ICC-ES Evaluation Report

ESR-5565

Issued September 2024

Subject to renewal September 2025

DIVISION: 07 00 00—Thermal and Moisture Protection Section: 07 42 13—Metal Wall Panels	REPORT HOLDER: SHINWOO INDUSTRIAL CO., LTD.	EVALUATION SUBJECT: PIR PANEL (URETHANE PANEL)	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021 and 2018 *International Building Code*® (IBC)
- 2024, 2021 and 2018 *International Residential Code*® (IRC)

Property evaluated:

- Structural
- Thermal Barrier
- Surface Burning Characteristics (core material only)

2.0 USES

The PIR Panels described in this report are insulated panels used as interior partition wall and ceiling panels in any type of construction. When installed in accordance with the IRC, the panels must be designed in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 General:

The PIR Panels are factory-assembled, metal-faced, sandwich panels with a continuously foamed-in-place foam plastic core. The panels are available in thicknesses between 1.97 inches through 3.94 inches (50 to 100 mm), a width of 39.4 inches (1000 mm) and lengths up to 59 feet (18,000 mm). See Table 1 for SUF and SUW panel types.

3.2 Materials:

3.2.1 Panel Core: The core of the panels is a polyurethane foam plastic as specified in the approved quality documentation. The cores have a 2.80 pcf (45 kg/m^3) nominal density, and a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84. The foam plastic is continuously foamed-in-place into the core of the panel during panel fabrication.

3.2.2 Panel Facers: Panel facers are composed of hot-dipped galvanized or aluminum zinc alloy-coated steel sheets with silicon-modified polyester or polyvinylidene fluoride coating or Polyvinyl Chloride or Anti-electrostatic coating. The facers come in varying thickness ranging from 0.020-inch (0.5 mm) to 0.03-inch (0.8 mm) as shown in Table 1 of this report. Panel facing material is steel conforming to ASTM A792 CS, KS D3520, KS D 3034 or KS D 3862 and with a minimum yield strength of 36.3 ksi (250 MPa) and minimum tensile strength of 39.2 ksi (388 MPa).

4.0 DESIGN AND INSTALLATION

4.1 Design:

An analysis must be submitted to the code official showing that the panel system, including fasteners and structural framing members, provides a complete load path capable of transferring all loads and forces from their point of origin to load-resisting elements. Table 2 of this report lists allowable out-of-plane loads and maximum panel spans for interior partition wall panels specified in 2024 and 2021 IBC Section 1607.16 (2018 IBC Section 1607.15).

4.2 Installation:

4.2.1 Interior Wall Partition Panels:

Each wall panel must be placed with the panel's longitudinal edge oriented vertically. The top and bottom of the panel must be connected to the supporting structure using steel channels or aluminum molding and fasteners. The steel channels or aluminum molding and fastener capacity must be designed by a registered design professional. Installation of wall panels must be in accordance with manufacturer's installation instructions and as determined by registered design professional. See Figure 3 for typical installation detail of interior partition wall panel.

4.2.2 Ceiling Panels:

Installation of ceiling panels must be in accordance with manufacturer's installation instructions and as determined by registered design professional. Ceiling panel support system must be designed by a registered design professional. See Figure 4 for typical installation detail of ceiling panel. The maximum unsupported ceiling panel span must not exceed 138 inches (3.5 m).

4.3 Thermal Barrier:

An approved thermal barrier complying with IBC Section 2603.4 is not required, based on testing in accordance with FM 4880, as indicated in IBC Section 2603.9.

5.0 CONDITIONS OF USE:

The PIR Panels 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 Panels must be installed in accordance with this report and the manufacturer's published installation instructions, a copy of which must be available at the jobsite. In the event of a conflict between this report and the manufacturer's published installation instructions, the more restrictive governs.

5.2 Interior wall panels must be limited to non-load bearing wall applications.

5.3 The ceiling panels are limited to ceilings not considered accessible in accordance with Item 30 of 2024 IBC Table 1607.1 (Item 29 of 2021 IBC Table 1607.1 or Item 28 of 2018 IBC Table 1607.1), as applicable.

5.4 Remaining portions of the structure, other than panels, must be designed and constructed in accordance with the code.

5.5 Construction plans, calculations for actual loading conditions and calculations for the connection of the panel to the supporting member must be submitted to the code official for approval.

