LEGACY REPORT

NER-467*
Reissued July 1, 2002

ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

Legacy report on the 2000 *International Building Code*®, the 1999 *Standard Building Code*©, the BOCA® *National Building Code*/1999, the 1997 *Uniform Building Code*™ and the 2000 *International Residential Code*®

DIVISION: 06—WOOD AND PLASTICS
Section: 06120—Structural Panels

W.H. PORTER, INC.
4240 NORTH 136th AVENUE
HOLLAND, MICHIGAN 49424

ADDITIONAL LISTINGS:

Fischer Sips, Inc.
1843 Northwestern Parkway
Louisville, Kentucky 40203

Lamit Industries, Inc.
710 Marion Road
Columbus, Ohio 43207

Winter Panel Corporation
74 Glen Orne Drive
Brattleboro, Vermont 05301

1.0 SUBJECT

Building Panels.

2.0 PROPERTY FOR WHICH EVALUATION IS SOUGHT

Structural.

3.0 DESCRIPTION

3.1 GENERAL

W. H. Porter building panels are factory laminated sandwich panels with oriented strand board or plywood face materials and an expanded polystyrene (EPS) core. The panels are roof, wall, and floor panels used as the structural frame and facing of a building when resisting transverse, racking, and axial compressive loads. The panels are also used to field fabricate wall opening headers. The name and location of the manufacturers producing the panel types described in this report are noted in Table 1 of this report.

3.1.1 Roof Wall and Floor Panels:

3.1.1.1 Type A:

Type A panels have minimum $^{7}/_{16}$ inch thick (11.1 mm) rated structural sheathing on both sides. Type A panels are permitted for use as structural walls, structural roof decks, and structural floor decks, provided they are designed and installed in accordance with this report. See Table 2 of this report for roof (L/240) and floor panel (L/360) allowable loads and spans. See Table 3 of this report for wall (L/180) panel allowable loads and spans.

3.1.1.2 Type C

Type C panels have face sheathing of minimum $^{7}/_{16}$ inch (11.1 mm) rated structural sheathing on one side and $^{19}/_{32}$ inch (15.1 mm) grooved plywood on the opposite side. Plywood face sheathing with butt joints over a support shall have the joints spliced with 12 inch wide by 0.019 inch thick (305 mm by 0.48 mm) aluminum, factory-laminated to the face sheathing.

3.1.2 Headers

Headers consist of minimum 12 inch high (305 mm) Type A panels with the foam plastic field routed to a depth for the field installation of single or double, solid sawn lumber plates on the top and bottom of the header. The lumber plates are 2 inch nominal thick solid sawn lumber members installed flatwise between the panel skins and continuous without splices, for the length of the header. The lumber is standard or better Hem-fir, except standard grade Hem-fir lumber is used as the plates of headers having a total thickness of 4½ inches (114 mm). Solid sawn lumber end plates, SPF #2 or better, are field installed between the top and bottom plates, which have been field routed to receive the end plates. The skins of the panel shall be field attached to the top and bottom plates with 8d box nails spaced at a maximum of 6 inches (152 mm) on center. The same nails spaced at a maximum of 6 inches (152 mm) on center are used to field attach the panel skins to the end plates. The plates of the double plates are interconnected with 8d common nails, face nailed at a maximum of 12 inches (305 mm) on center. Refer to the figures at the end of this report for header configurations.

3.2 MATERIALS

3.2.1 Rated Structural Sheathing

Rated structural sheathing shall meet or exceed the requirements of United States DOC Voluntary Product Standard PS 2-92 for $^{7}/_{16}$ inch thick (11.1 mm) Structural I, Exposure 1, rated sheathing with a span index of 24/16, and the requirements in the sandwich panel manufacturer's quality control manuals.

***Revised September 2005**

3.2.2 Grooved Plywood Panels

The grooved plywood panels simulate reverse board and batten construction. The panels are manufactured by Roseburg Forest Products, are $^{19}/_{32}$ inch (15.1 mm) thick and are graded in accordance with the Manufacturing Specifications for PTL Specialty Siding Panels. Panels are inspected by a third-party agency and comply with PS-1.

3.2.3 Foam Plastic Core

The foam plastic core material for all panels is 1.0 pcf (16.0 kg/m^3) density EPS [0.95 pcf (15.2 kg/m^3), minimum], with a flame-spread rating not exceeding 25 and a smoke-developed rating not exceeding 450 when tested in accordance with ASTM E84. The minimum thickness of the core is 3⅝, 5⅝, 7⅜, 9⅜ or 11⅜ inches (92, 143,187, 238 or 289 mm). The suppliers of the foam plastic used in the panels are specified in the sandwich panel manufacturers' quality control manuals noted in Section 6.0 of this report.

3.2.4 Adhesives

The adhesives (consisting of a two-part, waterborne, thermosetting structural adhesive) used to factory-laminate the panels are specified in the quality control manuals noted in Section 6.0 of this report and Table 1 of this report.

3.3 DESIGN

The allowable loads for the panels are specified in Tables 2 through 4 of this report. The maximum height-to-width ratio of shear walls is 1:1. Combined axial and transverse loads for Type A and C panels shall comply with the following equation:

$$\frac{Design\ Transverse\ Load}{Allow.\ Transverse\ Load} + \frac{Design\ Axial\ Load}{Allow.\ Axial\ Load} \leq 1.0$$

The allowable loads for the headers in Table 5 of this report are for headers installed with trimmers at each end designed in accordance with the applicable code and having sufficient width to provide support to the total thickness of the header, including the header skins.

4.0 INSTALLATION

Panels shall be joined and attached as indicated and illustrated in typical details in this report.

Except where noted otherwise in this report for shear walls, panels shall be connected to each other with nominal dimension of 2 by 4, 2 by 6, 2 by 8, 2 by 10, or 2 by 12 lumber splines of stud grade spruce pine fir, secured to face material in accordance with the details in this report. As an alternative, ⅝ inch thick by 4 inch wide (15.9 mm by 102 mm) continuous spline plates of rated sheathing are permitted to be used at joints in accordance with the details of this report. Rated structural sheathing shall satisfy the requirements of United States Voluntary Products Standard PS 2-92 (span index 24/16).

Except where noted otherwise in this report, for shear walls, fasteners used to attach panels to splines at panel to panel joints include ring shank nails and staples, as illustrated in the drawings of this report. Top and bottom plates shall also be dimensional lumber, sized to match the core thickness and secured to the panel facings in accordance with the details of this report. Plates used with header panels shall comply with Section 3.1.2 of this report. Sill plates shall be pressure-treated for decay resistance when required by the applicable code.

