFD in accordance with the footnotes to [Table 10](#) of this report. The nominal shear wall values for panels are shown in [Table 11](#). The nominal shear wall values in [Table 11](#) must be adjusted for use in ASD or LRFD in accordance with the footnotes to [Table 11](#) of this report. The framing supporting the panels must be designed by a registered design professional.

4.1.6.1 Shear Wall Deflection: Deflection of the shear wall assembly can be calculated as follows:

$$\Delta = \frac{P}{G'} \left(\frac{H}{L} \right)$$

Δ = shear wall assembly deflection, in.

P = Shear load applied to wall panel, lbf

G' = Wall assembly apparent stiffness from [Table 11](#), $\frac{\text{lbf}}{\text{in}}$.

H = Shear wall Height, in.

L = Shear wall length, in.

4.1.7 Design Loads for Above Grade Wall Applications: The nominal positive and negative uniform transverse loads for USG STRUCTO-CRETE® Panels used in above grade wall applications are the gravity and uplift loads shown in [Table 3B](#), respectively. The nominal values in [Table 3B](#) must be adjusted for use in ASD or LRFD in accordance with the footnotes to [Table 3B](#) of this report. The nominal shear values for USG STRUCTO-CRETE® Panels used in above grade shear wall applications are shown in [Tables 8](#) and [9](#) of this report. Framing supporting wall panels must be designed by a registered design professional.

4.1.8 Steel Standoff Base Anchorage: Design values for anchorage of steel standoff bases are provided in [Table 7](#).

4.2 Installation:

4.2.1 General: Installation of USG STRUCTO-CRETE® Panels and framing must be in accordance with the IBC, this report, USG's published installation instructions and the approved plans. Copies of this report, USG's published installation instructions and the approved plans must be available at the jobsite at all times during installation of the panels.

4.2.2 Framing: The floor or roof framing must be supported on a foundation that is uniform and level, or directly by bearing studs or headers installed at the top of the bearing wall to distribute the load. The wall framing must be supported on footings that are uniform and level, as shown in [Figure 4](#).

Web stiffeners must be provided at reaction points and/or concentrated loads as specified in the approved plans, based on the framing manufacturer's requirements and the applicable ICC-ES evaluation report on the framing members. End blocking must be provided where joists ends are not otherwise restrained from rotation.

Floor, roof or wall framing must be provided at a spacing indicated in the tables in this report. Additional framing must be provided under parallel partitions and around all openings that interrupt one or more spanning members. Framing members must be fastened to the supporting walls or structure in accordance with the approved plans.

All blocking or bridging for the framing must be installed prior to the installation of the USG STRUCTO-CRETE® Panels.

Framing must comply with the manufacturing tolerances specified in the code.

When blocking is required at the abutting edges of the panels, it must be centered under the longitudinal joints between sheathing panels and installed prior to installation of the sheathing panels.

4.2.3 USG STRUCTO-CRETE® Panels Floor and Roof Application:

4.2.3.1 General: The temperature during panel installation must be a minimum of 0°F (-18°C).

4.2.3.2 Panel Layout: USG STRUCTO-CRETE® Panels must be installed with the long edges perpendicular to the framing. Panels may be installed with either surface against the framing. However, because the panel markings that facilitate fastening are on one side only, the panels should preferably be applied with the markings toward the installer.

Panel installation must commence by marking a line across the framing members parallel to the rim joist at a distance equal to the width of the first panel being placed. Whenever possible, the panel layout must be planned so the first and last panel row width is a minimum of 24 inches (610 mm). Panels less than 24 inches (610 mm) wide must be supported by framing on all sides in accordance with the USG installation instructions.

The cut edge or tongue must be placed along the rim joist. Each panel must be supported across two or more framing members, as indicated in the tables in this report. Panels must be trimmed to ensure that the butted ends of each panel are centered on the framing member flanges.

For panels with tongue-and-groove edges, adjacent panels must be butted together so that the tongue of one panel being installed fits into the groove of the installed panel. Panels with square edges must be butted tightly together. No gaps are required between panels. When the framing spacing is 24 inches (610 mm) or less, panel rows must be placed in a running bond pattern so that end joints fall over the center of the framing members and are staggered by at least two framing members from where the end joints fall in the adjacent rows, except when panels less than 8 feet (2440 mm) long are used, in which case an offset of one framing member is allowed. When the framing spacing is greater than 24 inches (610 mm), panel rows must be placed in a running bond pattern so that end joints fall over the center of the framing members and are staggered by at least one framing member from where the end joints fall in the adjacent panel rows.

4.2.3.3 Panel Fastening: Each panel must be fastened to the framing members in accordance with the requirements for the applicable screw pattern shown in [Tables 5A, 5B, 6A and 6B](#), and in accordance with the fastening schedule specified in the approved plans. Fastening must commence at one end and fan out across the panel, and corners must not be fastened initially. Fasteners must be placed sequentially one row at a time. Screws must be installed using tools recommended by the screw manufacturer. Screw fasteners must be installed so the heads are flush with the panel surface. Panels must be fastened in accordance with one of the following patterns, as required by [Tables 5A and 6A](#):

■ **Screw Pattern A:** Sheathing must be fastened at 4, 6 or 8 inches (102, 152 or 203 mm) on center at the perimeter of the diaphragm and at the panel-to-panel butt joints, as required by [Tables 5A and 6A](#). At the panel corners, fasteners must be inset 2 inches (51 mm). In the field of the panel, fasteners must be spaced a maximum of 12 inches (305 mm) on center. Fastener edge distance at all panel edges must be a minimum of 1/2 inch (12.7 mm) or as indicated in [Table 4A](#) of this report, whichever is more restrictive, except at T-joints (intersection of butt joint with tongue-and-groove joint) where two fasteners are required, one placed 1 inch (25.4 mm) and another at 2 inches (51 mm) from the panel edge. [Figure 1](#) illustrates the Screw Pattern A fastener layout.

■ **Screw Pattern B and C:** Sheathing must be fastened at 2, 4, 6 or 8 inches (102, 152 or 203 mm) on center at the perimeter of the diaphragm and at the panel-to-panel butt joints, as required by [Tables 5A](#) and [6A](#). At the panel corners, fasteners must be inset 2 inches (51 mm). In the field of the panel, fasteners must be spaced a maximum of 12 inches (305 mm) on center. Fastener edge distance at all panel edges must be a minimum of 1/2 inch (12.7 mm) or as indicated in [Table 4A](#) of this report, whichever is more restrictive, except at T-joints where one fastener must be placed 1 inch (25.4 mm) from the panel edge. Fastener edge distance at tongue and groove panel joint over blocking must be a minimum of 1 inch (25.4 mm). [Figure 1](#) illustrates the Screw Patterns B and C fastener layout.

For floor applications with cold-formed steel truss framing, panels must be fastened in accordance with the Fastening Details in [Figure 2](#) and as described below, as required by [Tables 5B](#) and [6B](#):

■ **Staggered and Stacked Panel Layouts Screw Details:** Sheathing must be fastened at 4 or 6 inches (102 or 152 mm) on center at the perimeter of the diaphragm and at the panel-to-panel butt joints, as indicated in [Tables 5B](#) and [6B](#). At the panel corners, fasteners must be inset 1.25 inches (32 mm). In the field of the panel, fasteners must be spaced a maximum of 12 inches (305 mm) on center. Fastener edge distance at all panel edges must be a minimum of 1.25 inches (32 mm). [Figure 2](#) illustrates the Staggered and Stacked Screw fastener layouts.

4.2.3.4 Field Modifications: As needed, the panels must be cut to proper length and width in accordance with USG's installation instructions.

Cut-outs in the panels must be created before installation of the panels. All cut-out ends and edges exceeding 6 inches (152 mm) in any dimension must be supported by framing.

4.2.4 Floor Finish: Before application of floor finish materials, all structural panels must be completely fastened. All voids and depressions in the panel surface must be filled with cement-based patching or leveling compounds. Panel surfaces must be clean and free of moisture.

Before application of floor finish materials, USG STRUCTO-CRETE® Panels must be conditioned in the same environment as required for the finish floors, if applicable, for at least 48 hours.

Underlayment must be secured to USG STRUCTO-CRETE® Panels with fastenings specified for the flooring material. Mechanical fasteners must be long enough to penetrate the USG STRUCTO-CRETE® Panels 1/4 to 1/2 inch (6.4 to 12.7 mm).

For wood flooring, No. 15 felt or equivalent must first be laid over the USG STRUCTO-CRETE® Panels. For engineered wood flooring, the specified moisture barrier must be used in lieu of the felt. The USG STRUCTO-CRETE® Panels must be kept dry and maintained in a conditioned space for a minimum of 30 days prior to the installation of wood flooring. The wood flooring must then be installed in accordance with the wood flooring manufacturer's installation instructions for application over wood floor sheathing.

Tackless strips, designed for concrete application, must be used for the installation of stretched carpet.

4.2.5 Roof Finish: Before application of approved roof coverings, all structural panels must be completely fastened. Panel surfaces must be clean and free from moisture. Roof systems (above USG STRUCTO-CRETE® Panels) must be attached directly to the panels.

4.2.6 Foundation Walls: *USG STRUCTO-CRETE® Brand Structural Xtra Strength Panels* used for foundation walls must be installed when the temperature during panel installation is a minimum of 0°F (-18°C). Each foundation wall panel must be fully blocked at all panel edges. If blocking is used to connect two adjacent panels to create a wall taller than 8 feet (2.44 m), a full 8-foot panel must always be located at the bottom of the wall with the blocking at the top connecting the additional panel section.

A code approved waterproofing membrane must be installed over the finished foundation wall assembly in accordance with the membrane manufacturer's installation instructions. Panels must be protected from construction moisture, damage and impact during and after installation. [Table 12](#) shows bond strength values of several waterproofing membranes bonded to *USG STRUCTO-CRETE® Brand Structural Xtra Strength Panels*.

Extreme caution should be maintained while backfilling the area around the panels and backfill must be lightly compacted in maximum lifts of 1 foot (305 mm).

4.2.7 Above Grade Walls: *USG STRUCTO-CRETE® Panels* used for above grade wall sheathing must be installed when the temperature during panel installation is a minimum of 0°F (-18°C). If blocking is used to connect two adjacent panels to create a wall taller than 8 feet (2.44 m), a full 8-foot panel must always be

located at the bottom of the wall with the blocking at the top connecting the additional panel section. Code-complying water-resistive barrier and exterior wall covering must be installed over the panels.

4.3 Special Inspections: For the purpose of determining special inspection requirements, the floor systems described in this report must be considered special cases, in accordance with Section 1705.1.1 of the IBC. Inspection of diaphragm construction is required when the fastener spacing is less than or equal to 4 inches (102 mm).

5.0 CONDITIONS OF USE:

The USG STRUCTO-CRETE[®] Panels described in this report comply with, or are suitable alternatives to what is specified in, the codes indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1** The products must be installed in accordance with this report, the manufacturer's published instructions, the approved plans and the applicable code. In the event of a conflict amongst these documents, the most restrictive requirements govern.
- 5.2** When used in floor and roof applications, calculations and details showing that the applied gravity and uplift loads do not exceed the applicable uniform load capacity, and that the applied diaphragm loads do not exceed the available diaphragm strengths specified in this report, must be submitted to the code official for approval. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.3** When used in wall applications, calculations and details showing that the applied uniform loads do not exceed the applicable uniform load capacity, and that the applied shear loads do not exceed the available shear wall capacity specified in this report, must be submitted to the code official for approval. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.4** Design of the supporting building structure is outside the scope of this report.
- 5.5** For use in roof applications, the uplift loads in this report apply only to the structural capacity of the panel and its attachment to the supporting framing. Evaluation of allowable uplift loads for roof covering systems applied to the USG STRUCTO-CRETE[®] Panels used as roof sheathing are outside the scope of this report.
- 5.6** For use in above grade wall applications, the negative wind pressure loads in this report apply only to the structural capacity of the panel and its attachment to the supporting framing. Attachment of exterior wall covering systems to the USG STRUCTO-CRETE[®] Panels is outside the scope of this report.
- 5.7** For use in below grade (foundation) applications, the positive pressures in this report apply only to the structural capacity of the panel. The capacity of the wall assembly to resist lateral soil pressure and axial loads are outside the scope of this report and must be determined by a registered design professional.
- 5.8** For applications under CalGreen code described in Section 3.1.1 of this report, the user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. This code or standard often provides supplemental information as guidance.
- 5.9** The USG STRUCTO-CRETE[®] Panels are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1** Data in accordance with the [ICC-ES Acceptance Criteria for Structural Cementitious Floor and Roof Sheathing Panels \(AC318\)](#), dated March 2018 (editorially revised October 2024).
- 6.2** Data in accordance with the [ICC-ES Acceptance Criteria for Horizontal Diaphragms Consisting of Structural Cementitious Sheathing Panels Attached to Cold-formed Steel Framing \(AC319\)](#), dated March 2018 (editorially revised October 2024).
- 6.3** Reports of tests on USG STRUCTO-CRETE[®] panels in accordance with ASTM C1185, ASTM D1293, ASTM D3330, ASTM E96, ASTM G21, AWP Standard E1-17 and Specification 01350.
- 6.4** Reports of tests in accordance with ASTM D1761 and ASTM D1037, including engineering analysis to qualify alternate fasteners and framing members.
- 6.5** Reports of pull-through tests in accordance with ASTM D1037 for floor anchorage to USG STRUCTO-CRETE[®] panels.

- 6.6 Reports of racking shear tests in accordance with ASTM E564 for USG STRUCTO-CRETE[®] panels used as shear wall resisting elements.