5.6 All construction documents specifying the panels described in this report must comply with the design limitations of this report. Drawings and design details demonstrating that the panels comply with this report must be submitted to the code official at the time of permit application. The drawings and design details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.7 The panels described in this report have been justified for installation without the thermal barrier in accordance with Section 4.3 of this report.

5.8 Interior finish classification of the PIR Panels is outside scope of this report and compliance must be demonstrated to the satisfaction of code official.

5.9 The PIR Panels are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Sandwich Panels (AC04), dated February 2012 (editorially revised July 2024), including report of testing in accordance with ASTM E84 (core material only), ASTM E330 and FM 4880.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5565) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the PIR Panels are identified by the report holder name (SHINWOO INDUSTRIAL CO., Ltd.) and address and panel type.

7.3 The report holder's contact information is the following:

SHINWOO INDUSTRIAL CO., LTD.
65, MUNPYEONGDONG-RO, DAEDEOK-GU
DAEJEON, 34302
SOUTH KOREA
82 42 933 2170
www.swpanel.co.kr
ww.sung@shinwoo1988.com

TABLE 1—PANEL TYPES

Panel Type	Exterior Facer Thickness (mm)	Interior Facer Thickness (mm)	Core Thickness Insulation (mm)	Panel Type Profile	Application
SUF	0.5 through 0.8	0.5 through 0.8	50 through 100	Figure 1	Internal Wall Partitions and Ceiling
SUW				Figure 2	

For Imperial Units: 1 mm= 0.0394 inch.

TABLE 2-ALLOWABLE UNIFORM LOAD OF INTERIOR PARTITION PANEL[1,2,3,4,5]

Maximum Panel Span (m)	Allowable Uniform Partition Load (kgf/m^2)
3.5	24.4

For Imperial Units: 1 m= 3.05 feet; 1 kgf/m^2= 0.205 psf.

[1]The tabulated values apply to the panel types listed in Table 1 of this report.
[2]Panels must be installed in accordance with Section 4.2.2 of this report.
[3]The tabulated values are determined by dividing the ultimate load from uniform transverse load testing bya safety factor of 3.0.
[4]The tabulated values do not exceed a deflection limit of L/120 in accordance with IBC Section 1604.3.
[5]The tabulated values are based on 50mm thick interior partition panel with 0.5mm thick facers each side .