Wall openings shall be formed with headers described in Section 3.1.2 of this report supported with solid sawn lumber members each end, which are designed in accordance with the applicable code having sufficient width to support the entire width of the header panel including the panel facings. Full height wall framing adjacent to the header supports shall be designed for the applicable wind loads. See Figure H of Figure 1 of this report for additional detail.

An approved thermal barrier, such as $^1/_2$ inch (12.7 mm) thick gypsum wallboard or an equivalent thermal barrier, shall be installed on the interior face of the wall and roof panels and on the underside of floor panels having occupied space beneath. The gypsum wallboard (or other approved thermal barriers) shall be attached to the skin of the panels in accordance with the requirements of the applicable code.

Roof coverings, exterior wall coverings, and weather resistive barriers shall be installed in accordance with the applicable code, and shall be maintained weather-tight. Additionally, crawlspaces and attics shall be ventilated in accordance with the applicable code.

The manufacturer's published installation instructions, titled *Planning and Installation Guide,* by W. H. Porter, Inc. (2000), shall be complied with, and copies shall be available on the jobsite at all times during installation.

5.0 IDENTIFICATION

The building panels shall have a stamp which includes the product name, panel type, name and address of the manufacturer, ICC-ES Legacy report number (NER-467) and identification of the inspection agency, PFS Corporation.

6.0 EVIDENCE SUBMITTED

6.1 The following structural test reports have been submitted:

6.1.1 Test report on transverse load tests on laminated structural panels, 48 inches by 288 inches (1219 mm by 7315 mm), with $7^3/_8$ inch thick (187 mm), 1.0 pcf (16.0 kg/m^3) foam in accordance with ASTM E72-80, prepared by Progressive Engineering, Inc., 90-1540 (A), dated September 12, 1990.

6.1.2 Test report on transverse load tests of laminated structural panels, 48 inches by 288 inches (1219 mm by 7315 mm), with $3^5/_8$ inch thick (92 mm), 1.0 pcf (16.0 kg/m^3) foam in accordance with ASTM E72-80, prepared by Progressive Engineering, Inc., 90-1540 (B), dated September 13, 1990.

6.1.3 Test report on transverse load tests of laminated structural panels, 48 inches by 144 inches (1219 mm by 3658 mm) with $22^1/_4$ inch (565 mm) cantilever in accordance with ASTM E72-80, prepared by Progressive Engineering, Inc., 90-1540 (C), dated October 17, 1990, revised August 29, 1991.

6.1.4 Test report on transverse load tests of laminated structural panels, 48 inches by 48 inches (1219 mm by 1219 mm), with $3^5/_8$ inch thick (92), 1.0 pcf foam (16.0 kg/m^3) in accordance with ASTM E72-80, prepared by Progressive Engineering, In., 90-1540 (E), dated October 18, 1990.

6.1.5 Test report on transverse load tests of laminated structural panels, 48 inches by 48 inches (1219 mm by 1219 mm) with $3^5/_8$ inch thick (92 mm), 1.0 pcf (16.0 kg/m^3) foam in accordance with ASTM E72-80, prepared by Progressive Engineering, Inc., 90-1540 (F), dated November 14, 1990.

6.1.6 Test report on transverse load tests of laminated structural panels, 48 inches by 96 inches (1219 mm by 2438 mm) with $7^3/_8$ inch thick (187 mm), 1.0 pcf (16.0 kg/m^3) foam in accordance with ASTM E72-80, prepared by Progressive Engineering, Inc., 90-1540 (G), dated November 15, 1990.

6.1.7 Test report on axial compressive load tests of laminated panels in accordance with ASTM E72-80, prepared by Progressive Engineering, Inc., 90-2046, dated November 20, 1990.

6.1.8 Test reports on transverse load tests of laminated structural panels, 48 inches by 96 inches (1219 mm by 2438 mm) with longitudinal OSB grain direction with $3^5/_8$ inch thick (92 mm), 1.0 pcf (16.0 kg/m^3) foam using Mor-Ad M-414 and M-610 adhesives, prepared by Progressive Engineering, Inc., Reports 92-462 (A) and 92-462 (B), dated February 18, 1992.

6.1.9 Test report on transverse load tests of laminated structural panels, 48 inches by 96 inches (1219 mm by 2438 mm), longitudinal OSB grain direction with $3^5/_8$ inch thick (92 mm), 1.0 pcf (16.0 kg/m^3) foam using Mor-Ad M-434 adhesive, prepared by Progressive Engineering, Inc., Report 92-462 (C), dated February 19, 1992.

6.1.10 Test report on transverse load tests of laminated structural panels, 48 inches by 96 inches (1219 mm by 2438 mm), $^7/_{16}$ inch (11.1 mm) OSB on one side and $^{19}/_{32}$ inch (15.1 mm) Roseburg plywood on the other side with $3^5/_8$ inch thick (92 mm), 1.0 pcf (16.0 kg/m^3) foam using Mor-Ad M-434 adhesive, prepared by Progressive Engineering, Inc., Report 92-462 (D), dated February 19, 1992.

6.1.11 Test report on transverse load tests of laminated structural panels, 48 inches by 96 inches (1219 mm by 2438 mm), $^7/_{16}$ inch (11.1 mm) OSB on both sides with transverse OSB grain direction and $3^5/_8$ inch thick (92 mm), 1.0 pcf (16.0 kg/m^3) foam using Mor-Ad M-434 adhesive, prepared by Progressive Engineering, Inc., Report 92-462 (E), dated February 20, 1992.

6.1.12 PFS Corporation Test Report 95-42, dated February 28, 1996, on transverse and racking shear tests of W.H. Porter, Inc., panels.

6.1.13 PFS Corporation Test Report 98-55, dated November 16, 1998, on transverse load tests of Lamit Industries, Inc., panels.

6.1.14 PFS Corporation Test Report 99-06, dated March 2, 1990, on transverse load tests of Schmucker Manufacturing Company, Inc., panels.

6.1.15 PFS Corporation Test Report 97-66, dated March 3, 1998, on transverse load tests of panels manufactured at the Michigan facility of W.H. Porter.

6.1.16 PFS Corporation Test Report 97-33, dated March 2, 1998, on axial load tests of panels manufactured at the Michigan facility of W.H. Porter.