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-1792) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 In addition, each panel or bundle of panels is identified with one of the product names listed in Table 1 and the date of manufacture.
- 7.3 The report holder's contact information is the following:

USG CORPORATION
700 N US HIGHWAY 45
LIBERTYVILLE, ILLINOIS 60048
(800) 950-3839
www.usg.com

TABLE 1—USG STRUCTO-CRETE[®] PANEL TYPE END USE APPLICATIONS

END USE APPLICATION	USG PANEL TYPE		
	USG STRUCTO-CRETE [®] Brand Structural Panels (aka USG Structural Panel Concrete Subfloor)	USG STRUCTO-CRETE [®] Brand Structural Roof Deck Panels (aka USG Structural Panel Concrete Roof Deck)	USG STRUCTO-CRETE [®] Brand Structural Xtra Strength Panels (aka USG Structural Panel Concrete Foundation Wall XD)
Combination subfloor and underlayment	yes	yes	yes
Subfloor	yes	yes	yes
Roof deck	no	yes	yes
Below grade foundation wall	no	no	yes
Above grade wall	yes	yes	yes

TABLE 2—PHYSICAL AND MECHANICAL PROPERTIES OF USG STRUCTO-CRETE[®] PANEL

PROPERTY	TEST STANDARD	REQUIREMENTS	TESTED VALUES
Concentrated Load Resistance, Wet or Dry	ASTM E661	550 lbf static 0.108 inch max deflection at 200 lbf	840 lbf static 0.066 inch deflection at 200 lbf
Fastener Lateral Resistance ¹	ASTM D1761	Dry > 210 lbf Wet > 160 lbf	Dry: 776 lbf Wet: 800 lbf
Density-Oven Dried ²	ASTM C1185	Minimum 75 pcf	78.6 pcf
Bending Strength	ASTM C1185	n/a	2,050 lb-in/ft
Modulus of Elasticity	ASTM C1185	n/a	1,035,000 psi
Weight, ¾-inch-thick	ASTM D1037	n/a	5.3 lb/ft ²
pH Value	ASTM D1293	n/a	10.5
Linear Variation with Change in Moisture 25% to 90% Relative Humidity	ASTM C1185	< 0.10%	0.06%
Thickness Swell	ASTM D1037	< 3.0%	0.04%
Freeze/Thaw Resistance	ASTM C1185	Minimum 75% retention of dry flexural strength testing per ASTM C1185	100% retention
Mold Resistance	ASTM D3273	10	10
	ASTM G21	≤ 1	≤ 1
Water Absorption ³	ASTM C1185	< 15.0%	9%
Noncombustibility	ASTM E136	Must Pass	Passed
Surface Burning Characteristics	ASTM E84	0 Flame Spread Index / 5 Smoke Developed Index	0 Flame Spread Index / 0 Smoke Developed Index
Long Term Durability	ASTM C1185	Min. 75% retention of dry flexural strength testing per ASTM C1185	100% retention
Water Durability	ASTM C1185	Min. 70% retention of dry flexural strength testing per ASTM C1185	100% retention
Water Vapor Transmission (Method B)	ASTM E96	n/a ⁴	Permeance 1.4 Perms
Termite Resistance	AWPA Standard E1-17	n/a ⁴	Termite resistant to subterranean termites, including Formosan termites

For SI: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 pcf = 16.02 kg/m³, 1 lb/ft² = 4.88 kg/m², 1 perm = 57.2 ng/Pa*s*m².

¹Fastener lateral resistance measured with applicable fasteners in [Table 4A](#) and [4B](#).

²Density measured at equilibrium conditioning in accordance with Section 5.2.3.1 of ASTM C1185-Tested 28 days after manufacturing

³Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours.

⁴n/a-not applicable.

TABLE 3A—NOMINAL AND ALLOWABLE UNIFORM GRAVITY LOADS³
FOR USG STRUCTO-CRETE BRAND STRUCTURAL PANELS USED AS FLOOR SHEATHING OR USG STRUCTO-CRETE® BRAND
STRUCTURAL ROOF DECK PANELS USED AS FLOOR OR ROOF SHEATHING
WITH SUPPORT FRAMING SPACED UP TO 24 INCHES ON CENTER

Support Framing Spaced at 24 inches on center	Number of Spans Over Support Framing ^{1,2}		
	1-Span	2-Spans	3 or more Spans
Nominal Uniform Load, psf	676	429	451
Allowable Uniform Load, psf	225	143	150
Displacement Limit	Allowable Load, psf		
L/180	225	143	150
L/240	225	143	150
L/360	204	143	150
L/480	153	143	150
L/600	123	143	150
L/720	102	143	136
Support Framing Spaced at 19.2 inches on center	Number of Spans Over Support Framing ^{1,2}		
	1-Span	2-Spans	3 or more Spans
Nominal Uniform Load, psf	1020	656	698
Allowable Uniform Load, psf	340	219	233
Displacement Limit	Allowable Load, psf		
L/180	340	219	233
L/240	340	219	233
L/360	340	219	233
L/480	274	219	233
L/600	219	219	233
L/720	183	219	233
Support Framing Spaced at 16 inches on center	Number of Spans Over Support Framing ^{1,2}		
	1-Span	2-Spans	3 or more Spans
Nominal Uniform Load, psf	1400	928	998
Allowable Uniform Load, psf	467	309	333
Displacement Limit	Allowable Load, psf		
L/180	467	309	333
L/240	467	309	333
L/360	467	309	333
L/480	441	309	333
L/600	353	309	333
L/720	294	309	333
Support Framing Spaced at 12 inches on center	Number of Spans Over Support Framing ^{1,2}		
	1-Span	2-Spans	3 or more Spans
Nominal Uniform Load, psf	2304	1606	1758
Allowable Uniform Load, psf	768	535	586
Displacement Limit	Allowable Load, psf		
L/180	768	535	586
L/240	768	535	586
L/360	768	535	586
L/480	768	535	586
L/600	744	535	586
L/720	620	535	586

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

¹These loads represent the load-carrying capacity of the panels spanning between the framing members. The support span conditions of the structural panels must be determined by a registered design professional. This table does not consider the influence of joist deflection.

²Values based on panel flexural strength and stiffness properties. The tabulated values for Allowable Strength Design (ASD) are on the nominal values divided by a safety factor, Ω , of 3.0. For Load and Resistance Factor Design (LRFD), the nominal tabulated values must be multiplied by a resistance factor, ϕ , of 0.50. The allowable (unfactored) load based on the deflection limit applies to both ASD and LRFD. The L in deflection limit is the support framing spacing.

³Maximum fastener spacing for gravity loads is 12 in. o.c.

**TABLE 3B—NOMINAL UNIFORM GRAVITY LOADS AND UPLIFT LOADS FOR
USG STRUCTO-CRETE[®] BRAND STRUCTURAL ROOF DECK PANELS USED AS ROOF SHEATHING³**

SUPPORT FRAMING SPACING, inches	NOMINAL UNIFORM GRAVITY LOAD ² , psf		NOMINAL UNIFORM UPLIFT LOAD, psf ¹			
			Fastener Spacing at Panel Edges / In the Field, inches			
			8/12	8/8	6/6	4/4
12	See Table 3A		570	855	1,140	1,710
16	See Table 3A		428	641	855	1,171
19.2	See Table 3A		356	534	713	875
24	See Table 3A		285	428	475	475
32	Nominal Uniform Load, psf	255	214	255	255	255
	L/240 Deflection, psf	145				
	L/360 Deflection, psf	105				
48	Nominal Uniform Load, psf	231	143	180	180	180
	L/240 Deflection, psf	56				
	L/360 Deflection, psf	40				

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

¹Values based on panel flexural properties, fastener pull-through and fastener pull-out from the supporting steel complying with Section 3.2 of this report and having a minimum thickness of 54 mils. For Allowable Strength Design (ASD), the nominal values must be divided by a safety factor, Ω , of 3.0. For Load and Resistance Factor Design (LRFD), the nominal tabulated values must be multiplied by a resistance factor, ϕ , of 0.50. The allowable (unfactored) load based on the deflection limit applies to both ASD and LRFD.

²Maximum faster spacing for gravity loads is 12-in. o.c.

³[Tabulated values are also](#) applicable to the USG STRUCTO-CRETE[®] Brand Structural Xtra Strength Panels.

TABLE 4A—ACCEPTABLE DIAPHRAGM FRAMING AND FASTENERS FOR USE IN FLOOR AND ROOF APPLICATIONS^{1,4}

MINIMUM FRAMING	MINIMUM EDGE DISTANCE, inch	MANUFACTURER	PART NO.	TYPE ^{3,5}
16 ga. [0.0538-inch (1.37 mm)] cold formed steel complying with Section 3.2.1	1/2	Grabber Construction Products	CGH8158LG	No. 8 x 1 ⁵ / ₈ -inch winged self-drilling screw, ESR-4223
		Grabber Construction Products	CGHM8200LG	No. 8 x 2-inch self-drilling screw
		Simpson Strong-Tie Company, Inc.	CBSDQ158S	No. 8 x 15/8-inch winged self-drilling screw, ESR-4208
18 ga. [0.0403-inch (1.02 mm)] cold formed steel complying with Section 3.2.1	1	Grabber Construction Products	CGH8158LG	No. 8 x 1 ⁵ / ₈ -inch winged self-drilling screw, ESR-4223
1/8-inch-thick hot rolled steel, min. yield strength 50 ksi	1	Aerosmith	5324HPG	0.145-inch-diameter x 1 ¹ / ₄ -inch power actuated fastener
		Hilti	X-U 32	0.157-inch-diameter x 1 ¹ / ₄ -inch power actuated fastener, ESR-2269
		Grabber Construction Products	CC12250LRG	No. 12 x 2 ¹ / ₂ -inch winged self-drilling screw, ESR-4223
		Dewalt	50458-PWR	0.157-inch-diameter x 1 ¹ / ₄ -inch power actuated fastener, ESR-2024
1/4-inch-thick hot rolled steel, min. yield strength 36 ksi	3/4	Grabber Construction Products	CC12250LRG	No. 12 x 2 ¹ / ₂ -inch winged self-drilling screw, ESR-4223
		Muro North America	RSM645	M6 x 45 mm winged self-drilling screw
		Simpson Strong-Tie Company, Inc.	TBG1260S	No. 12 x 2 ³ / ₈ -inch, flat head Strong-Drive TB Wood to Steel screw
1/4-inch-thick steel tubing, min. yield strength 50 ksi	3/4	Hilti	X-U 27 Pin	0.157-inch-diameter 1 ¹ / ₁₆ -inch power actuated fastener, ESR-2269
3/8-inch-thick steel tubing, min. yield strength 50 ksi				
1/2-inch-thick steel tubing, min. yield strength 50 ksi				
SPF Lumber (Min. SG- 0.42)	5/8	Grabber Construction Products	C8200L2M	No. 8 x 2-inch, flat head, Type 17, nibs, GrabberGard
		Simpson Strong-Tie Company, Inc.	WSNTLG2S	No. 8 x 2-inch, flat head, twin threads, Nibs, ESR-1472
	1/2	Senco ²	GL24AABF	8d Ring Shank Nails

For SI: 1 inch= 25.4 mm, 1 ksi= 6.89 MPa.

¹Nominal fastener pull-through capacity of 581 lbf (2584 N) may be applied to all listed fasteners. Capacity is based on ultimate tested value for all tabulated fasteners. The registered design professional must apply the appropriate safety factor (ASD) or resistance factor (LRFD).

²Senco 8d ring shank nails are manufactured with a length of 2³/₈-inch (60 mm), a head diameter of 0.266-inch and a shank diameter of 0.113-inch.

³Fastener lengths shown are minimums.

⁴Fasteners shall be flush or slightly below the surface and care must be taken to not strip out the steel framing. No fasteners shall be installed within 2-inches (50.8 mm) of the corner of a panel and shall not be closer than the minimum distance from panel edges indicated above.

⁵When no ICC-ES evaluation report is referenced, the fasteners have not been evaluated for compliance with the code.

TABLE 4B—ACCEPTABLE FASTENERS FOR FOUNDATION WALL APPLICATIONS^{1,4}

MINIMUM FRAMING	MINIMUM EDGE DISTANCE, inch	MANUFACTURER	PART NO.	TYPE ^{3,5}
16 ga. [0.0538-inch (1.37 mm)] cold formed steel	$\frac{1}{2}$	Grabber Construction Products	CGH8158LG	No. 8 x $1\frac{5}{8}$ -inch winged self-drilling screw, ESR-4223
		Simpson Strong-Tie Company, Inc.	CBSDQ158S	No. 8 x $1\frac{5}{8}$ -inch winged self-drilling screw, ESR-4208
$\frac{1}{8}$ -inch-thick hot rolled steel, min. yield strength 50 ksi	1	Aerosmith	5724HPG	0.145-inch-diameter x $1\frac{1}{4}$ -inch power actuated fastener
		Hilti	X-U 32MX	0.157-inch-diameter x $1\frac{1}{4}$ -inch power actuated fastener, ESR-2269
		Dewalt	50458-PWR	0.157-inch-diameter x $1\frac{1}{4}$ -inch power actuated fastener, ESR-2024
$\frac{1}{4}$ -inch-thick hot rolled steel, min. yield strength 36 ksi	$\frac{3}{4}$	Grabber Construction Products	CC12250LRG	No. 12 x $2\frac{1}{2}$ -inch winged self-drilling screw, ESR-4223
		Muro North America	RSM645	M6 x 45 mm winged self-drilling screw
		Simpson Strong-Tie Company, Inc.	TBG1260S	No. 12 x $2\frac{3}{8}$ -inch, flat head Strong-Drive® TB Wood to Steel screw
SPF Lumber (Min. SG- 0.42)	$\frac{5}{8}$	Grabber Construction Products	C8200L2M	No. 8 x 2-inch, flat head, Type 17, nibs, GrabberGard
		Simpson Strong-Tie Company, Inc.	WSNTLG2S	No. 8 x 2-inch, flat head, twin threads, Nibs, ESR-1472
	$\frac{1}{2}$	Senco ²	GL24AABF	8d Ring Shank Nails

For SI: 1 inch= 25.4 mm, 1 ksi= 6.89 MPa.

¹Nominal fastener pull-through capacity of 581 lbf (2584 N) may be applied to all listed fasteners. Capacity is based on ultimate tested value for all tabulated fasteners. The registered design professional must apply the appropriate safety factor (ASD) or resistance factor (LRFD).

²Senco 8d ring shank nails are manufactured with a length of $2\frac{3}{8}$ -inch (60 mm), a head diameter of 0.266-inch and a shank diameter of 0.113-inch.

³Fastener lengths shown are minimums.

⁴Fasteners shall be flush or slightly below the surface and care must be taken to not strip out the steel framing. No fasteners shall be installed within 2-inches (50.8 mm) of the corner of a panel and shall not be closer than the minimum distance from panel edges indicated above.

⁵When no ICC-ES evaluation report is referenced, the fasteners have not been evaluated for compliance with the code.

**TABLE 5A—NOMINAL SHEAR STRENGTH FOR SIMPLE BEAM DIAPHRAGMS CONSTRUCTED WITH
USG STRUCTO-CRETE[®] PANELS USED WITH COLD-FORMED STEEL, HOT-ROLLED STEEL AND WOOD FRAMING MEMBERS
SHOWN IN TABLE 4A^{1,2,3,4}**

SUPPORT FRAMING SPACING, inches	MINIMUM NUMBER OF SUPPORTS PER PANEL	REQUIRED BLOCKING ⁵	MAXIMUM FASTENER SPACING, inches		SCREW PATTERN (See Figure 1)	SHEAR STRENGTH, S _u plf	SLIP COEFFICIENT, X
			Perimeter	Field			
USG STRUCTO-CRETE® Brand Structural Panels							
USG STRUCTO-CRETE® Brand Structural Roof Deck Panels							
24	3	Strap	6	12	C	1,526	0.346
24	3	Strap	6	12	C	1,468	0.180
24	3	Strap	6 panel 2 diaphragm	12	C	1,999	0.218
24	3	Strap	4 panel 2 diaphragm	12		2,541	0.313
24	3	None	4	12	A or B	1,341	0.476
24	3	None	6	12	A or B	1,053	0.397
16	3	None	4	12	B	1,462	0.443
16	3	None	6	12	B	1395	0.421
USG STRUCTO-CRETE® Brand Structural Roof Deck Panels							
32	2	Strap	8	12	C	1,317	0.193
48	2 ⁽⁶⁾	Track	8	12	C	1,488	0.301
32	2	Strap	4	12	C	2,035	0.216
48	2 ⁽⁶⁾	Track	4	12	C	2,812	0.415

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m.