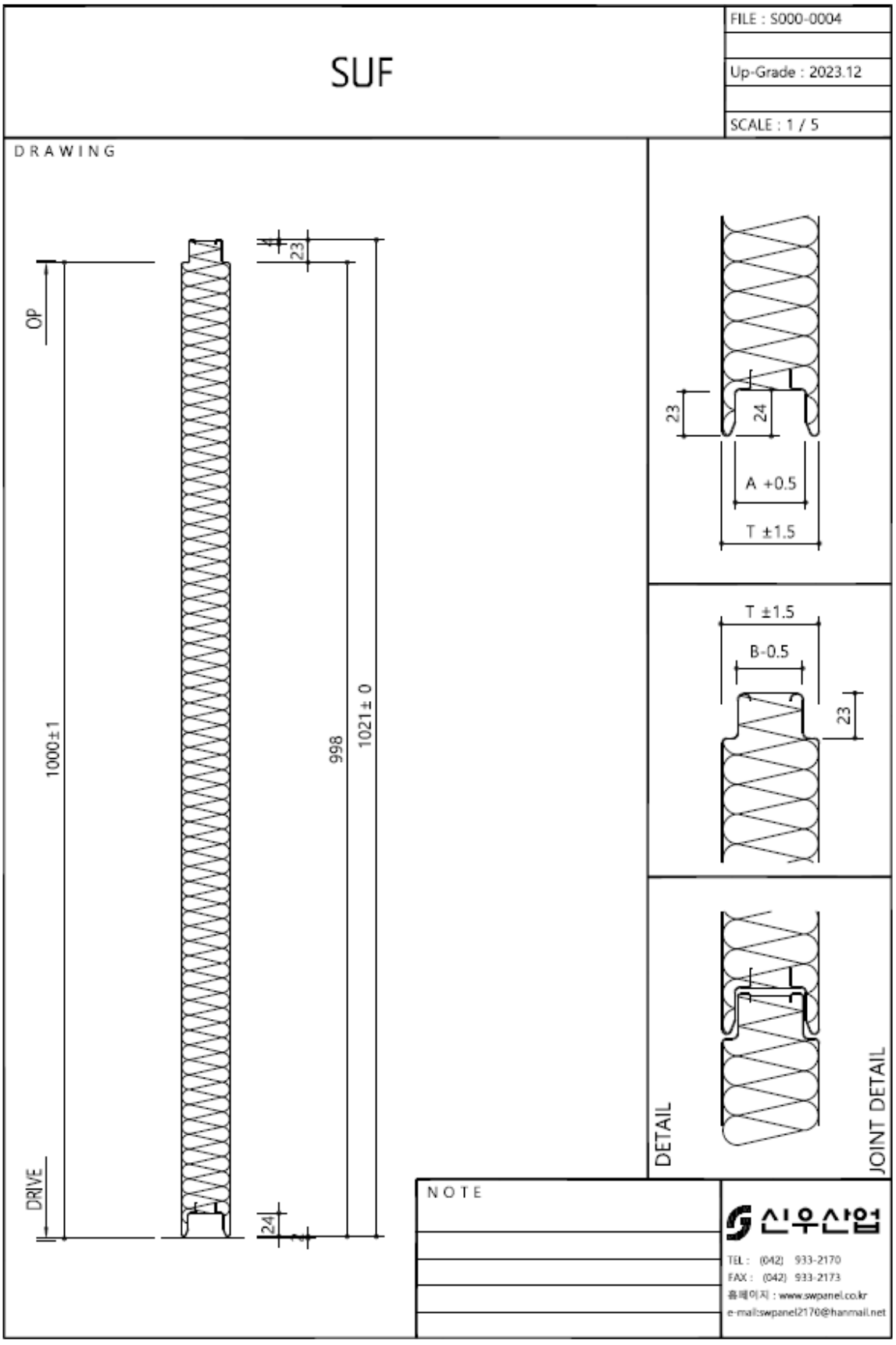
SUF
FILE : S000-0004
Up-Grade : 2023.12
SCALE : 1 / 5
DRAWING
OP
1000±1
DRIVE
23
24
998
1021± 0
23
24
A +0.5
T ±1.5
T ±1.5
B-0.5
23
DETAIL
JOINT DETAIL
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FIGURE 1—SUF