6.1.17 PFS Corporation Test Report 97-33a dated June 24, 1998, on concentrated load tests of panels manufactured at the Michigan facility of W.H. Porter.

6.1.18 PFS Corporation Test Reports 98-44A, B, C and D dated September 28, 1998 on axial load, transverse load, racking shear, and bond strength of panels manufactured at the Michigan plant of W.H. Porter.

6.1.19 PFS Corporation Test Reports 98-43 A, B, C, D and E, dated October 28, 1998 (except test report 98-43-E is dated January 4, 1998), on axial load, transverse load, racking shear, bond strength and concentrated load tests of panels manufactured at the Michigan plant of W. H. Porter.

6.1.20 PFS Corporation Test Report 99-23, dated April 29, 1999, on transverse load tests of Fischer SIPS, Inc., panels.

6.1.21 PFS Corporation Test Report 96-62, dated march 7, 1997, on transverse load tests of Winter Manufacturing Corporation panels.

6.1.22 PFS Corporation Test Report 98-65, dated December 10, 1998, on flexural test of headers manufactured at the Michigan facility of W. H. Porter.

6.1.23 PFS Corporation Test Report 00-84, January 18, 2001, on transverse load tests of Pulte Home Sciences, L.L.C. panels.

6.1.24 PFS Corporation Test Report #01-15 Transverse Load Test of Structural Insulated Panels Manufactured with Insulfoam Type I EPS for Schmucker Manufacturing Co., Inc. and Premier Industries, Inc. d.b.a. Insulfoam Derry, Pennsylvania, dated April 18, 2001.

6.2 The following structural calculations were submitted:

6.2.1 Analysis of axial, transverse and racking shear loads, dated December 14, 1998, prepared by David S. Dayton, P.E.

6.2.2 The following structural calculations and analysis items prepared, signed, and sealed by David S. Dayton, P.E. were submitted:

6.2.2.1 *Structural Calculations for Transverse Loading of Roof Panels with 4 Foot Cantilever, for Type A Sandwich Panels*, dated November 29, 1999.

6.2.2.2 *Structural Calculations for Transverse Loading of Roof Panels, for Type A Sandwich Panels*, dated November 29, 1999.

6.2.2.3 *Structural Calculations for Headers*, dated November 30, 1999.

6.2.2.4 *Structural Calculations for Racking Load*, dated November 30, 1999.

6.2.2.5 *Structural Calculations for Transverse Loading of Wall Panels*, dated November 30, 1999.

6.2.2.6 *Structural Calculations for Static Loading, for Type A Sandwich Panels*, dated November 29, 1999.

6.2.2.7 *Comparison Analysis for Transverse Loading OSB/OSB and OSB/T1-11 Panels, for Type A Sandwich Panels*, dated December 1, 1999.

6.2.2.8 *Comparison Analysis for Transverse Loading of All Listees Panels, for Type A Sandwich Panels*, dated December 1, 1999.

6.2.2.9 *Structural Calculations for Axial Loading of Wall Panels, for Type A Sandwich Panels*, dated December 2, 1999.

6.2.2.10 Structural Calculations for Transverse Loading of Roof Panels, prepared, signed and sealed by David S. Dayton, P.E., dated March 27, 2001

6.2.2.11 Comparison Analysis for Transverse Loading of all Listees Panels, prepared, signed and sealed by David S. Dayton, P.E., dated September 21, 2001.

6.3 The following revised Quality Control Manuals for these manufacturing facilities were submitted:

6.3.1 W. H. Porter, Inc., in Holland, Michigan, dated October 4, 1999.

6.3.2 Winter Panel Corporation, in Brattleboro, Vermont, dated November 18, 1999.

6.3.3 Fischer SIPS, Inc., in Louisville, Kentucky, dated October 4, 1999.

6.3.4 Schmucker Manufacturing Company, Inc., in Derry, Pennsylvania, dated October 1, 1999.

6.3.5 Lamit Industries, Inc., in Columbus, Ohio, dated December 7, 1999.

6.3.6 Pulte Home Sciences, L.L.C., in Detroit, Michigan, dated September 13, 2001.

6.4 Carpenter Company quality control manual dated October 1997.

6.5 Plymouth Foam Products quality control manual dated August 1994.

6.6 *UBC 26-3 Room Fire Test Standard for Interior of Foam Plastic Systems, 12.25 in. Structural Insulated Panel*, Project Number 15915-104159, prepared by Omega Point Laboratories, dated January 6, 1999.

6.7 *Quality Control Manual For Expanded Polystyrene Board,* Falcon Foam, a Division of Atlas Roofing, dated July 19, 2001, Revision 6.

7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for the National Evaluation Service finds that the building panels described in this report are acceptable alternative materials, products, and methods of construction to that specified in the 2000 *International Building Code*, the 2000 *International Residential Code for One- and Two-Family Dwellings*, the *2002 Accumulative Supplement to the International Codes*, the 1998 *International One and Two Family Dwelling Code*, the *BOCA National Building Code*/1999, the 1999 *Standard Building Code* and the 1997 *Uniform Building Code*, subject to the following conditions:

7.1 W. H. Porter, Inc. manufacturing is located in Holland, Michigan. The plants listed on the first page of this report as “Listing” have also been evaluated in the report.

7.2 Allowable spans and design loading values shall not exceed the values found in this report.

7.3 Building panels shall be manufactured by the companies, at their respective facilities noted in Table 1, under a quality assurance program monitored by PFS Corporation (NER-QA251/IAS AA-652).

7.4 Plans specifying the building panels described in this report shall comply with the design limitations of this report. Design calculations and details for specific applications shall be furnished to the code official verifying compliance with this report and applicable codes. The individual preparing such documents shall posses the necessary credentials regarding competency and qualifications as required by the applicable code and the professional registration laws of the state where the construction is undertaken.

7.5 The building panels shall be used only where combustible, unprotected construction is allowed. In areas using the Uniform Building Code, the panels shall be limited to use in Type V-N construction.

7.6 The panels and their attachments shall be inspected and approved by the building official prior to covering with an approved weather-resistive covering.

7.7 The foam plastic shall be separated from the interior of a building by an approved 15 minute thermal barrier in accordance with the applicable code.

7.8 Connections and attachments of the panel are not within the scope of this report and shall be addressed in the design calculations and details.

7.9 All floor-to-wall and roof-to-wall details shall be designed such that gravity loads are applied over the entire wall-panel thickness.