¹See Section 3.2 for framing requirements. See also Table 4A.

²See Section 3.2.3 for fastener requirements. See also Table 4A.

³See Section 4.2.3.3 and Figure 1 for a description of the screw patterns.

⁴For Allowable Strength Design (ASD), the nominal load values must be divided by safety factor of 2.8 for diaphragms with cold-formed steel and hot-rolled steel framing members subjected to wind and seismic forces; a safety factor of 3.30 for diaphragms with wood framing members subject to seismic forces; and a safety factor of 2.35 for diaphragms with wood framing members subject to wind forces. For Load and Resistance Factor Design (LRFD), the nominal values must be multiplied by resistance factor of 0.6 for diaphragms with cold-formed steel and hot-rolled steel framing members subjected to wind and seismic forces; a resistance factor of 0.5 for diaphragms with wood framing members subject to seismic forces; and resistance factor of 0.70 for diaphragms with wood framing members subject to wind forces.

⁵See Section 3.2.2 for blocking requirements.

⁶When only two supports are provided (single span) a framing member must be added at the center of the panel, running between the two supports, as illustrated in the USG installation instructions.

**TABLE 5B—NOMINAL SHEAR STRENGTH FOR SIMPLE BEAM DIAPHRAGMS CONSTRUCTED WITH
USG STRUCTO-CRETE[®] PANELS USED WITH COLD-FORMED STEEL FLOOR TRUSSES DESCRIBED IN SECTION 3.2.1^{1,2,3,4,5,6,7}**

REQUIRED BLOCKING	MAXIMUM FASTENER SPACING ⁷ , inches		FASTENING DETAILS (Figure 2)	PANEL LAYOUT	SHEAR STRENGTH, S _u plf	SLIP COEFFICIENT, X
	Perimeter	Field				
None	4	12	B, C	Staggered	1,774	0.272
None	6	12	A, B	Staggered	1,351	0.241
None	4	12	C, E	Stacked	1,601	0.280
Strap	4	12	D	Staggered	2,170	0.126

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m.

¹See Section 3.2.1 for truss member requirements.

²See Section 3.2.3 for fastener requirements.

³See Figure 2 for a description of the fastening details.

⁴For Allowable Strength Design (ASD), the nominal load values must be divided by safety factor of 2.8 for diaphragms subjected to wind and seismic forces. For Load and Resistance Factor Design (LRFD), the nominal values must be multiplied by resistance factor of 0.6 for diaphragms subjected to wind and seismic forces.

⁵See Section 3.2.2.3 for blocking requirements.

⁶Panels must be installed perpendicular to truss member span and panels must be supported by minimum of two (2) truss members. The minimum panel width, measured parallel to the truss member, must not be less than 24 inches. The maximum truss member spacing must not exceed 24 inches.

⁷Panel fasteners must be inset 2 inches from the corners.

**TABLE 6A—NOMINAL SHEAR STRENGTH FOR CANTILEVER DIAPHRAGMS CONSTRUCTED WITH
USG STRUCTO-CRETE[®] PANELS USED WITH COLD-FORMED STEEL, HOT-ROLLED STEEL AND WOOD FRAMING MEMBERS
SHOWN IN [TABLE 4A](#)^{1,2,3,4}**

SUPPORT FRAMING SPACING, inches	MINIMUM NUMBER OF SUPPORTS PER PANEL	REQUIRED BLOCKING ⁵	MAXIMUM FASTENER SPACING (inches)		SCREW PATTERN (See Figure 1)	SHEAR STRENGTH, S _u plf	SLIP COEFFICIENT, X
			Perimeter	Field			
USG STRUCTO-CRETE® Brand Structural Panels							
USG STRUCTO-CRETE® Brand Structural Roof Deck Panels							
24	3	Strap	6	12	C	1,148	0.354
24	3	None	4	12	A	713	0.732
24	3	None	6	12	A	487	0.518
24	3	None	8	12	A	475	0.511
24	3	None	6	12	B	525	0.625
24	3	None	8	12	B	465	0.754
16	3	None	4	12	A	975	0.833
16	3	None	6	12	A	915	0.765
16	3	None	8	12	A	860	0.702
12	3	None	4	12	A	1,121	0.759
12	3	None	6	12	A	940	0.541
12	3	None	8	12	A	772	0.484
USG STRUCTO-CRETE® Brand Structural Roof Deck Panels							
32	2	Strap	8	12	C	1,006	0.481
48	2 ⁽⁶⁾	Track	8	12	C	1,098	0.391
32	2	Strap	4	12	C	1,516	0.570
48	2 ⁽⁶⁾	Track	4	12	C	1,641	0.426

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m.

¹See Section 3.2 for framing requirements. See [Table 4A](#).

²See Section 3.2.3 for fastener requirements. See [Table 4A](#).

³See Section 4.2.3.3 and Figure 1 for a description of the screw patterns.

⁴For Allowable Strength Design (ASD), the nominal load values must be divided by safety factor of 2.8 for diaphragms with cold-formed steel and hot-rolled steel framing members subjected to wind and seismic forces; a safety factor of 3.30 for diaphragms with wood framing members subject to seismic forces; and a safety factor of 2.35 for diaphragms with wood framing members subject to wind forces. For Load and Resistance Factor Design (LRFD), the nominal values must be multiplied by resistance factor of 0.6 for diaphragms with cold-formed steel and hot-rolled steel framing members subjected to wind and seismic forces; a resistance factor of 0.5 for diaphragms with wood framing members subject to seismic forces; and resistance factor of 0.70 for diaphragms with wood framing members subject to wind forces.

⁵See Section 3.2.2 for blocking requirements.

⁶When only two supports are provided (single span) a framing member must be added at the center of the panel, running between the two supports, as illustrated in the USG installation instructions.

**TABLE 6B—NOMINAL SHEAR STRENGTH FOR CANTILEVER DIAPHRAGMS CONSTRUCTED WITH
USG STRUCTO-CRETE[®] PANELS USED WITH COLD-FORMED STEEL FLOOR TRUSSES DESCRIBED IN SECTION 3.2.1^{1,2,3,4,5,6,7}**

REQUIRED BLOCKING ⁵	MAXIMUM FASTENER SPACING, inches		FASTENING DETAILS (Figure 2)	PANEL JOINT LAYOUT	SHEAR STRENGTH, S _u plf	SLIP COEFFICIENT, X
	Perimeter	Field				
None	4	12	B, C	Staggered	996	0.346
None	6	12	A, B	Staggered	891	0.407
None	4	12	C, E	Stacked	1,002	0.356
Strap	4	12	D	Staggered	1,893	0.384

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m.

¹See Section 3.2.1 for truss member requirements.

²See Section 3.2.3 for fastener requirements.

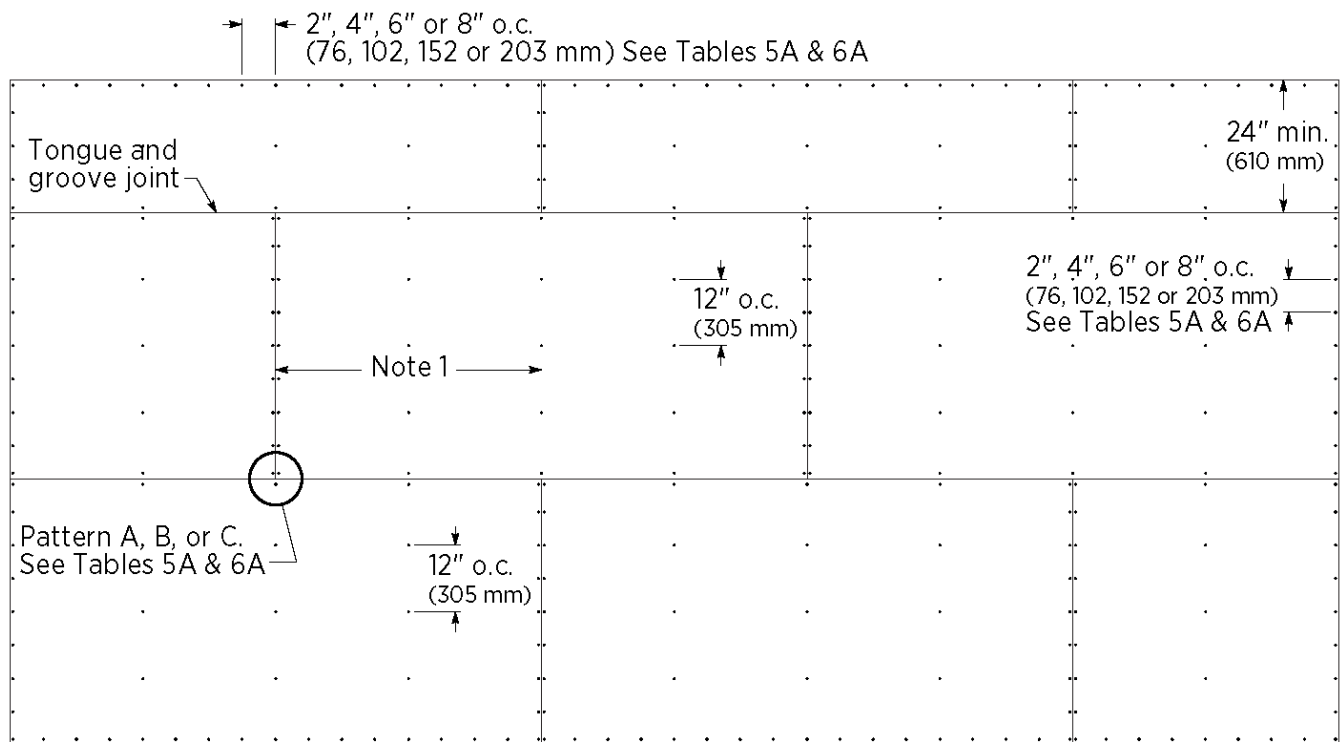
³See Figure 2 for a description of the fastening details.

⁴For Allowable Strength Design (ASD) the nominal load values must be divided by safety factor of 2.8 for diaphragms subjected to wind and seismic forces. For Load and Resistance Factor Design (LRFD), the nominal values must be multiplied by resistance factor of 0.6 for diaphragms subjected to wind and seismic forces.

⁵See Section 3.2.2.3 for blocking requirements.

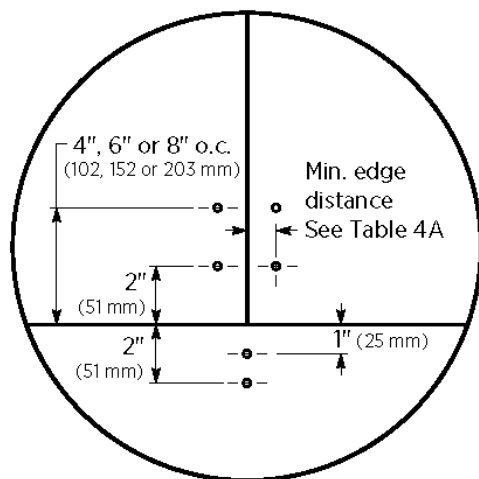
⁶Panels must be installed perpendicular to truss member span and panels must be supported by minimum of two (2) truss members. The minimum panel width, measured parallel to the truss member, must not be less than 24 inches. The maximum truss member spacing must not exceed 24 inches.

⁷Panel fasteners must be inset 1¹/₄-inch from the corners. Fastener edge distance at all panel edges must comply with spacing in [Table 5B](#), as well as exception to the tongue and groove joints where the truss members are perpendicular to the joint. The fasteners must be kept flush or slightly below the surface of the panel.