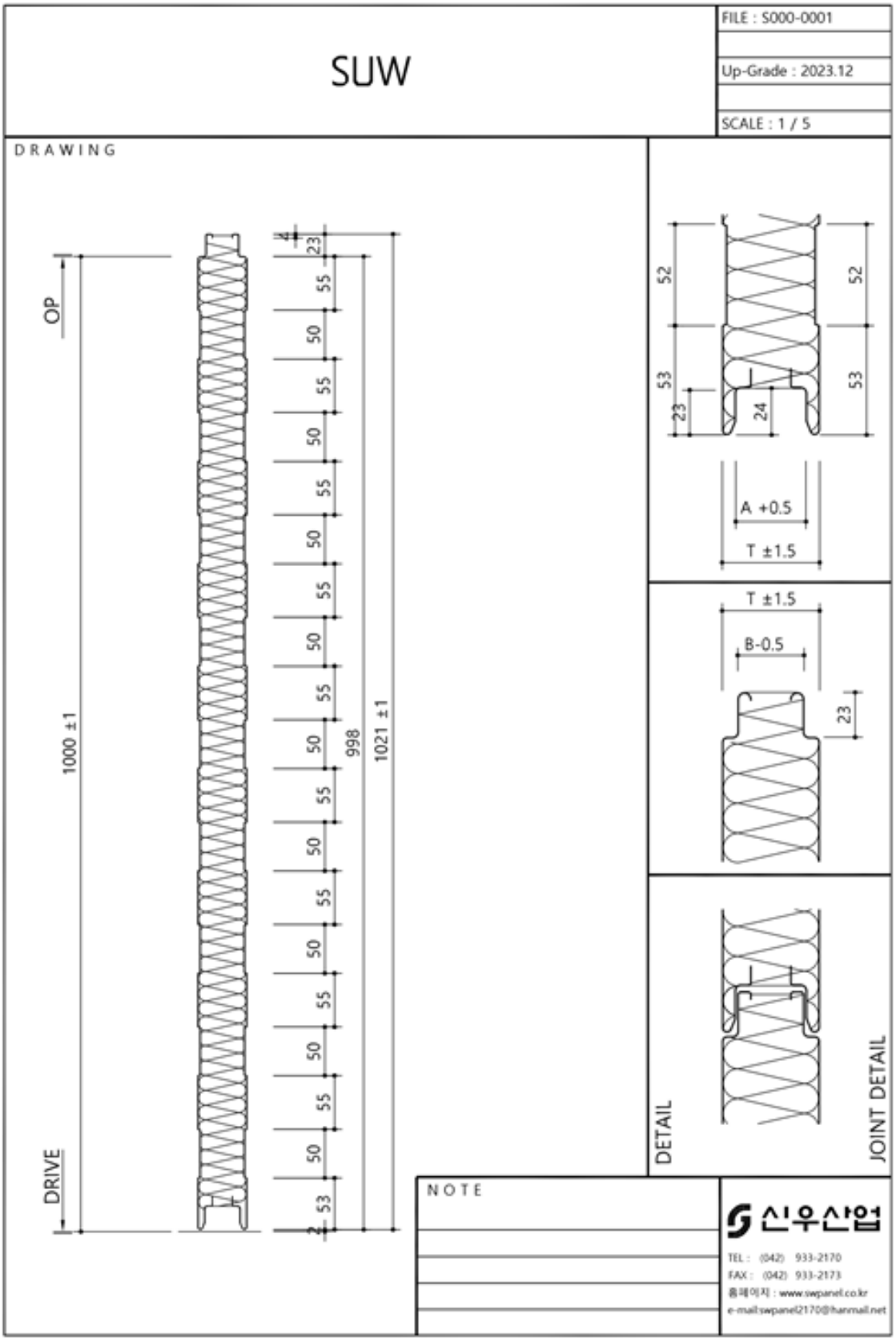
SUW
FILE : S000-0001
Up-Grade : 2023.12
SCALE : 1 / 5
DRAWING
OP
DRIVE
1000 ±1
998
1021 ±1
4
23
55
50
53
52
24
A +0.5
T ±1.5
B-0.5
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FIGURE 2—SUW