7.10 In areas using the Standard Building Code and the International Residential Code, the panels shall be installed in accordance with Section 2603.3 and Section R324.4 respectively.

7.11 In areas using the Uniform Building Code, the floor panels shall be limited to use in Group R-1 and R-3 occupancies.

7.12 This report is subject to periodic re-examination. For information on the current status of this report, consult the ICC-ES website.

TABLE 1
COMPANY NAMES, MANUFACTURING LOCATIONS AND PRODUCTS

Company Name	Manufacturing Facility Location	Panels Manufactured	Sandwich Panel Adhesive
W. H. Porter	Holland, Michigan	Types A and C	Types 1, 3 or 4
Fischer SIPS, Inc.	Louisville, Kentucky	Types A and C	Type 3
Lamit Industries, Inc.	Columbus, Ohio	Types A and C	Type 3
Winter Panel Corporation	Brattleboro, Vermont	Type A	Type 4

Notes to Table 1:

1. The types of sandwich panel adhesives are as follows:
   - Type 1 - Rohm and Haas Company Morton International, A Rohm and Haas Co., Mor-Ad M640, (NER-451)
   - Type 2 - Rohm and Haas Company Morton International, A Rohm and Haas Co., Mor-Ad M642, (NER-451)
   - Type 3 - Rohm and Haas Company Morton International, A Rohm and Haas Co., Mor-Ad M717A and CRLA, (NER-451)
   - Type 4 - Ashland Chemical Company Division of Ashland, Inc. WD3 - A322 with CX47 cross linker, (NER-165)
   - Type 5 - Rohm and Haas Company Morton International, A Rohm and Haas Co., Mor-Ad M647, (NER-451)
   - Type 6 - Rohm and Haas Company Morton International, A Rohm and Haas Co., Mor-Ad M657, (NER-451)

Note: for all the following Tables:

1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 plf = 14.6 N/m, 1psf = 47.88 Pa.

TABLE 2

ALLOWABLE TRANSVERSE LOAD (PSF)

FOR TYPE A AND TYPE C SANDWICH PANELS (ROOFS AND FLOORS)

		SANDWICH PANEL DIMENSIONS				
Nominal Skin Thickness		7/16"	7/16"	7/16"	7/16"	7/16"
Nominal Core Thickness		3⅝"	5⅝"	7⅜"	9⅜"	11⅜"
Nominal Total Panel Thickness		4½"	6½"	8¼"	10¼"	12¼"
Panel Span Between Supports	Deflection Limit	ALLOWABLE TRANSVERSE LOAD FOR SIMPLE SUPPORTED ROOF & FLOOR PANELS (DEAD + LIVE) PSF				
7.5 ft	L/180	62 s	93 s	119 s	150 s	181 s
	L/240	52 d	87 d	118 d	150 s	181 s
	L/360	35 d	58 d	79 d	103 d	128 d
9.5 ft	L/180	46 d	73 s	94 s	118 s	143 s
	L/240	34 d	60 d	83 d	111 d	140 d
	L/360	23 d	40 d	56 d	74 d	93 d
11.5 ft	L/180	32 d	57 d	78 s	98 s	118 s
	L/240	24 d	43 d	61 d	83 d	105 d
	L/360	16 d	28 d	41 d	55 d	70 d
13.5 ft	L/180	22 d	42 d	61 d	83 s	100 s
	L/240	17 d	31 d	46 d	63 d	81 d
	L/360	11 d	21 d	30 d	42 d	54 d
15.5 ft	L/180	16 d	31 d	46 d	65 d	83 m
	L/240	12 d	23 d	35 d	49 d	64 d
	L/360	8 d	16 d	23 d	33 d	42 d
17.5 ft	L/180	12 d	24 d	36 d	51 d	65 m
	L/240	9 d	18 d	27 d	38 d	51 d
	L/360	6 d	12 d	18 d	26 d	34 d
19.5 ft	L/180	9 d	19 d	28 d	41 d	53 m
	L/240	7 d	14 d	21 d	31 d	41 d
	L/360	5 d	9 d	14 d	20 d	27 d
21.5 ft	L/180	7 d	15 d	23 d	33 d	43 m
	L/240	5 d	11 d	17 d	25 d	33 d
	L/360	4 d	7 d	12 d	16 d	22 d
23.5 ft	L/180	6 d	12 d	18 d	27 d	36 m
	L/240	4 d	9 d	14 d	20 d	27 d
	L/360	3 d	6 d	9 d	13 d	18 d

Notes to Table 2:

1. Values shown are the allowable dead load plus live load.
2. Controlling conditions: “s” - shear, “m” - moment, “d” - deflection.
3. Minimum bearing required is 3 inches.
4. Deflection criteria is L/240 for roof loads, L/360 for floor loads.
5. Loads are normal duration loads. No duration factors are allowed.
6. For permanent loads, such as floor loads, the tabulated load values shall be reduced by 50%.

TABLE 3
ALLOWABLE TRANSVERSE LOADS
FOR SIMPLE SUPPORTED WALL PANELS (DEAD LOAD PLUS LIVE LOAD) PSF

		SANDWICH PANEL DIMENSIONS		
Nominal Skin Thickness		7/16"	7/16"	7/16"
Nominal Core Thickness		3⅝"	5⅝"	7⅜"
Nominal Total Panel Thickness		4½"	6½"	8¼"
Panel Span Between Supports	Deflection Limit	ALLOWABLE TRANSVERSE LOAD FOR SIMPLE SUPPORTED WALL PANELS (DEAD + LIVE LOAD) PSF		
7.5 ft	L/180	22 s	32 s	41 s
	L/240	22 s	32 s	41 s
	L/360	22 s	32 s	41 s
9.5 ft	L/180	17 s	25 s	33 s
	L/240	17 s	25 s	33 s
	L/360	17 s	25 s	33 s
11.5 ft	L/180	14 s	21 s	27 s
	L/240	14 s	21 s	27 s
	L/360	14 s	21 s	27 s
13.5 ft	L/180	12 s	18 s	23 s
	L/240	12 s	18 s	23 s
	L/360	11 d	18 s	23 s
15.5 ft	L/180	10 s	16 s	20 s
	L/240	10 s	16 s	20 s
	L/360	8 d	15 d	20 s
17.5 ft	L/180	9 s	14 s	18 s
	L/240	9 s	14 s	18 s
	L/360	6 d	12 d	17 d
19.5 ft	L/180	8 s	12 s	16 s
	L/240	7 d	12 s	16 s
	L/360	5 d	10 d	14 d
21.5 ft	L/180	8 s	11 s	14 s
	L/240	6 d	11 s	14 s
	L/360	4 d	8 d	11 d
23.5 ft	L/180	6 d	10 s	13 s
	L/240	5 d	9 d	13 s
	L/360	3 d	6 d	9 d

Notes to Table 3:

1. Values shown in table are the allowable dead load plus live load due to wind, being applied over entire panel. Values are for single-span panels with supports at the top and bottom. Axial loads shall be applied with maximum eccentricity equal to one-sixth of panel thickness.
2. Controlling conditions: “s” - shear, “m” - moment, “d” - deflection.
3. Minimum bearing required is 3 inches
4. Deflection criteria is L/180 for wall loads.
5. Loads are normal duration loads. No duration factors are allowed.