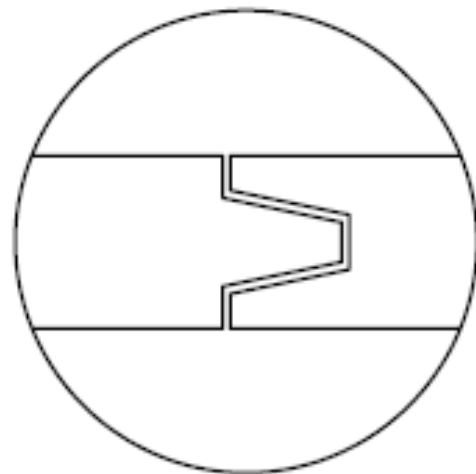


1. Two Span offset of Seams w/o Blocking. One Span w/ Blocking.

Panels Layout

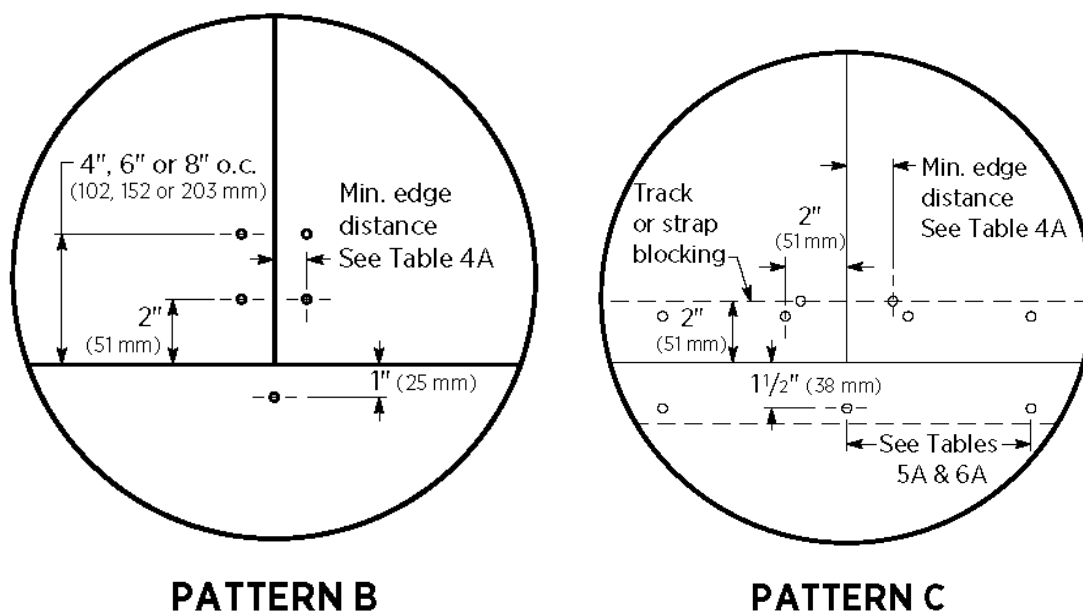
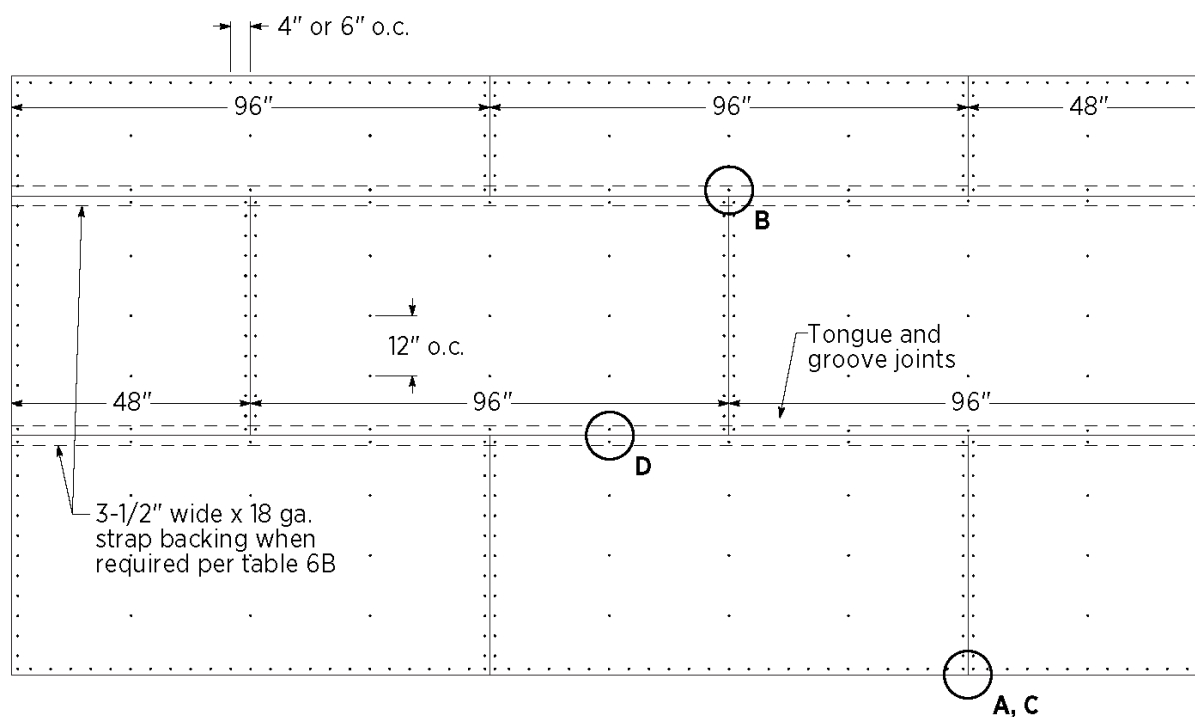


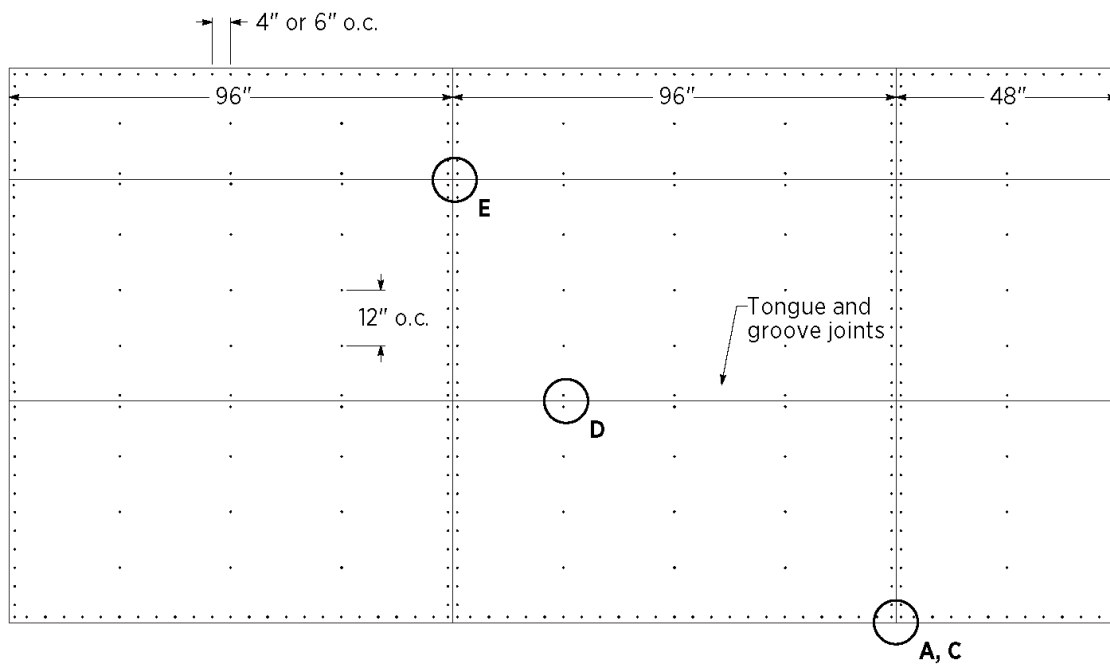
PATTERN A



Tongue & Groove Joint

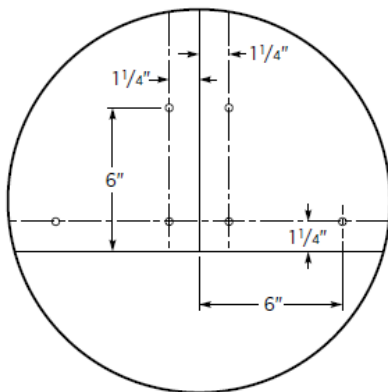
FIGURE 1- SCREW PATTERNS A, B AND C ([TABLE 5A](#) AND [6A](#))

FIGURE 1- SCREW PATTERNS A, B AND C ([TABLE 5A](#) AND [6A](#)) (CONTINUED)FIGURE 2- SCREW PATTERN FOR COLD-FORMED STEEL FLOOR TRUSSES ([TABLE 5B](#) AND [6B](#))

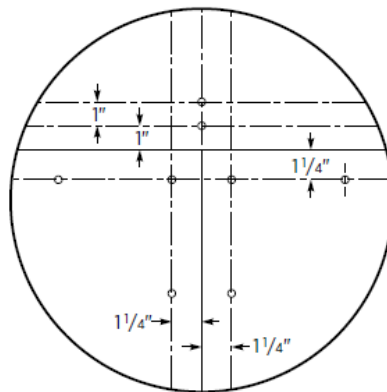


Stacked Panel Layout

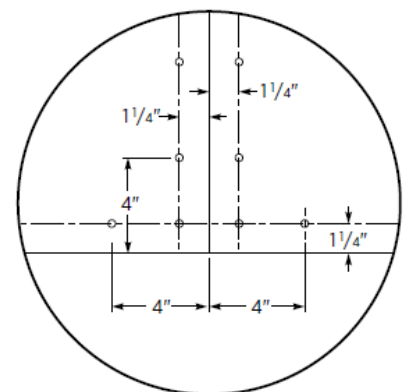
STACKED PANEL LAYOUT



DETAIL A

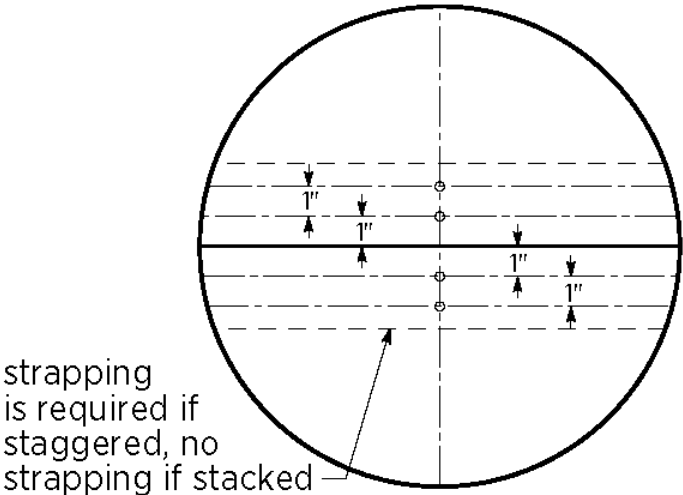


DETAIL B

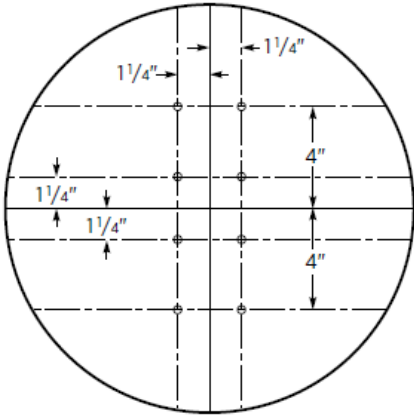


DETAIL C

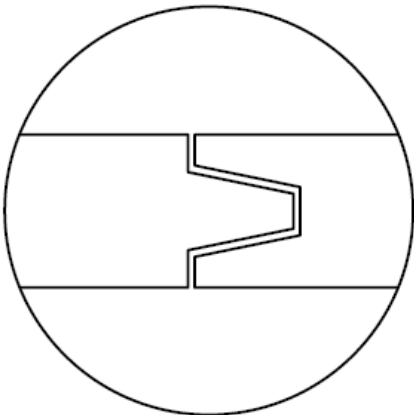
FIGURE 2- SCREW PATTERN FOR COLD-FORMED STEEL FLOOR TRUSSES ([TABLE 5B](#) AND [6B](#)) (CONTINUED)



DETAIL D



DETAIL E
Stacked Pattern



Tongue & Groove

FIGURE 2- SCREW PATTERN FOR COLD-FORMED STEEL FLOOR TRUSSES (TABLE 5B AND 6B) (CONTINUED)

TABLE 7—ANCHORAGE OF STEEL STANDOFF BASE TO USG STRUCTO-CRETE[®] PANEL

ANCHOR TYPE	DISTANCE BETWEEN ANCHORS, d (inches)	NUMBER OF USG STRUCTO-CRETE [®] PANEL LAYERS	NOMINAL TENSION (T) Capacity of Two Anchor Connection ^{1,2} , (lbf)	NOMINAL SHEAR (V) Capacity of Two Anchor Connection ^{1,2} , (lbf)
³ / ₈ -inch-diameter Captive anchor toggle bolt (by others) ³	2	1	1,856	232
		2	(2,200)	430
	4	1	2,016	252
		2	(2,200)	430
	6	1	2,168	271
		2	(2,200)	430
	8	1	(2,200)	291
		2	(2,200)	430
¹ / ₂ -inch-diameter captive anchor toggle bolt (by others) ⁴	2	1	1,896	237
		2	(3,000)	461
	4	1	2,048	256
		2	(3,000)	501
	6	1	2,200	275
		2	(3,000)	540
	8	1	2,352	294
		2	(3,000)	580
¹ / ₄ -inch x 3-inch steel blind rivet (by others) ⁵	2	1	1,272	159
	4	1	1,344	168
	6	1	1,312	164
	8	1	1,336	167

For **SI**: 1 inch=25.4 mm, 1 lbf= 4.45 N.

¹The tabulated nominal tension and shear values have been determined through testing by applying a lateral load to the top of a steel standoff base fastened to one or two layers of USG STRUCTO-CRETE[®] Panel as shown in [Figure 3](#). The panels are installed on support framing at maximum spacing of 24 inches. The design of the steel standoff base is outside the scope of this report and must be determined by registered design professional. Values in parentheses () are governed by the nominal tensile anchor capacity published in the applicable product specification identified below.

²For Allowable Strength Design (ASD), the tabulated values must be divided by a safety factor, Ω , of 4.0. For Load and Resistance Factor Design (LRFD), the tabulated values must be multiplied by a resistance factor, ϕ , of 0.40.

³Captive anchor toggle bolts must comply with Federal Specification FF-588D, Type V and must be composed of a Grade 5 SAE J429

³/₈-inch-diameter hex head bolt threaded to a steel U-shaped wing with the following minimum dimensions:

2.62-inch-long by 0.047-inch-thick.

⁴Captive anchor toggle bolt must comply with Federal Specification FF-588D, Type V and must be composed of a Grade 5 SAE J429

¹/₂-inch-diameter hex head bolt threaded to a steel U-shaped wing with the following minimum dimensions:

3.25-inch-long by 0.062-inch-thick.

⁵Steel blind rivets must comply with IFI-114 Grades 16 or 19.

⁶ $P = V$ and $T = \frac{24P}{3}$, see [Figure 3](#).

⁷Withdrawal capacity tests in accordance with [Figure 3](#) were conducted. A registered design professional must evaluate and design the attachment of panel(s) to support and/or blocking when anchors are installed close to the panel(s) edge. The attachment capacity must exceed the tabulated capacities reported in [Table 7](#). Installation of standoff base at panel edges/corners must be determined by registered design professional.