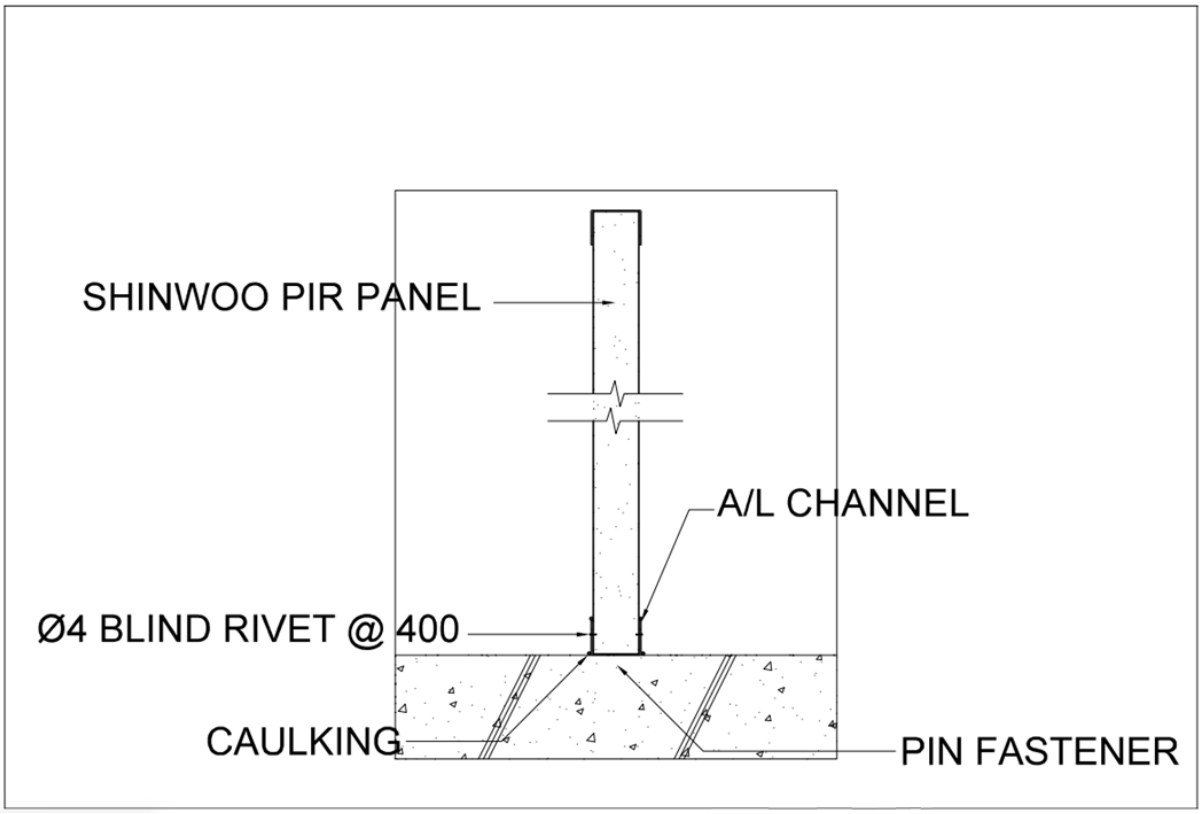

FIGURE 3—TYPICAL INSTALLATION OF INTERIOR WALL PARTITION

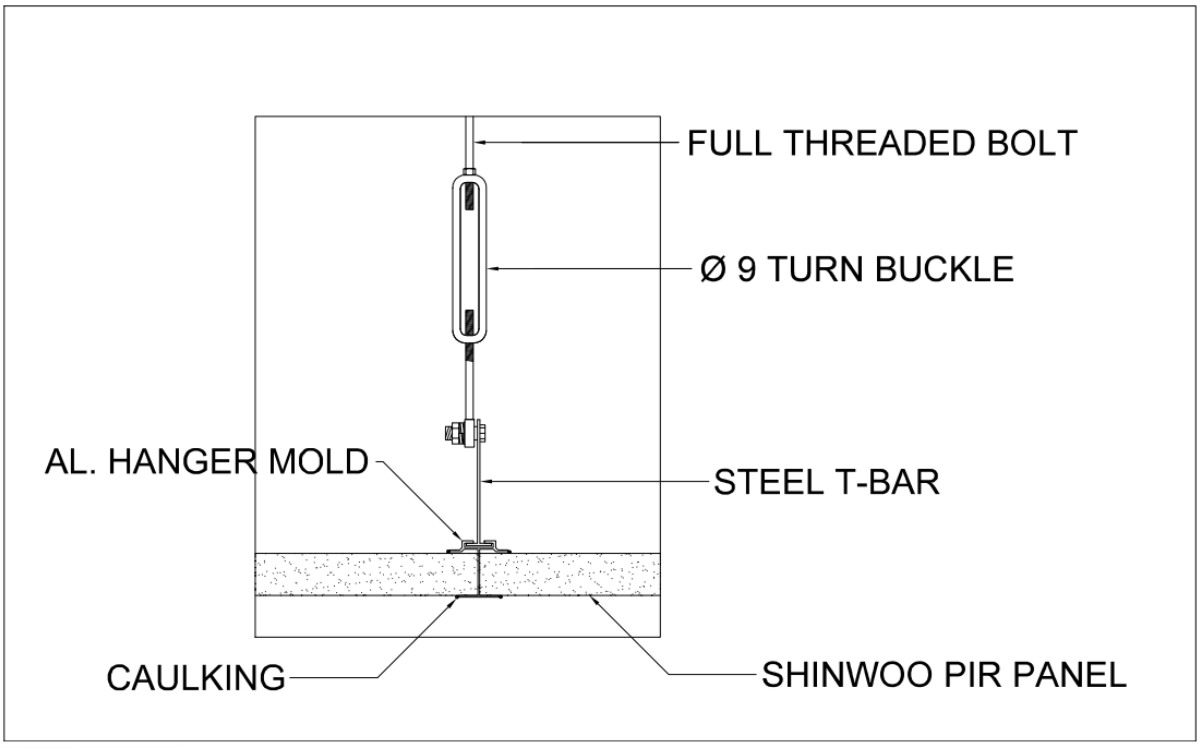

FIGURE 4—TYPICAL INSTALLATION OF CEILING PANEL