TABLE 4
ALLOWABLE RACKING LOAD (PLF)
FOR TYPE A AND TYPE C SANDWICH PANELS

		SANDWICH PANEL DIMENSIONS		
Nominal Skin Thickness		7/16"	7/16"	7/16"
Nominal Core Thickness		3⅝"	5⅝"	7⅜"
Nominal Total Panel Thickness		4½"	6½"	8¼"
Panel Span Between Supports	Deflection Limit	ALLOWABLE TRANSVERSE LOAD FOR PANELS WITH DIMENSIONAL LUMBER SPLINE PLF		
8.0 ft	1/8 inch	130	130	130
Panel Span Between Supports	Deflection Limit	ALLOWABLE RACKING LOAD FOR PANELS WITH 5/8 IN. BY 3-7/8 IN. OSB SPLINE PLF		
8.0 ft.	1/8 inch	180	180	180

Notes to Table 4:

1. Panels using the dimensional lumber center spline shall have lumber along the top and bottom and both ends, along with the center spline. The panels shall be connected to the lumber with a minimum 8d nail at a maximum of 6 in. on center.
2. Panels using the OSB center spline shall have lumber along the top and bottom and both ends. The panels shall be attached with a minimum 8d nail at 6 in. on center. OSB shall be APA rated.

TABLE 5
HEADER ALLOWABLE UNIFORM LOADS (PLF) [1, 2]

			SANDWICH PANEL DIMENSIONS		
Nominal Skin Thickness			7/16"	7/16"	7/16"
Nominal Core Thickness			3⅝"	5⅝"	7⅜"
Nominal Total Panel Thickness			4½"	6½"	8¼"
Panel Span Between Supports	Deflection & Moment Limit	Header Top & Bottom Plates	ALLOWABLE HEADER LOAD FOR PANELS WITH SINGLE TOP & BOTTOM PLATES (Load in PLF and Moment in ft - lbs.)		
4 ft	L/240	single plate	332	332	332
	L/360		190	190	190
	Mmax		1700	1700	1700
	L/240	double plate	466	466	466
	L/360		297	297	297
	Mmax		2482	2482	2482
6 ft	L/240	single plate	148	148	148
	L/360		85	85	85
	Mmax		1700	1700	1700
	L/240	double plate	207	207	207
	L/360		132	132	132
	Mmax		2482	2482	2482

TABLE 5
HEADER ALLOWABLE UNIFORM LOADS (PLF) [1, 2] (Continued)

			SANDWICH PANEL DIMENSIONS		
Nominal Skin Thickness			7/16"	7/16"	7/16"
Nominal Core Thickness			3⅝"	5⅝"	7⅜"
Nominal Total Panel Thickness			4½"	6½"	8¼"
Panel Span Between Supports	Deflection & Moment Limit	Header Top & Bottom Plates	ALLOWABLE HEADER LOAD FOR PANELS WITH SINGLE TOP & BOTTOM PLATES (Load in PLF and Moment in ft - lbs.)		
8 ft	L/240	single plate	83	83	83
	L/360		48	48	48
	Mmax		1700	1700	1700
	L/240	double plate	117	117	117
	L/360		74	74	74
	Mmax		2482	2482	2482
10 ft	L/240	single plate	53	53	53
	L/360		30	30	30
	Mmax		1700	1700	1700
	L/240	double plate	75	75	75
	L/360		48	48	48
	Mmax		2482	2482	2482
12 ft	L/240	single plate	70	70	70
	L/360		50	50	50
	Mmax		2679	2679	2679
	L/240	double plate	95	95	95
	L/360		71	71	71
	Mmax		3884	3884	3884

Notes to Table 5:

1. Values shown are allowable loads for the spans shown (dead load plus live load).
2. Table reflects two deflection criteria, L/360 values are recommended when header supports floor loadings.
3. Headers listed with single plates shall have a dimensional lumber single plate at top and bottom and along both end edges.
4. Headers listed with double plates shall have a dimensional lumber double plate at top and bottom and along both end edges.
5. Minimum bearing required is 3 inches.
6. Loads are normal duration loads. No duration factors are allowed.
7. Values shown are for single spans supported at each end.
8. For single plates, since the bottom plate will be used for transfer of the transverse loadings, the following loads shall not be exceeded:
   4' = 222.8 plf, 6' = 99.02 plf, 8' = 55.70 plf 10' = 35.65 plf 12' = 24.76 plf
9. For double plates, since the bottom plates will be used for transfer of the transverse loadings, the following loads shall not be exceeded on the bottom plates:
   10' = 71.30 plf 12' = 49.52 plf
10. Header span is the distance measured from centerline of support to centerline of support.