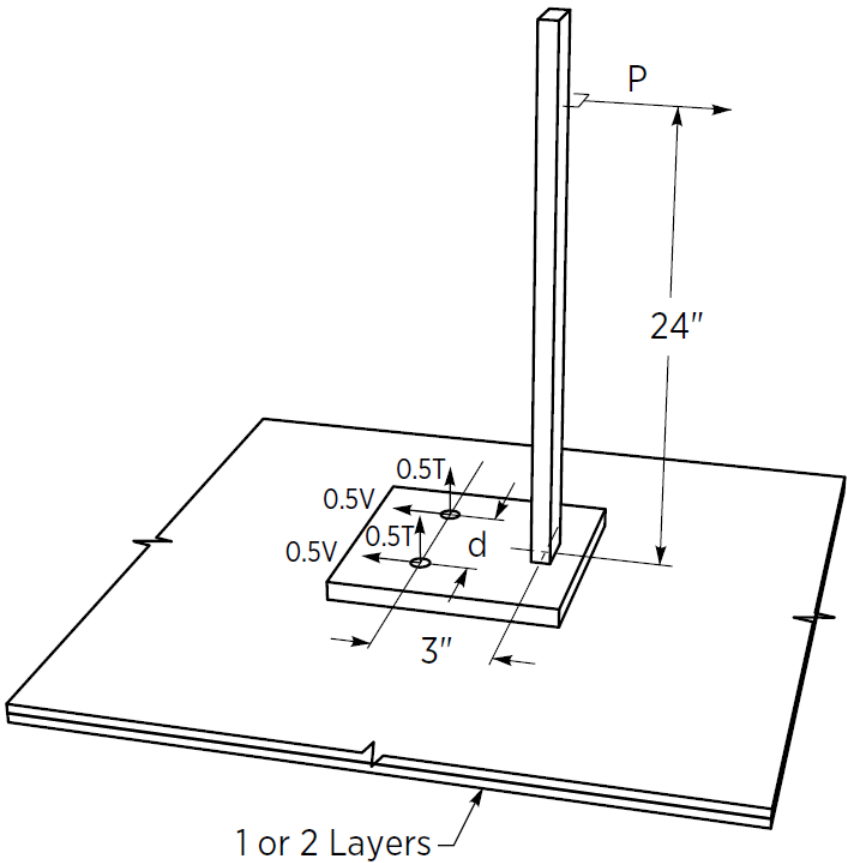


FIGURE 3—STEEL STANDOFF BASE ATTACHMENT TO USG STRUCTO-CRETE®PANEL

TABLE 8—NOMINAL RACKING SHEAR WALL CAPACITY OF USG STRUCTO-CRETE[®] PANELS FASTENED TO COLD FORMED STEEL FRAMING AT 16 INCHES ON CENTER^{1,2,7}

SIDES SHEATHED	STRAP AT SEAM ³	SHEATHING ORIENTATION ^{4,5}	FASTENER SPACING to Framing and Strap ⁶ , inches		NOMINAL LOAD, plf	STIFFNESS, G' lbf/in
			Perimeter	Field		
Single	No	Vertical	8	12	914	6185
Single	No	Vertical	6	12	1320	7416
Single	No	Vertical	4	12	1726	8647
Single	Yes	Horizontal	8	12	984	5535
Single	Yes	Horizontal	6	12	1402	7268
Single	Yes	Horizontal	4	12	1821	9003
Double	Yes	Horizontal	8	12	1901	13287
Double	Yes	Horizontal	6	12	2625	22677
Double	Yes	Horizontal	4	12	3349	32067

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 lbf/in=175 N/m.

¹Framing must be 16 ga. (54 mils) thick by 3.625-inch-deep cold-formed steel C stud spaced 16 inches on center.

²For Allowable Strength Design (ASD), the tabulated values must be divided by a safety factor as determined by registered design professional. For Load and Resistance Factor Design (LRFD), the tabulated load values must be multiplied by a resistance factor as determined by registered design professional. Shear wall assemblies described in [Table 8](#) are limited to Seismic Design Categories A and B.

³Cold-formed steel straps located behind sheathing seam must be 16 ga. (54 mils) thick by 2 inches wide by 48 inches long made from steel having minimum yield strength of 50 ksi.

⁴Vertical orientation denotes that the length of the panel is parallel to the stud framing. The tested shear wall assembly did not include vertical or horizontal sheathing joints.

⁵Horizontal orientation denotes that the length of the panels is perpendicular to the stud framing. The shear wall assembly includes a horizontal sheathing joint and no vertical joints.

⁶Fasteners must be Grabber Construction Products No. 8 by 1⁵/₈-inch Grabber SuperDrive Lox Drive self-drilling screws (item no. CGH8158LG). Fasteners must be 3/₈ inches from panel edges. At panel corners, fasteners must be installed 2 inches from the edges.

⁷Tabulated values are based on racking shear tests conducted in accordance with ASTM E564 of a 96-inch-high by 48-inch-wide wall assembly installed with a tie-down device. The tie-down device must be designed by the registered design professional.

TABLE 9—NOMINAL RACKING SHEAR WALL CAPACITY OF USG STRUCTO-CRETE[®] PANELS FASTENED TO COLD FORMED STEEL FRAMING AT 24 INCHES ON CENTER^{1,2,7}

SIDES SHEATHED	STRAP AT SEAM ³	SHEATHING ORIENTATION ^{4,5}	FASTENER SPACING to Framing and Strap ⁶ , inches		NOMINAL LOAD, plf	STIFFNESS, G' lbf/in
			Perimeter	Field		
Single	No	Vertical	8	12	819	5882
Single	No	Vertical	6	12	1201	7736
Single	No	Vertical	4	12	1584	9590
Single	Yes	Horizontal	8	12	906	5117
Single	Yes	Horizontal	6	12	1292	7384
Single	Yes	Horizontal	4	12	1679	9590
Double	Yes	Horizontal	8	12	1730	11684
Double	Yes	Horizontal	6	12	2432	19945
Double	Yes	Horizontal	4	12	3135	28207

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 lbf/in=175 N/m.

¹Framing must be 16 ga. (54 mils) thick by 3.625-inch-deep cold-formed steel C stud spaced 24 inches on center.

²For Allowable Strength Design (ASD), the tabulated nominal values must be divided by a safety factor as determined by registered design professional. For Load and Resistance Factor Design (LRFD), the tabulated load values must be multiplied by a resistance factor as determined by registered design professional. Shear wall assemblies described in [Table 9](#) are limited to Seismic Design Categories A and B.

³Cold-formed steel straps located behind sheathing seam must be 16 ga. (54 mils) thick by 2 inches wide by 48 inches long made from steel having minimum yield strength of 50 ksi.

⁴Vertical orientation denotes that the length of the panel is parallel to the stud framing. The tested shear wall assembly did not include any vertical or horizontal sheathing joints.

⁵Horizontal orientation denotes that the length of the panels is perpendicular to the stud framing. The shear wall assembly includes a horizontal sheathing joint and no vertical joints.

⁶Fasteners must be Grabber Construction Products No. 8 by 1⁵/₈-inch Grabber SuperDrive Lox Drive self-drilling screws (item no. CGH8158LG). Fasteners must be 3/₈ inches from panel edges. At panel corners, fasteners must be installed 2 inches from the edges.

⁷Tabulated values are based on racking shear tests conducted in accordance with ASTM E564 of a 96-inch-high by 48-inch-wide wall assembly installed with a tie-down device. The tie down device must be designed by registered design professional.

**TABLE 10—NOMINAL UNIFORM TRANSVERSE LOADS FOR
USG STRUCTO-CRETE[®] BRAND STRUCTURAL XTRA STRENGTH PANELS^{1,2,3,4}**

SUPPORT FRAMING SPACING, inches	NOMINAL UNIFORM LOAD, psf
12	2083
16	1172

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

¹Values based on panel flexural strength and stiffness properties. The tabulated values for Allowable Strength Design (ASD) must be determined by dividing the nominal values by a safety factor, Ω , of 3.0. For Load and Resistance Factor Design (LRFD), the nominal tabulated values must be multiplied by a resistance factor, ϕ , of 0.50.

²Minimum of three framing spans per panel.

³Framing members supporting panels must be designed to resist applicable forces. Framing members and corresponding fasteners listed in [Table 4B](#) may be used.

⁴Tabulated values apply to USG Structo-Crete[®] Brand Structural Xtra Strength Panels (aka USG Structural Panel Concrete Foundation Wall XD).

**TABLE 11—NOMINAL RACKING SHEAR WALL CAPACITY OF USG STRUCTO-CRETE[®] BRAND STRUCTURAL XTRA STRENGTH
PANELS FASTENED TO COLD FORMED STEEL FRAMING AT 16 INCHES ON CENTER^{1,2,3,5}**

FASTENER SPACING AT FRAMING AND STRAP ⁴ , inches		NOMINAL LOAD, plf	STIFFNESS, G' lbf/in
Perimeter	Field		
8	12	914	6185
6	12	1320	7416
4	12	1726	8647

For SI: 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 lbf/in = 175 N/m.

¹Framing must be 16 ga. (54 mils) thick by 3.625-inch-deep cold-formed steel C stud spaced 16 inches on center.

²For Allowable Strength Design (ASD), the tabulated values must be divided by a safety factor as determined by registered design professional.

For Load and Resistance Factor Design (LRFD), the tabulated load values must be multiplied by a resistance factor as determined by registered design professional. Shear wall assemblies described in [Table 11](#) are limited to Seismic Design Categories A and B.

³Wall panels are only to be mounted in the vertical orientation, with square edges butting up against each other and adjacent edges bearing a minimum of $\frac{3}{4}$ inch (19 mm) on each of the studs. Install the panels such that the printed logo and code information face the framing. Tabulated values are for shear wall assemblies with one side sheathed and no straps at seams.

⁴Fasteners must be as described in [Table 4B](#) for 16 gage cold-formed steel. Fasteners must be spaced from panel edges as indicated in [Table 4B](#) for 16 gage cold-formed steel framing member. At panel corners, fasteners must be installed 2 inches from the edges.

⁵Tabulated values are based on racking shear tests conducted in accordance with ASTM E564 of a 96-inch-high by 48-inch-wide wall assembly installed with a tie-down device. The tie down device must be designed by registered design professional.

**TABLE 12—TESTED PEEL ADHESION OF VARIOUS WATERPROOFING MEMBRANES BONDED TO USG STRUCTO-CRETE[®] BRAND
STRUCTURAL XTRA STRENGTH PANELS (aka USG STRUCTURAL PANEL CONCRETE FOUNDATION WALL XD)**

MEMBRANE	COATING/ADHESIVE ³	AVERAGE PEEL ADHESION (lbf/in)
Delta [®] Thene 40	Delta Primer	12.9 ¹
	(no primer)	7.8 ²
Blueskin [®] WB25	Henry Blueskin Adhesive/Primer	8.0 ¹
	(no primer)	3.5 ²
Grace VYCOR [®] Plus	Valspar Concrete Bonding Primer	6.1 ¹
	(no primer)	5.3 ²

For SI: 1 lbf/in = 175.1 N/m

¹Peel adhesion tested in accordance with ASTM D3330 Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape.

²Peel adhesive values for the various membrane products have been provided by manufacturers.

³Coatings and adhesives are intended to enhance the adhesion of the various membrane products to the USG STRUCTO-CRETE[®] Panel Foundation Wall substrate.

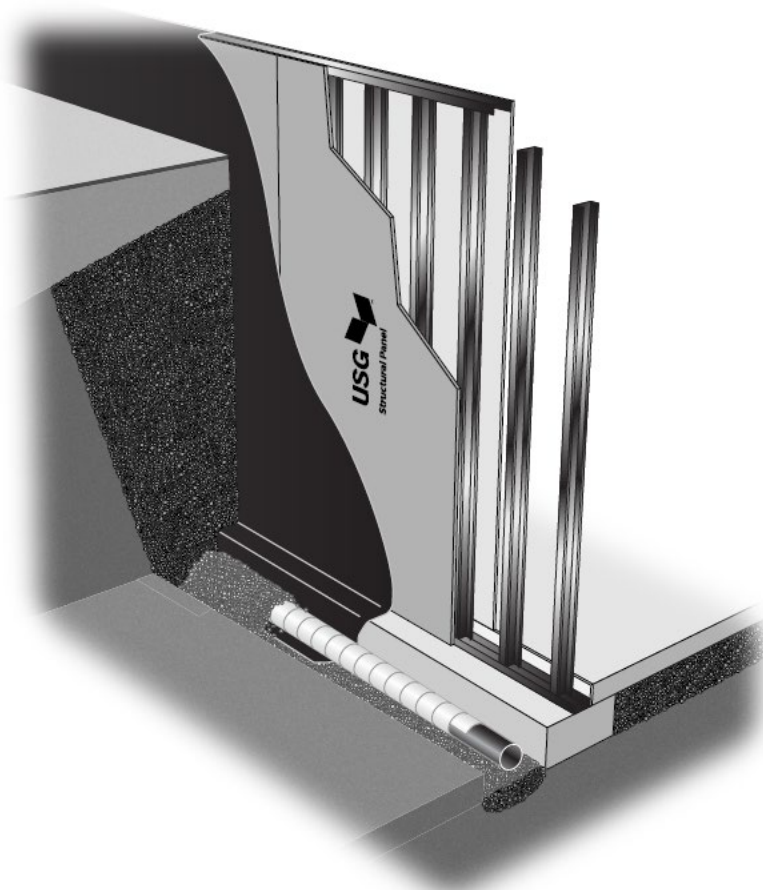


FIGURE 4—USG STRUCTO-CRETE[®] BRAND STRUCTURAL XTRA STRENGTH PANELS TYPICAL INSTALLATION

ICC-ES Evaluation Report

ESR-1792 City of LA Supplement

Reissued January 2026

This report is subject to renewal January 2027.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 12 13—Cementitious Reinforced Panels

REPORT HOLDER:

USG CORPORATION

EVALUATION SUBJECT:

USG STRUCTURAL PANELS PRODUCT DESIGNATIONS:

- **USG STRUCTO-CRETE® BRAND STRUCTURAL PANELS** (aka **USG STRUCTURAL PANEL CONCRETE SUBFLOOR**)
- **USG STRUCTO-CRETE® BRAND STRUCTURAL ROOF DECK PANELS** (aka **USG STRUCTURAL PANEL CONCRETE ROOF DECK**)
- **USG STRUCTO-CRETE® BRAND STRUCTURAL XTRA STRENGTH PANELS** (aka **USG STRUCTURAL PANEL CONCRETE FOUNDATION WALL XD**)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the USG Structural Panels, described in ICC-ES evaluation report [ESR-1792](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 City of Los Angeles Building Code ([LABC](#))
- 2020 City of Los Angeles Residential Code ([LARC](#))

2.0 CONCLUSIONS

The USG Structural Panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1792](#), comply with the LABC and the LARC and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The USG Structural Panels described in this evaluation report must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-1792](#).
- The design, installation, conditions of use and identification of the USG Structural Panels are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-1792](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued January 2026.

ICC-ES Evaluation Report

ESR-1792 CA Supplement

w/ DSA and OSHPD

Reissued January 2026

This report is subject to renewal January 2027.

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- **USG STRUCTO-CRETE® BRAND STRUCTURAL ROOF DECK PANELS** (aka **USG STRUCTURAL PANEL CONCRETE ROOF DECK**)
- **USG STRUCTO-CRETE® BRAND STRUCTURAL XTRA STRENGTH PANELS** (aka **USG STRUCTURAL PANEL CONCRETE FOUNDATION WALL XD**)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the USG Structural Panels, described in ICC-ES evaluation report [ESR-1792](#), have also been evaluated for the codes noted below.

Applicable code editions:

- 2022 *California Building Code* (CBC)

For evaluation of applicable Chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The USG Structural Panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1792](#), comply with CBC Section 104.11, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report, and the additional design and inspection requirements of the CBC Chapter 16 and Section 1705.1.1.

2.1.1 OSHPD: The USG Structural Panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1792](#), comply with CBC amended Section 104.11, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report, and the additional requirements in Sections 2.1.1.1 and 2.1.1.2 of this supplement:

2.1.1.1 Conditions of Use: Cold-formed steel framing must comply with the manufacturing tolerances specified in Section A5.4 of AISI S240-20, which is referenced in Section 2211.1 [OSHPD 1R, 2 & 5] or Section 2211A.1 [OSHPD 1 & 4] of the CBC, as applicable.

2.1.1.2 Special Inspection Requirements: Special inspection shall be required in accordance with Section 1705.1.1 [OSHPD 1R, 2 & 5] or Section 1705A.1.1 [OSHPD 1 & 4] of the CBC, as applicable.

2.1.2 DSA: The USG Structural Panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1792](#), comply with CBC amended Section 104.11, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report, and the additional requirements in Sections 2.1.2.1 to 2.1.2.2 of this supplement:

2.1.2.1 Conditions of Use: Cold-formed steel framing must comply with the manufacturing tolerances specified in Section A5.4 of AISI S240-20, which is referenced in Section 2211.1 [DSA SS/CC] or Section 2211A.1 [DSA-SS] of the CBC, as applicable.

2.1.2.2 Special Inspection Requirements: Special inspection shall be required in accordance with Section 1705A.1.1 [DSA-SS & SS/CC] of the CBC.

2.2 CRC:

The USG Structural Panels, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1792](#), comply with CRC Section R301.1.3, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report, and the additional design and inspection requirements of the CBC Chapter 16 and Section 1705.1.1.

This supplement expires concurrently with the evaluation report, reissued January 2026.



USG STRUCTO-CRETE® BRAND STRUCTURAL ROOF DECK PANELS

A concrete roof deck that can be combined with other noncombustible materials to create 1- and 2-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 active ASTM standard E136 for use in all types of noncombustible construction
- Made in the USA with domestic and imported materials

DESCRIPTION

USG STRUCTO-CRETE® Brand Structural Roof Deck Panels, mechanically fasten 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 STRUCTO-CRETE® Roof Deck Panels. For retrofit or renovation projects, STRUCTO-CRETE® Roof Deck Panels can also be installed on wood-joists, trusses or bar joists. Refer to *3/4" STRUCTO-CRETE® Panels Recommended Fasteners* (SCP297586) for details.

STRUCTO-CRETE® Roof Deck Panels 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.

STRUCTO-CRETE® Roof Deck Panels 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 STRUCTO-CRETE® Roof Deck Panels requires 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.

LIMITATIONS

- STRUCTO-CRETE® Roof Deck Panels are not intended to be left in service exposed in an exterior location.
- The panels can be supported by framing spaced up to 48 in. (1219 mm) o.c.



SYSTEM PERFORMANCE

Description	Reference
FM Approved	Complies with requirements of FM 4472
Meets FM Class 1	
Code Report	ICC-ES Evaluation Report ESR-1792
Ultimate Uniform Load ^a	150psf (7.2kPa) @ 48 in. o.c. (1220mm). See Table
Shear Diaphragm Ratings	1641plf ^b (23.9kN/m)
UL 1-, 1.5-, 2-Hour Fire Resistance Designs	P561, P562, P573
UL Roofing System, Uplift Resistance	TG1K.R25352

(a) On steel framing.

(b) Joists spaced 48 in. (1219.2mm) o.c. and fasteners spaced 4 in. (102mm) o.c. at the perimeter and 12 in. (305mm) o.c. in field, fully blocked. See the [ICC-ES Evaluation Report ESR-1792](#).

WARNING

STRUCTO-CRETE® Roof Deck Panels should not be left in service without an appropriate roof, or weather-resistive membrane covering.

INSTALLATION

To perform in the expected manner, STRUCTO-CRETE® Roof Deck Panels must be installed according to USG specifications, using only the listed materials and components. For a complete set of specifications, email 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 STRUCTO-CRETE® Roof Deck Panels on roof framing. A pallet of STRUCTO-CRETE® Roof Deck Panels 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 *STRUCTO-CRETE® Roof Deck Panels Installation Guide* (SCP347208) for additional information.

RECOMMENDED FASTENERS

Refer to *3/4" STRUCTO-CRETE® Panels Recommended Fasteners* (SCP297586) for specific fastener recommendations for the various types of framing used for installing STRUCTO-CRETE® Roof Deck Panels. 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 [ICC-ES Evaluation Report ESR-1792](#), 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.

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.

TRAFFIC PROTECTION

Place sheathing materials (i.e. additional layer of STRUCTO-CRETE® Roof Deck Panels or plywood) on the roof in high traffic areas to protect newly installed STRUCTO-CRETE® Roof Deck Panels. See *STRUCTO-CRETE® Roof Deck Panels Installation Guide* (SCP347208) for additional information.

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 STRUCTO-CRETE® Roof Deck Panels 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 1.36 mm) 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 *STRUCTO-CRETE® Roof Deck Panels Installation Guide* (SCP347208) 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 STRUCTO-CRETE® Roof Deck Panels, 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. STRUCTO-CRETE® Roof Deck Panels are packaged in 20-piece units.

Availability: STRUCTO-CRETE® Roof Deck Panels are sold through any USG distributor. Email usgstructural@usg.com for information on availability and a dealer in your area.

Storage: STRUCTO-CRETE® Roof Deck Panels 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 STRUCTO-CRETE® Roof Deck Panels 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: STRUCTO-CRETE® Roof Deck Panels 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 STRUCTO-CRETE® Roof Deck Panels 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 *STRUCTO-CRETE® Roof Deck Panels Installation Guide* (SCP347208) for additional information.

SYSTEM PERFORMANCE

TEST DATA

Physical and Mechanical Properties	(AC 318 – Min/Max Values)	Test Values Standard (Metric)
Concentrated load	ASTM E661 (>550 lb, 0.108 in)	804 lb (3.58 kN) static 0.066 in. (1.7 mm) max. deflection @ 200 lb (0.89 kN)
Fastener lateral resistance ^A	ASTM D1761, Sec. 10.2 (dry >210 lbf, wet >160 lbf)	776 lbf (3.45 kN) dry 800 lbf (3.56 kN) wet
Density ^B	ASTM C1185	78.6 lb/ft ³ (1,259 kg/m ³)
Weight at 3/4 in. (19 mm) thickness	ASTM D1037	5.3 lb/ft ² (26 kg/m ²)
pH value	ASTM D1293	10.5
Linear variation with change in moisture (25% to 90% relative humidity)	ASTM C1185, Sec. 8 (<0.10%)	0.06%
Thickness swell	ASTM D1037, B (≤3.0%)	0.04%
Freeze / thaw resistance	ASTM C1185 (>75%)	100% properties retention
Mold resistance	ASTM D3273 (10)	10 (No Growth)
Water absorption ^C	ASTM C1185, Sec. 5.2.3.1 (<15%)	9.0%
Noncombustibility	ASTM E136 CAN/ULC-S114	Passed Passed
Total Organic Carbon ^E	ASTM E136	<1%
Surface-burning characteristics (flame spread/smoke developed)	ASTM E84 (0/0) CAN/ULC-S102 (0/0)	0/0 0/0
Long-term durability	ASTM C1185, Sec. 13 (>75%)	100% properties retention
Water durability	ASTM C1185, Sec. 5.2.4 (>70%)	83% properties retention
Termite resistance	AWPA Standard E1-13	No Damage
Low VOC emissions	CDPH/EHLB/Standard Method V1.1-2010 ^D	Compliant

(A) Fastener lateral resistance measured with #8, 1-5/8 in (41 mm) Hi-Low screw.

(B) Density measured at equilibrium conditioning per Section 5.2.3.1., 28 days after manufacturing.

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

(D) Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (Emission testing method for CA Specification 01350).

(E) *Per section X1.5.1.1 Commentary of ASTM E136, any building materials exceeding 3% combustible portion in noncombustible material is very likely to fail noncombustibility test.*

LOAD TABLE

Refer to the below load tables from the [ICC-ES Evaluation Report ESR-1792](#) for the load capacities of STRUCTO-CRETE® Roof Deck Panels.

The uplift capacities represent the attachment of STRUCTO-CRETE® Roof Deck Panels 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 additional information, see the [ICC-ES Evaluation Report ESR-1792](#) or for technical assistance, email usgstructural@usg.com. **A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.**

This table represents the nominal and allowable Uniform Gravity Loads³ for USG STRUCTO-CRETE® Brand Structural Panels used as floor sheathing or USG STRUCTO-CRETE® Brand Structural Roof Deck Panels used as flooring or roof sheathing with support framing spaced up to 24" on center.

Support Framing Spaced at 24" on center	Number of Span(s) over Support Framing ^{1,2}		
	1-Span	2-Spans	3-Spans
Nominal Uniform Load, PSF	676	429	451
Allowable Uniform Load, PSF	225	143	150
Displacement Limit, inches	Allowable Load, PSF	Allowable Load, PSF	Allowable Load, PSF
L/180	225	143	150
L/240	225	143	150
L/360	204	143	150
L/480	153	143	150
L/600	123	143	150
L/720	102	143	136
Support Framing Spaced at 19.2" on Center	Number of Span(s) over Support Framing ^{1,2}		
	1-Span	2-Spans	3-Spans
Nominal Uniform Load, PSF	1020	656	698
Allowable Uniform Load, PSF	340	219	233
Displacement Limit, inches	Allowable Load, PSF	Allowable Load, PSF	Allowable Load, PSF
L/180	340	219	233
L/240	340	219	233
L/360	340	219	233
L/480	274	219	233
L/600	219	219	233
L/720	183	219	233
Support Framing Spaced at 16" on Center	Number of Span(s) over Support Framing ^{1,2}		
	1-Span	2-Spans	3-Spans
Nominal Uniform Load, PSF	1400	928	998
Allowable Uniform Load, PSF	467	309	333
Displacement Limit, inches	Allowable Load, PSF	Allowable Load, PSF	Allowable Load, PSF
L/180	467	309	333
L/240	467	309	333
L/360	467	309	333
L/480	441	309	333
L/600	353	309	333
L/720	294	309	333

LOAD TABLE CONT.

Support Framing Spaced at 12" on Center	Number of Span(s) over Support Framing ^{1,2}		
	1-Span	2-Spans	3-Spans
Nominal Uniform Load, PSF	2304	1606	1758
Allowable Uniform Load, PSF	768	535	586
Displacement Limit, inches	Allowable Load, PSF	Allowable Load, PSF	Allowable Load, PSF
L/180	768	535	586
L/240	768	535	586
L/360	768	535	586
L/480	768	535	586
L/600	744	535	586
L/720	620	535	586

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

- These loads represent the load-carrying capacity of the panels spanning between the framing members. The support span conditions of the structural panels must be determined by a registered design professional. This table does not consider the influence of joist deflection.
- Values based on panel flexural strength and stiffness properties. The tabulated values for Allowable Strength Design (ASD) are on the nominal values divided by a safety factor, Ω , of 3.0. For Load and Resistance Factor Design (LRFD), the nominal tabulated values must be multiplied by a resistance factor, ϕ , of 0.50. The design load at deflection limit apply to both ASD and LRFD. The L in deflection limit is the support framing spacing in inches.
- Maximum fastener spacing for gravity loads is 12-in. o.c.

This table represents the nominal Uniform Gravity Loads² and uplift loads for USG STRUCTO-CRETE® Brand Structural Roof Deck Panels used as roof sheathing³.

Support Framing Spacing, inches	Nominal Uniform Gravity Load, PSF	Nominal Uniform Uplift Load, PDF ¹ Fastener Spacing at Panel edges / in the Field, inches			
		8/12	8/8	6/6	4/4
12	See Load Table above ⁴	570	855	1,140	1,710
16	See Load Table above ⁴	428	641	855	1,171
19.2	See Load Table above ⁴	356	534	713	875
24	See Load Table above ⁴	285	428	475	475
32	Nominal Uniform Load, PSF 255	214	255	255	255
	L/240 Deflection, PSF 145				
	L/360 Deflection, PSF 155				
48	Nominal Uniform Load, PSF 231	143	180	180	180
	L/240 Deflection, PSF 56				
	L/360 Deflection, PSF 40				

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

- Values based on panel flexural properties, fastener pull-through and fastener pull-out from the supporting steel complying with Section 3.2 of this report⁴ and having a minimum thickness of 54 mils. For Allowable Strength Design (ASD), the nominal values divided by a safety factor, Ω , of 3.0. For Load and Resistance Factor Design (LRFD), the nominal tabulated values must be multiplied by a resistance factor, ϕ , of 0.50. The design load at deflection limit apply to both ASD and LRFD.
- Maximum fastener spacing for gravity loads is 12-in. o.c.
- This table applies to the USG STRUCTO-CRETE® Brand Structural Roof Deck Panels.
- Reference [ICC-ES Evaluation Report ESR-1792](#)

SUBMITTAL APPROVALS

Job Name	
Contractor	Date

Made in the USA with domestic and imported materials.

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!

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protection equipment. Read applicable SDSs and literature before specification and installation.



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ICC-ES Evaluation Report

ESR-1697

Reissued November 2025

This report also contains:

Revised May 2026

- [CA Supplement](#)

Subject to renewal November 2027

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DIVISION: 07 00 00— THERMAL AND MOISTURE PROTECTION Section: 07 30 05— Roofing Felt and Underlayment	REPORT HOLDER: POLYGLASS USA, INC. ADDITIONAL LISTEES: MULE-HIDE PRODUCTS CO., INC.	EVALUATION SUBJECT: POLYSTICK IR-Xe, TU, TU PLUS, TU P, TU MAX, DUAL PRO, TILE PRO, MTS PLUS, PX HT, MU- X, XFR AND ABC SUPPLY SELF- ADHERED ICE & WATER PROTECTION ROOF UNDERLAYMENTS AND POLYSTICK P, POLYSTICK MTS, POLYSTICK MX, POLYSTICK PX HT AND ABC SUPPLY SELF- ADHERED ICE & WATER PROTECTION ICE BARRIERS	
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1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2024, 2021, 2018, 2015, 2012, 2009 and 2006 [International Building Code® \(IBC\)](#)
- 2024, 2021, 2018, 2015, 2012, 2009 and 2006 [International Residential Code® \(IRC\)](#)

Properties evaluated:

- Physical properties
- Water resistance

1.2 Evaluation to the following green standards:

- 2020, 2015, 2012 and 2008 [ICC 700 National Green Building Standard™](#) (ICC 700-2020, ICC 700-2015, ICC 700-2012, and ICC 700-2008)

Attributes verified:

- See Section 3.1

2.0 USES

2.1 Roof Underlayment:

Polystick IR-Xe, TU, TU Plus, TU P, TU Max, MTS Plus, MU-X, XFR, PX HT, Dual Pro, Tile Pro and ABC Supply Self-Adhered Ice & Water Protection are self-adhering membranes used as alternatives to ASTM D226, Type I and Type II, roofing underlayment specified in IBC Chapter 15 and IRC Chapter 9 IRC.