TABLE 6
ALLOWABLE TRANSVERSE LOAD (PSF
FOR TYPE A AND TYPE C SANDWICH PANELS WITH A 4 FOOT CANTILEVER

		SANDWICH PANEL DIMENSIONS				
Nominal Skin Thickness		7/16"	7/16"	7/16"	7/16"	7/16"
Nominal Core Thickness		3⅝"	5⅝"	7⅜"	9⅜"	11⅜"
Nominal Total Panel Thickness		4½"	6½"	8¼"	10¼"	12¼"
Panel Span Between Supports	Deflection Limit	ALLOWABLE TRANSVERSE LOAD FOR SIMPLE SUPPORTED ROOF PANELS WITH 4' CANTILEVER (DEAD + LIVE) PSF				
7.5 ft	L/180	48 s	72 s	93 s	117 s	141 s
	L/240	48 s	72 s	93 s	117 s	141 s
	L/360	48 s	72 s	93 s	117 s	141 s
9.5 ft	L/180	42 s	62 s	80 s	101 s	121 s
	L/240	42 s	62 s	80 s	101 s	121 s
	L/360	36 d	62 d	80 s	101 s	121 s
11.5 ft	L/180	36 s	54 s	69 s	87 s	105 s
	L/240	32 d	54 s	69 s	87 s	105 s
	L/360	21 d	38 d	54 d	73 d	93 d
13.5 ft	L/180	28 d	47 s	61 s	77 s	92 s
	L/240	21 d	39 d	56 d	77 s	92 s
	L/360	14 d	26 d	37 d	51 d	66 d
15.5 ft	L/180	19 d	37 d	54 s	68 s	82 s
	L/240	14 d	28 d	41 d	57 s	74 s
	L/360	10 d	18 d	27 d	38 d	49 d
17.5 ft	L/180	14 d	27 d	41 d	58 s	73 m
	L/240	10 d	20 d	31 d	43 d	57 d
	L/360	7 d	14 d	20 d	29 d	38 d
19.5 ft	L/180	10 d	21 d	31 d	45 d	57 m
	L/240	8 d	15 d	23 d	34 d	45 d
	L/360	5 d	10 d	16 d	23 d	30 d
21.5 ft	L/180	8 d	16 d	25 d	36 d	46 m
	L/240	6 d	12 d	18 d	27 d	36 d
	L/360	4 d	8 d	12 d	18 d	24 d
23.5 ft	L/180	6 d	13 d	20 d	29 d	38 m
	L/240	5 d	10 d	15 d	22 d	29 d
	L/360	3 d	6 d	10 d	14 d	20 d

Notes to Table 6:

1. Values shown in table are the allowable dead load plus live load.
2. Controlling conditions: “s” - shear, “m” - moment, “d” - deflection.
3. Minimum bearing required is 3 inches.
4. Deflection criteria is L/240 for roof loads.
5. Loads are normal duration loads. No duration factors are allowed.
6. For permanent loads, such as floor loads, the tabulated load values shall be reduced by 50%.

TABLE 7 - ALLOWABLE AXIAL LOAD (PLF) FOR TYPE A & TYPE C SANDWICH PANELS

	SANDWICH PANEL DIMENSIONS		
Nominal Skin Thickness	7/16"	7/16"	7/16"
Nominal Core Thickness	3⅝"	5⅝"	7⅜"
Nominal Total Panel Thickness	4½"	6½"	8¼"
Transverse Wind Load (psf)	0	0	0
PANEL CLEAR SPAN	ALLOWABLE AXIAL LOAD (DEAD + LIVE) PLF		
10	2585	2680	2763
12	2355	2485	2598
14	2126	2289	2432
16	1897	2094	2266
18	1667	1898	2101
20	1438	1703	1935
22	1208	1508	1769
24	979	1312	1604

Notes to Table 7:

1. Allowable loads are based on axial loads being applied over entire panel thickness.
2. Deflection criterial for the wall panels is L/240
3. Values are normal duration loads. No increases for other load durations allowed.
4. Loads and spans shall NOT be increased for other deflection criteria.
5. Listed values are for single span panels with supports at the top and bottom.
6. Axial loads can be applied with a maximum eccentricity equal to one-sixth of the panel thickness.

TABLE 8 - ALLOWABLE AXIAL LOAD WITH TRANSVERSE WIND LOAD

Nominal Skin Thickness	7/16"			7/16"			7/16"		
Nominal Core Thickness	3⅝"			5⅝"			7⅜"		
Nominal Total Panel Thickness	4½"			6½"			8¼"		
Transverse Wind Load (psf)	10	15	20	10	15	20	10	15	20
PANEL CLEAR SPAN	ALLOWABLE AXIAL LOAD WITH TRANSVERSE WIND LOAD (DEAD LOAD & LIVE LOAD) PLF								
10	1062	305	X	1605	1069	533	1923	1504	1086
12	671	X	X	1299	708	116	1633	1152	671
14	352	X	X	1015	379	X	1372	843	315
16	X	X	X	783	129	X	1131	564	X
18	X	X	X	540	X	X	932	348	X
20	X	X	X	282	X	X	724	119	X
22	X	X	X	136	X	X	504	X	X
24	X	X	X	X	X	X	369	X	X

Notes to Table 8:

1. Allowable loads are based on axial loads being applied over entire panel thickness.
2. Deflection criteria for the wall panels is L/240
3. Values are normal duration loads. No increases for other load durations allowed.
4. Loads and spans shall NOT be increased for other deflection criteria.
5. Listed values are for single span panels with supports at the top and bottom.
6. Axial loads are permitted to be applied with a maximum eccentricity equal to one-sixth of the panel thickness.
7. The above axial loads satisfy the following equation with the appropriate wind load applied:

$$\frac{\text{Actual Axial}}{\text{Allowable Axial}} + \frac{\text{Actual Transverse}}{\text{Allowable Transverse}} < 1.0$$

NOTE: FOR THE FOLLOWING FIGURES, THESE ILLUSTRATIONS ARE FOR INFORMATION ONLY. ALL PANELS ARE REQUIRED TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S DOCUMENTS, WITH THIS REPORT, AND THE APPROVED CONSTRUCTION DOCUMENTS.

FIGURE 1 — TYPICAL DETAILS – (Figure's A through L)