2.2 Ice Barrier:

Polystick P and Polystick MTS are limited to use as alternatives to the ice barrier specified in IBC Chapter 15 and IRC Chapter 9. Polystick IR-Xe, TU, TU Plus, TU P, TU Max, MTS Plus, MU-X, MX, XFR, PX HT, Dual Pro, Tile Pro and ABC Supply Self-Adhered Ice & Water Protection roof underlayments may also be used as alternatives to the ice barrier specified in IBC Chapter 15 and IRC Chapter 9.

3.0 DESCRIPTION

3.1 General:

The roof underlayments and ice barriers are self-adhering, modified asphalt membranes constructed as described in Sections 3.2 through 3.16 of this report. These products are also specified for the additional listee as described in [Table 1](#).

The attributes of the Polystick membranes have been verified as conforming to the requirements of (i) ICC 700-2020 Sections 602.1.13, 11.602.1.13, 1202.9 and 13.104.17; (ii) ICC 700-2015 Section 602.1.13, 11.602.1.13 and 12.6.602.1.13; (iii) ICC 700-2012 Sections 602.1.13, 11.602.1.13 and 12.5.602.1.14; and (iv) ICC 700-2008 Section 602.10 for ice barriers. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.2 Polystick IR-Xe:

Polystick IR-Xe is an APP-modified-asphalt, fiberglass-mat-reinforced membrane having a fine granular mineral surface. The membrane has a nominal weight of 27 pounds per 100 square feet (1.3 kg/m²) and is supplied in various lengths and widths.

3.3 Polystick P:

Polystick P is an SBS-modified-asphalt, unreinforced membrane having a polyethylene film surface. The membrane has a nominal weight of 31 pounds per 100 square feet (1.5 kg/m²) and is supplied in rolls of various lengths and widths.

3.4 Polystick TU:

Polystick TU is an APP-modified-asphalt, fiberglass-mat-reinforced membrane having a coarse granular mineral surface. The membrane has a nominal weight of 64 pounds per 100 square feet (3.1 kg/m²) and is supplied in rolls of various lengths and widths.

3.5 Polystick TU Plus:

Polystick TU Plus is an APP-modified-asphalt, fiberglass-mat-reinforced membrane having a polyester fabric surface. The membrane has a nominal weight of 31 pounds per 100 square feet (1.5 kg/m²) and is supplied in rolls of various lengths and widths.

3.6 Polystick MTS:

Polystick MTS is an APP-modified-asphalt, fiberglass-mat-reinforced membrane having a polymer film surface. The membrane has a nominal weight of 33 pounds per 100 square feet (1.6 kg/m²) and is supplied in rolls of various lengths and widths.

3.7 Polystick TU P:

Polystick TU P is an APP-modified-asphalt, glass-fiber, and polyester reinforced membrane with a granular surface. The membrane has a nominal weight of 80 pounds per 100 square feet (3.9 kg/m²) and is supplied in rolls of various lengths and widths.

3.8 Polystick TU Max:

Polystick TU Max is an APP-modified-asphalt, polyester reinforced membrane self-adhering membrane. The membrane has a nominal weight of 25 lbs per 100 square feet (1.2 kg/m²) and is supplied in rolls of various lengths and widths.

3.9 Polystick Dual Pro:

Polystick Dual Pro is an APP- modified-asphalt, glass fiber and polyester reinforced self-adhering membrane. The membrane has a nominal weight of 31 pounds per 100 square feet (1.5 kg/m²) and is supplied in rolls of various lengths and widths.

3.10 Polystick Tile Pro:

Polystick Tile Pro is an APP-modified-asphalt, glass fiber and polyester reinforced self-adhering membrane. The membrane has a nominal weight of 33 pounds per 100 square feet (1.6 kg/m²) and is supplied in rolls of various lengths and widths.

3.11 Polystick MTS Plus:

Polystick MTS Plus is an SBS-modified-asphalt, fiberglass reinforced self-adhering membrane having a polymer film surface. The membrane has a nominal weight of 29 pounds per 100 square feet (1.4 kg/m²) and is supplied in rolls of various lengths and widths.

3.12 Polystick MU-X:

Polystick MU-X is an SBS-modified-asphalt, fiberglass reinforced self-adhering membrane with a polypropylene film surface. The membrane has a nominal weight of 31 pounds per 100 square feet (1.5 kg/m²) and is supplied in rolls of various lengths and widths.

3.13 Polystick MX:

Polystick MX is an SBS-modified-asphalt, fiberglass reinforced self-adhering membrane. The membrane has a nominal weight of 34 pounds per 100 square feet (1.6 kg/m²) and is supplied in rolls of various lengths and widths.

3.14 Polystick XFR:

Polystick XFR is an SBS-modified-asphalt, fiberglass reinforced self-adhering membrane with a polymer film surface. The membrane has a nominal weight of 43 pounds per 100 square feet (2.1 kg/m²) and is supplied in rolls of various lengths and widths.

3.15 Polystick PX HT:

Polystick XPX HT is an SBS-modified-asphalt, fiberglass reinforced self-adhering membrane with a polyolefin multi-layer film surface. The membrane has a nominal weight of 20 pounds per 100 square feet (0.98 kg/m²) and is supplied in rolls of various lengths and widths.

3.16 ABC Supply Self-Adhered Ice & Water Protection:

ABC Supply Self-Adhered Ice & Water Protection is an APP-modified-asphalt, fiberglass-mat-reinforced membrane having a fine granular mineral surface. The membrane has a nominal weight of 27 pounds per 100 square feet (1.3 kg/m²) and is supplied in various lengths and widths.

4.0 INSTALLATION

4.1 General:

Installation of the Polystick roof underlayments must comply with the applicable code, this report and the manufacturer's published installation instructions. The installation instructions must be available at the jobsite at all times during installation.

Prior to application of the underlayment, the deck surface must be free of frost, dust and dirt, loose fasteners, and other protrusions. Damaged sheathing must be replaced. Installation is limited to plywood substrates. The underlayment must be applied only when the ambient air and substrate temperatures are above 40°F (4.4°C).

The underlayments are cut into workable lengths and rerolled prior to placement. The release film is peeled back approximately 1 to 2 feet (305 to 610 mm) and the membrane aligned with the lower edge of the roof and set in place. The remainder of the underlayment is applied directly to the roof deck by removing the film and firmly pressing the membrane into place. The end seams must be overlapped a minimum of 6 inches (152 mm). Edge seams must be overlapped 3 inches (76 mm) or as indicated on product surface. The subsequent courses of underlayment are applied parallel to the eave, from the lower edge of the roof upwards in a shingle-lap manner. For slopes greater than 4:12 (33.33 percent), the membrane may be laid in a strapping fashion (length of roll parallel to slope).

If the underlayment becomes misaligned, the roll is to be cut and restarted. The underlayment is pressed firmly into place, from the center to edge. After application, the underlayment must be inspected, and any defects repaired. "Fish mouths" are slit, pressed flat, and covered with a patch of membrane of sufficient width and length to overlap each side and end of the slit a minimum of 3 inches (76 mm). Membranes should be installed in a manner that water will run over or parallel to all laps.

Installation of the roof covering can proceed immediately following application of the underlayment. The underlayment should be covered by an approved roof covering as soon as possible. For reroofing application, the same procedures apply after removal of the existing roof covering and roofing felts to expose the roof deck.

4.2 Ice Barrier:

When used as an ice barrier, the Polystick IR-Xe, P, TU, TU Plus, TU P, MTS, TU Max, MTS Plus, MU-X, MX, PX HT, Dual Pro, Tile Pro, XFR and ABC Supply Self-Adhered Ice & Water Protection membranes must be installed as prescribed in IBC Chapter 15 and IRC Chapter 9 where an ice barrier is required. The membranes must be installed in sufficient courses to extend up the roof for a minimum distance of 24 inches (610 mm) inside the exterior wall line of the building. When used as roof underlayment in the field of the roof, the underlayment products recognized in this report must overlap the ice barrier.

4.3 Roof Underlayment:

Polystick IR-Xe, TU, TU Plus, TU P, TU Max, MTS Plus, MU-X, XFR, PX HT, Dual Pro, Tile Pro and ABC Supply Self-Adhered Ice & Water Protection underlayments must be installed as prescribed in IBC Chapter 15 or IRC Chapter 9 where an ASTM D226, Type I or Type II underlayment is required.

4.4 Flashing:

Flashing must be in accordance with the applicable code. Flashing around protrusions must be over the lower course of the underlayment and under the upper course of the underlayment, to prevent water backup. When used, metal drip edges must be installed beneath the underlayment at the eaves and over the underlayment at rakes.

5.0 CONDITIONS OF USE:

The Polystick roof underlayments and ice barriers described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1** Installation must comply with the applicable code, this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's instructions, this report governs.
- 5.2** Recognition in this evaluation report is limited to installation on plywood substrates.
- 5.3** Installation is limited to roofs with a slope of 2:12 (16.67%) or greater.
- 5.4** Installation is limited to use with roof coverings that do not involve hot asphalt or coal-tar pitch.
- 5.5** Installation is limited to use with roof coverings that are mechanically fastened through the underlayment to the sheathing or rafters.
- 5.6** Installation is limited to roofs with ventilated attic spaces in accordance with the requirements of the applicable code.
- 5.7** The underlayments and ice barriers must be installed only when the ambient air and substrate temperatures are above 40°F (4.4°C).
- 5.8** Installation is limited to structures located in areas where nonclassified roof coverings are permitted or as a component of a classified roofing assembly when specifically recognized as such in a listing approved by the code official.
- 5.9** The membranes are produced in Fernley, Nevada, Hazleton, Pennsylvania, Winter Haven, Florida, and Waco, Texas under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1** Data in accordance with the [ICC-ES Acceptance Criteria for Self-Adhered Roof Underlayments for Use as Ice Barriers \(AC48\)](#), dated February 2012 (editorially revised April 2024). Specifically, data in accordance with Section 3.1.1 of AC48 (ASTM D1970) for Polystick IR-Xe, Polystick TU P, Polystick MU-X, Polystick MX, Polystick PX HT, Polystick XFR and ABC Supply Self-Adhered Ice & Water Protection.
- 6.2** Data in accordance with the [ICC-ES Acceptance Criteria for Self-Adhered Roof Underlayments for Use as Ice Barriers \(AC48\)](#), dated February 2012 (editorially revised April 2024). Specifically, data in accordance with Section 3.1.2 of AC48 for Polystick P, Polystick TU, Polystick TU Plus, Polystick MTS, Polystick TU

Max, Polystick MTS Plus, Polystick PX HT, Polystick Dual Pro, Polystick Tile Pro and ABC Supply Self-Adhered Ice & Water Protection.

- 6.3 Data in accordance with the [ICC-ES Acceptance Criteria for Roof Underlayments \(AC188\)](#), dated February 2023 (editorially revised April 2024) for Polystick IR-Xe, Polystick TU, Polystick TU Plus, Polystick TU P, Polystick TU Max, Polystick Dual Pro, Polystick Tile Pro, Polystick MTS Plus, Polystick MU-X, Polystick XFR, Polystick PX HT and ABC Supply Self-Adhered Ice & Water Protection.

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-1697) along with the name, registered trademark, or registered logo of the report holder and listee must be included in the product label.
- 7.2 The Polystick roof underlayments and ice barriers described in this report are identified by a label, on the container of each roll of membrane, bearing the Polyglass U.S.A, Inc., name, the product name and the manufacturing location, and the evaluation report number (ESR-1697).
- 7.3 The report holder's contact information is the following:

POLYGLASS USA, INC.
1111 WEST NEWPORT CENTER DRIVE
DEERFIELD BEACH, FLORIDA 33442
(800) 894-4563
www.polyglass.us

- 7.4 The Additional Listee's contact information is the following:

MULE-HIDE PRODUCTS CO., INC.
1195 PRINCE HALL DRIVE
BELOIT, WISCONSIN 53511
(800) 786-1492
www.mulehide.com/en-us/

TABLE 1 – PRODUCT NAME CROSS-REFERENCE FOR REPORT HOLDER AND ADDITIONAL LISTEE

COMPANY	POLYGLASS USA, INC. Brand: Polystick or ABC Supply	MULE-HIDE PRODUCTS CO., INC. Brand: Shur-Gard
BRAND AND PRODUCT NAME	Polystick IR-Xe	-
	Polystick TU	-
	Polystick TU Plus	Shur-Gard TU FORCE HT
	Polystick TU P	-
	Polystick TU Max	Shur-Gard TU PRIME HT
	Polystick MTS Plus	Shur-Gard MU FORCE HT
	Polystick MU-X	-
	Polystick MX	-
	Polystick XFR	-
	Polystick Dual Pro	-
	Polystick Tile Pro	-
	Polystick P	Shur-Gard MU PRIME HT
	Polystick MTS	-
	Polystick PX HT	-
	ABC Supply Self-Adhered Ice & Water Protection	-

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 30 05—Roofing Felt and Underlayment

REPORT HOLDER:

POLYGLASS USA, INC.

EVALUATION SUBJECT:

POLYSTICK IR-Xe, TU, TU PLUS, TU P, TU MAX, DUAL PRO, TILE PRO, MTS PLUS, PX HT, MU-X, XFR AND ABC SUPPLY SELF-ADHERED ICE & WATER PROTECTION ROOF UNDERLAYMENTS AND POLYSTICK P, POLYSTICK MTS, POLYSTICK MX, POLYSTICK PX HT AND ABC SUPPLY SELF-ADHERED ICE & WATER PROTECTION ICE BARRIERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Polystick IR-Xe, TU, TU Plus, TU P, TU Max, Dual Pro, Tile Pro, MTS Plus, PX HT, MU-X, XFR and ABC Supply Self-Adhered Ice & Water Protection roof underlayments and Polystick P, Polystick MTS, Polystick MX, Polystick PX HT and ABC Supply Self-Adhered Ice & Water Protection ice barriers, described in ICC-ES evaluation report [ESR-1697](#), have also been evaluated for compliance with the code editions noted below.

Applicable code editions:

■ 2025 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

■ 2025 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The roof underlayments and ice barriers, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1697](#), comply with CBC Chapter 15, provided the design and installation are in accordance with the 2024 *International Building Code*® provisions, as applicable, noted in the evaluation report and the additional requirements of CBC Chapter 15, as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The roof underlayments and ice barriers, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1697](#), comply with CRC Chapter 9, provided the design and installation are in accordance with the 2024 *International Residential Code*® (IRC) provisions, as applicable, noted in the evaluation report and the additional requirements of CRC Chapter 9, as applicable.

This supplement expires concurrently with the evaluation report, reissued November 2025 and revised May 2026.

POLYSTICK® XFR

SELF-ADHERED FIRE-RESISTANT HIGH TEMP UNDERLAYMENT

PRODUCT DESCRIPTION

Polystick XFR is a self-adhered waterproofing underlayment with superior fire resistance designed for metal roof coverings. Utilizing ADESO® dual-compound self-adhered technology, Polystick XFR features a polymer modified bitumen upper compound and a proprietary self-adhesive SBS (elastomeric) compound on the bottom. A split release film that protects the self-adhesive compound allows for easy application.