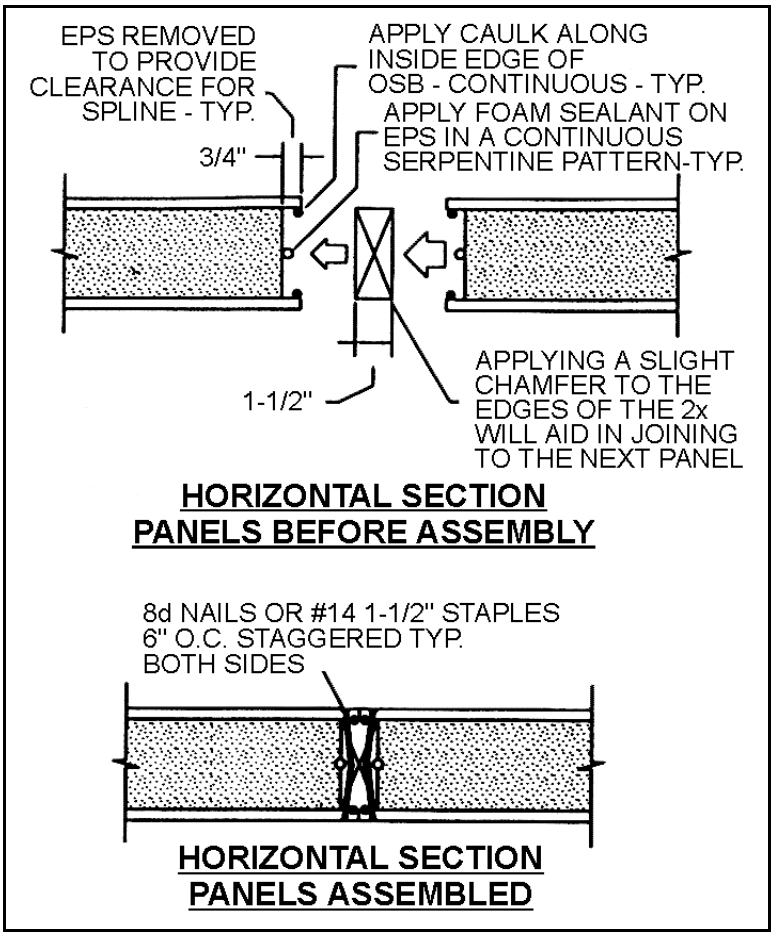

Figure A*
PANEL-TO-PANEL CONNECTION WITH 2x LUMBER

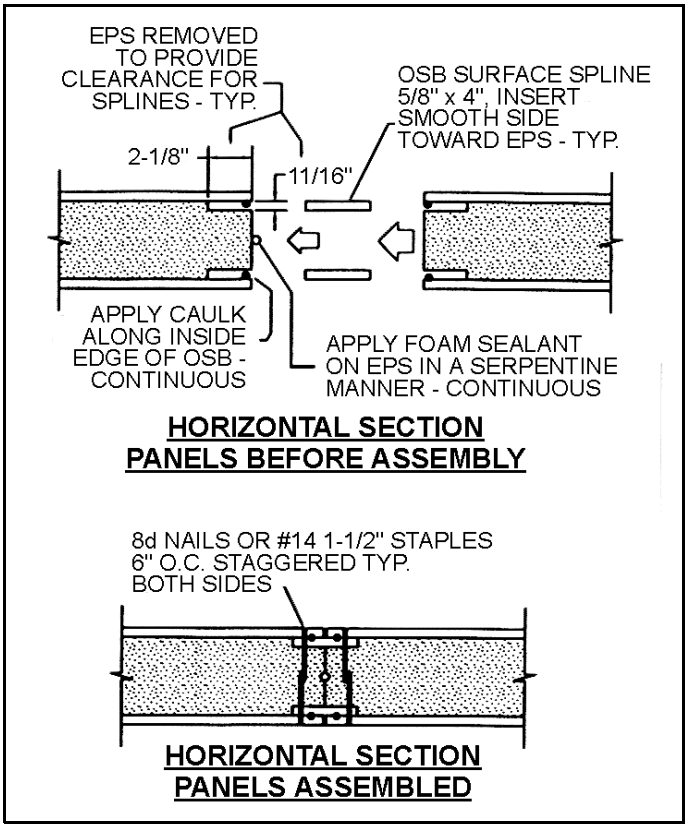

Figure B*

PANEL-TO-PANEL CONNECTION SURFACE SPLINE

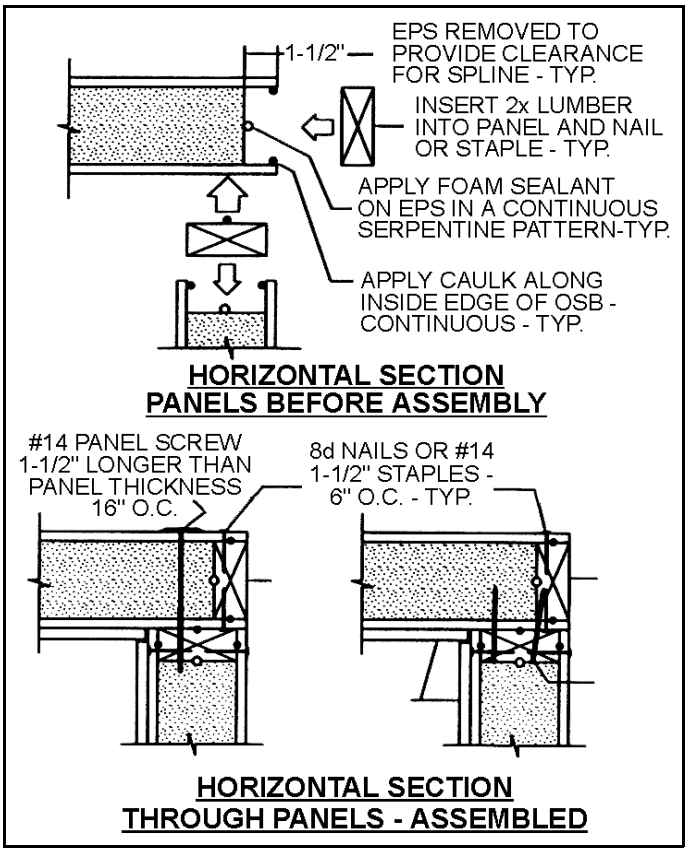

Figure C*

PANEL-TO-PANEL CORNER CONNECTION