Polyglass' patented Burn-Shield Technology® provides superior fire and ember resistance in areas where this is required or desired. With a temperature resistance of up to 265°F, Polystick XFR is ideally suited for high temperature roof covering systems such as steel, aluminum, or copper panels. Polystick XFR features a cavitated slip-resistant top film surface which can be exposed up to 180 days.

Polystick XFR can be installed as part of a multi-ply underlayment system when used as a secondary layer above Polystick MTS Plus or a two-ply Polystick XFR assembly.

TYPICAL APPLICATIONS

- Over combustible decks and under metal roof coverings to achieve class A fire ratings. ** (see pg. 2 Class A Table)
- Where fire resistance is required by code or desired.
- As part of a multi-ply underlayment system for extended warranties.
- Primary application under metal. Also approved under Wood/Asphalt Shingles, Synthetic.

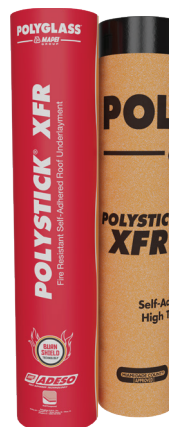
FEATURES AND BENEFITS

- Fire spread/penetration resistance in systems tested under UL 790.
- Cavitated slip-resistant top film surface.
- Fiberglass reinforced for added strength and dimensional stability.
- Robust 80 mils (2 mm) of waterproofing rubberized asphalt.
- Self adhered technology increases labor efficiency and roof dry-in speed.
- Approved up to 265°F.
- Max 180 days UV exposure.

TECHNICAL DESCRIPTION*

Physical Properties	ASTM Method	ASTM Value	Typical Performance
Maximum Load, min	ASTM D5147	35 lbf/in (4.4 kN/m)	69 lbf/in (12 kN/m) MD 40 lbf/in (7 kN/m) XMD
Elongation at break, min of modified bitumen portion	ASTM D5147	10%	50% MD 60% XMD
Tear Resistance, min	ASTM D5147	20 lbf (89 N)	157 lbf (700 N) MD 79 lbf (350 N) XMD
Thermal Stability, max	ASTM D1970	0.1 in (3 mm)	pass
Adhesion to Plywood (min at 40°F)	ASTM D1970	2.0 lbf/ft	15 lbf/ft
Adhesion to Plywood (min at 75°F)	ASTM D1970	12.0 lbf/ft	25.0 lbf/ft
Waterproof integrity of Lap Seam	ASTM D1970	pass	pass
Flexibility at -29°C (-20°F)	ASTM D5147	pass	pass
Sealability around Nail	ASTM D5147	pass	pass
Slip Resistance	ASTM D1970	pass	pass
Moisture Vapor Permeance, max	ASTM E96	max 0.1 U.S. perms (5.7 ng/Pa.S.M²)	pass

*The properties in this table are "as manufactured" unless otherwise noted.



PRODUCT DATA**

Net Coverage (Approx) ... 150 ft² (13.9 m²)
 Gross Coverage 160 ft² (15 m²)
 Weight (Approx) 75 lbs (34 kg)
 Thickness (Nominal) 80 mils (2.0 mm)
 Roll Size 49'3" x 39 3/8" (15 m x 1 m)
 Rolls/Pallet 30

**All values are nominal at time of manufacturing

APPLICABLE STANDARDS

- ASTM D1970
- ASTM E108/UL790, Class A Fire Resistance** (see Class A table)
- UL Classified
- Listed by California State Fire Marshal
- ICC ESR-1697
- FORTIFIED Roof™ Compliant
- Florida Building Code
- Miami-Dade County Approved
- Texas Department of Insurance



PRODUCT CODES

- PSXFRQ



www.polyglass.us

POLYSTICK® XFR

SELF-ADHERED FIRE-RESISTANT HIGH TEMP UNDERLAYMENT

UL CLASS A LISTING BY ROOFING COVERING

Deck	Anchor Sheet (Optional)	Insulation (Optional)	Second Ply (Optional)	Underlayment	Roof Covering
Plywood (15/32"), spaced sheathing or 7/16" OSB	ASTM D226 (III) 30# Felt or Polyanchor HV	Polytherm Polyiso	Polystick XFR	Polystick XFR	UL Listed copper panels or steel standing seam panels, stone coated shingles, 26 gauge minimum**
As listed by shingle manufacturer	N/A	N/A	Polystick XFR	Polystick XFR	Any UL Listed Class A asphalt glass fiber mat shingles***
Deck	Anchor Sheet (Optional)	Insulation (Optional)	Second Ply (Required)	Underlayment	Roof Covering
Plywood (15/32"), spaced sheathing or 7/16" OSB	ASTM D226 (III) 30# Felt or Polyanchor HV	Polytherm Polyiso	Polystick XFR	Polystick XFR	UL Listed aluminum panels, 0.032" min.**

** Unlimited Slope. Refer to published UL product listings (TGFR.R25992) for specific fire rated assemblies.

*** Refer to published UL product listing TGDY.R25992 for specific fire rated assemblies.

APPLICATION INSTRUCTIONS

- Polystick XFR may be applied directly to the roof deck where allowable by Code, or to various approved substrates such as Polyanchor HV and Polytherm insulation. For additional substrate requirements and information refer to Polyglass published "Suitable Substrates for Self-Adhered (SA) Membranes."
- Do not apply directly on to existing shingles or other roof coverings.
- Apply only when the substrate is dry and project related temperatures (air, roof deck, membrane) are 40°F and rising.
- Be sure to follow all local building code recommendations and requirements with regards to the width of ice dam materials.
- If full roof coverage application is desired, proper venting of the structure is recommended. Consult a design professional for proper venting requirements. Applications involving nonventilated attics or sheathing with radiant barriers, an anchor sheet is recommended to allow venting and prevent the creation of a double vapor barrier condition.
- In steep slope applications where back nailing may be recommended, be sure that all nails are covered by the overlapping next sheet.
- Polystick XFR must be covered within 180 days of installation or unless otherwise limited by the Authority Having Jurisdiction.

MEMBRANE INSTALLATION

- Cut the Polystick XFR to a suitable, workable length prior to placement.
- Lay the material flat in place, starting at the lowest point. Overlap seams 3" at designated side lap area and a minimum 6" at end laps.
- Peel half of the release film from the roll and apply firm, even pressure from the center to the outer edge. Remove the backing from the remaining half of the roll and apply pressure.
- After adhering the Polystick underlayment, uniform pressure must be applied to the entire surface. Roll area with a 35 lbs or 75 lbs weighted roller, or water-filled lawn roller. Brooming the surface of the Polystick membrane is also acceptable on steep pitched roof applications where safety is a concern. NOTE: Polyglass advises that proper safety precautions are taken during rolling on all sloped roofs.
- Refer to Technical Bulletin #2023-M-01 for additional installation information.

MANUFACTURING FACILITIES

- Fernley, NV
- Hazleton, PA
- Waco, TX
- Winter Haven, FL

CORPORATE HEADQUARTERS

Polyglass U.S.A., Inc.
1111 West Newport Center Drive
Deerfield Beach, FL 33442

www.polyglass.us

General Line: (888) 410-1375
(954) 233-1330
Customer Service: (800) 222-9782
Technical Service: (866) 794-9659

Questions? technical@polyglass.com

Product Disclaimer: Unless otherwise incorporated into or part of a supplemental manufacturer's warranty, Polyglass warrants its product(s) against manufacturing defects in its product that directly results in leakage for a period of 1 year.

Refer to safety data sheet (SDS) for specific data and handling of our products. All data furnished refers to standard production and is given in good faith within the applicable manufacturing and testing tolerances.

Polyglass U.S.A., Inc., reserves the right to improve and change its products at any time without prior notice. Polyglass U.S.A., Inc. cannot be held responsible for the use of its products under conditions beyond its own control. For most current product data and warranty information, visit www.polyglass.us.

This product is qualified for use as a component of a FORTIFIED-eligible roof system. Use of this product does not guarantee a FORTIFIED™ designation. To be eligible for a FORTIFIED designation, a complete roofing system (components and accessories) must meet the requirements detailed in the FORTIFIED Home™ Standard and be installed by a certified FORTIFIED Roofing Contractor. Products that are required to meet the standard include but may not be limited to: roof coverings, attic ventilation components, a qualified sealed roof deck system, roof underlayments, edge metal and appropriate fasteners for all mechanically fastened components. Documentation for all products and their installation is required. Additional requirements, eligibility criteria and restrictions apply. See the current FORTIFIED Home standard at <https://fortifiedhome.org/technical-documents/> for details.



www.polyglass.us

POLYSTICK® MTS PLUS

SELF-ADHERED MULTI-PURPOSE HIGH TEMP UNDERLAYMENT

PRODUCT DESCRIPTION

Polystick MTS PLUS is a self-adhered high-temp waterproofing underlayment for metal roof coverings and various other applications. Utilizing ADESO® dual-compound self-adhered technology, Polystick MTS PLUS features a polymer modified bitumen upper compound and a proprietary self-adhesive SBS (elastomeric) compound on the bottom. A split release film that protects the self adhesive compound allows for easy application.

Polystick MTS PLUS features a cavitated anti-skid top film surface which can be exposed up to 180 days. With a temperature resistance of up to 265°F, Polystick MTS PLUS is ideally suited for high temperature roof covering systems such as steel, aluminum, or copper panels.

Can be installed as part of a multi-ply underlayment system when covered with Polystick TU PLUS, Polystick TU MAX, Polystick XFR or a second ply of Polystick MTS PLUS.

TYPICAL APPLICATIONS

- Specifically designed as underlayment for high temperature applications.
- Primary use for application under steel, aluminum, or copper roof panels.
- Approved for use under tile, slate and asphalt shingle roof coverings.
- Base layer of a multi-ply underlayment system for extended warranties.

FEATURES AND BENEFITS

- Patented ADESO dual-compound self-adhered technology
- Cavitated anti-skid top film surface with up to 180 days exposure.
- Fiberglass reinforced for added strength and dimensional stability.
- Self adhered technology increases labor efficiency and roof dry-in speed.
- Asphaltic compound provides excellent sealability around nails.
- Approved up to 265°F.
- Max 180 days exposure.

TECHNICAL DESCRIPTION*

Physical Properties	ASTM Method	ASTM Value
Maximum Load, Longitudinal and Transverse, min, kN/m (lbf/in.)	D5147	4.4 (25)
Elongation at break, min of modified bitumen portion (%)	D5147	10
Tear Resistance, Longitudinal and Transverse, min, N (lbf)	D5147	89 (20)
Moisture Vapor Permeability, max, perms	E96	0.1
Adhesion to Plywood @ 40°F, min, lbf/ft width	D1970	2.0
Adhesion to Plywood @ 75°F, min, lbf/ft width	D1970	12.0
Sealability around nail	D1970	pass
Waterproof integrity after low temp flexibility	D1970	pass
Waterproof integrity of lap seam	D1970	pass
Slip Resistance	D1970	pass

*The properties in this table are "as manufactured" unless otherwise noted.



PRODUCT DATA**

Net Coverage (Approx) ...200 ft² (18.5 m²)
Gross Coverage 215 ft² (20 m²)
Weight (Approx) 74 lbs (33.5 kg)
Thickness (Nominal) 60 mils (1.5 mm)
Roll Size 65'8" × 39 3/8" (20 m × 1 m)
Rolls/Pallet.....30

**All values are nominal at time of manufacturing

APPLICABLE STANDARDS

- ASTM D1970
- UL Classified
- ICC ESR-1697
- FORTIFIED Roof™ Compliant
- Florida Building Code
- Miami-Dade County Approved
- Texas Department of Insurance



PRODUCT CODES

- PSMTSPLQ

POLYGLASS®



www.polyglass.us

POLYSTICK® MTS PLUS

SELF-ADHERED MULTI-PURPOSE HIGH TEMP UNDERLAYMENT

APPLICATION INSTRUCTIONS

- Polystick MTS PLUS may be applied directly to the roof deck where allowable by Code, or to various approved substrates such as ASTM D226 type roofing felts and Polytherm insulation. For additional substrate requirements and information refer to Polyglass published "Suitable Substrates for Self-Adhered (SA) Membranes."
- Do not apply directly on to existing shingles or other roof coverings.
- Apply only when the substrate is dry and project related temperatures (air, roof deck, membrane) are 40°F and rising.
- Cut the Polystick MTS PLUS to a suitable, workable length prior to placement.
- Lay the material flat in place, starting at the lowest point. Overlap seams 3" at black side lap area and a minimum 6" at end laps.
- Peel half of the release film from the roll and apply firm, even pressure from the center to the outer edge. Remove the backing from the remaining half of the roll and apply pressure.
- Be sure to follow all local building code recommendations and requirements with regards to the width of ice dam materials.
- If full roof coverage application is desired, proper venting of the structure is recommended. Consult a design professional for proper venting requirements. Applications involving nonventilated attics or sheathing with radiant barriers, an anchor sheet is recommended to allow venting and prevent the creation of a double vapor barrier condition.
- In steep slope applications where back nailing may be recommended, be sure that all nails are covered by the overlapping next sheet.
- Polystick MTS PLUS must be covered within 180 days of installation or unless otherwise limited by the Authority Having Jurisdiction.

MANUFACTURING FACILITIES

- Fernley, NV
- Hazleton, PA
- Waco, TX
- Winter Haven, FL

CORPORATE HEADQUARTERS

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Questions? technical@polyglass.com

Product Disclaimer: Unless otherwise incorporated into or part of a supplemental manufacturer's warranty, Polyglass warrants its product(s) against manufacturing defects in its product that directly results in leakage for a period of 1 year.

Refer to safety data sheet (SDS) for specific data and handling of our products. All data furnished refers to standard production and is given in good faith within the applicable manufacturing and testing tolerances.

Polyglass U.S.A., Inc., reserves the right to improve and change its products at any time without prior notice. Polyglass U.S.A., Inc. cannot be held responsible for the use of its products under conditions beyond its own control. For most current product data and warranty information, visit www.polyglass.us.

This product is qualified for use as a component of a FORTIFIED-eligible roof system. Use of this product does not guarantee a FORTIFIED™ designation. To be eligible for a FORTIFIED designation, a complete roofing system (components and accessories) must meet the requirements detailed in the FORTIFIED Home™ Standard and be installed by a certified FORTIFIED Roofing Contractor. Products that are required to meet the standard include but may not be limited to: roof coverings, attic ventilation components, a qualified sealed roof deck system, roof underlayments, edge metal and appropriate fasteners for all mechanically fastened components. Documentation for all products and their installation is required. Additional requirements, eligibility criteria and restrictions apply. See the current FORTIFIED Home standard at <https://fortifiedhome.org/technical-documents/> for details.