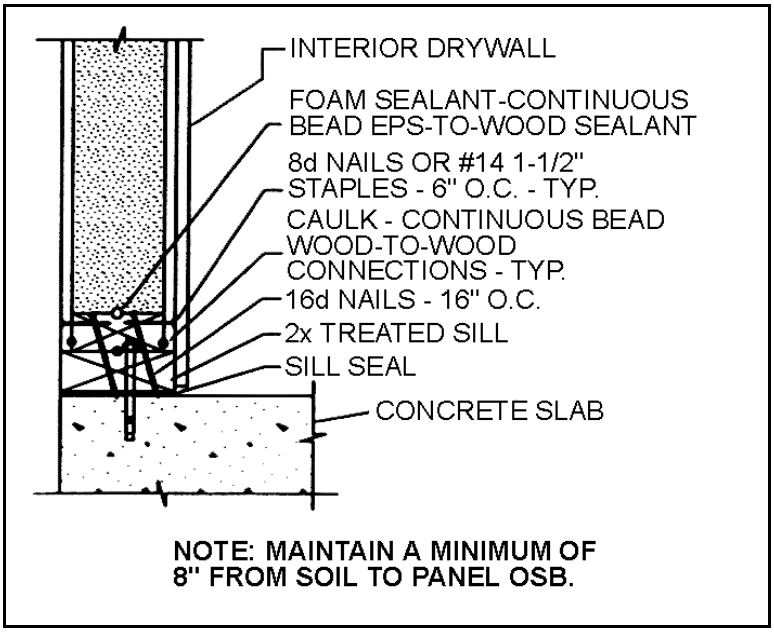

Figure D*

PANEL ON SLAB

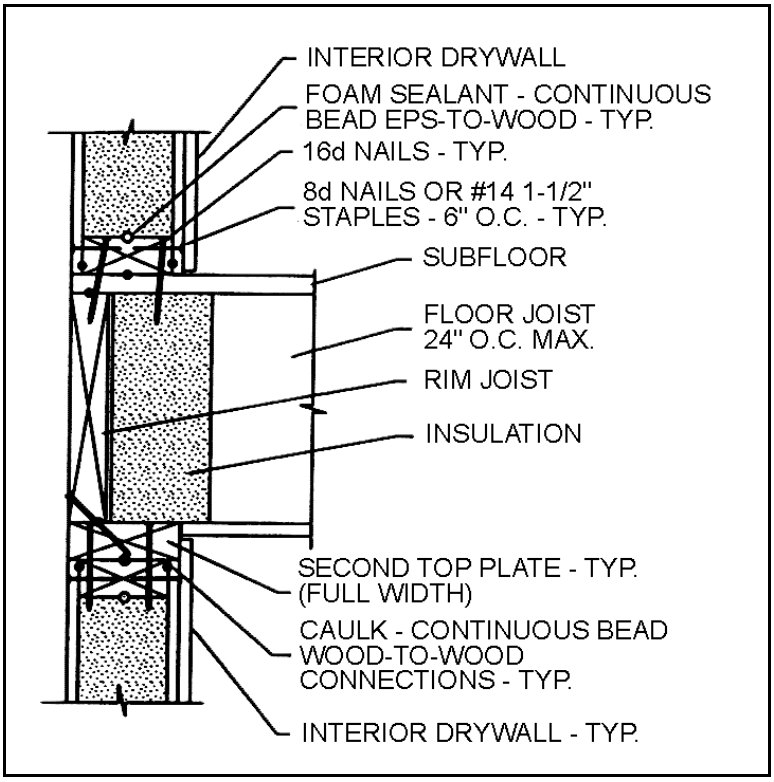

Figure E*

BEARING WALL TO FLOOR JOIST - MULTI-STORY

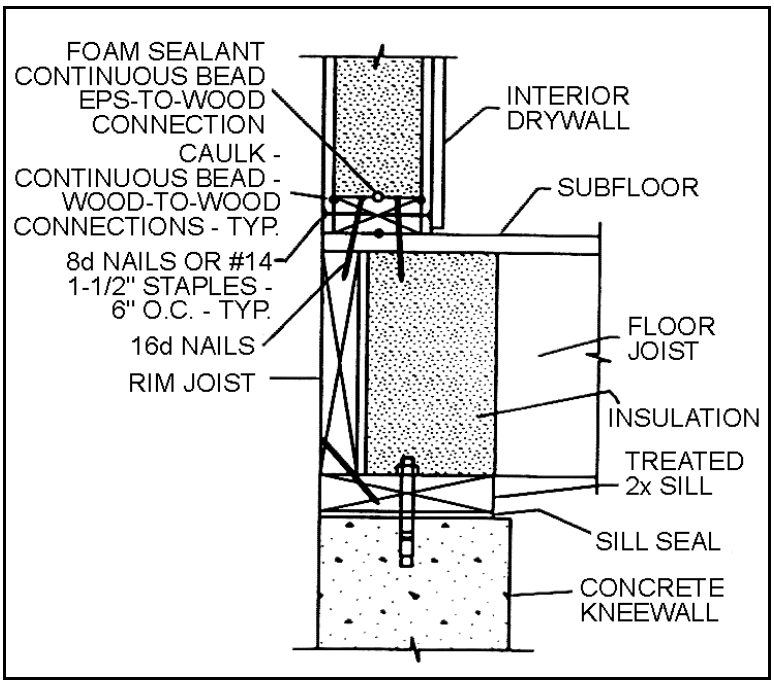

Figure F*
PANEL ON SUBFLOOR

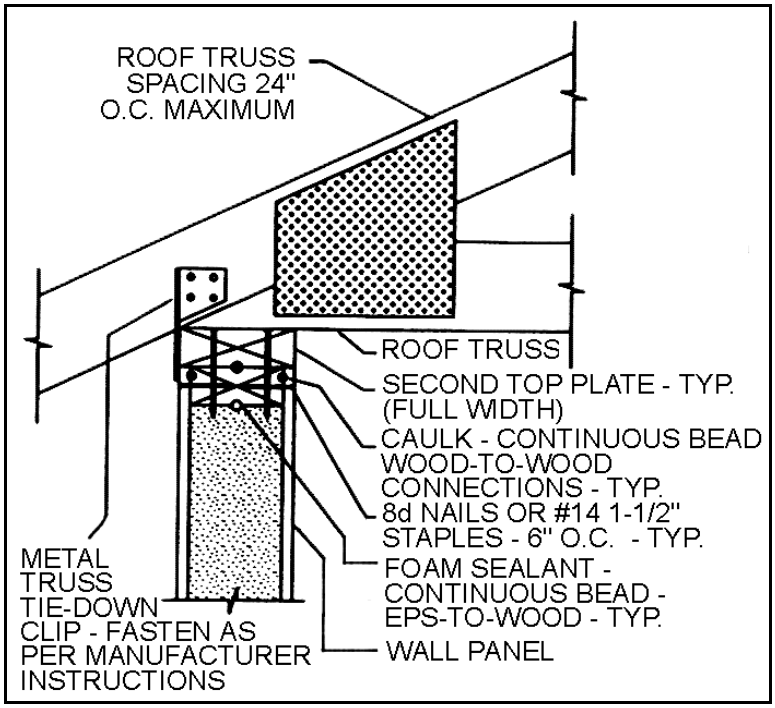

Figure G*
ROOF TRUSS-TO-WALL CONNECTION

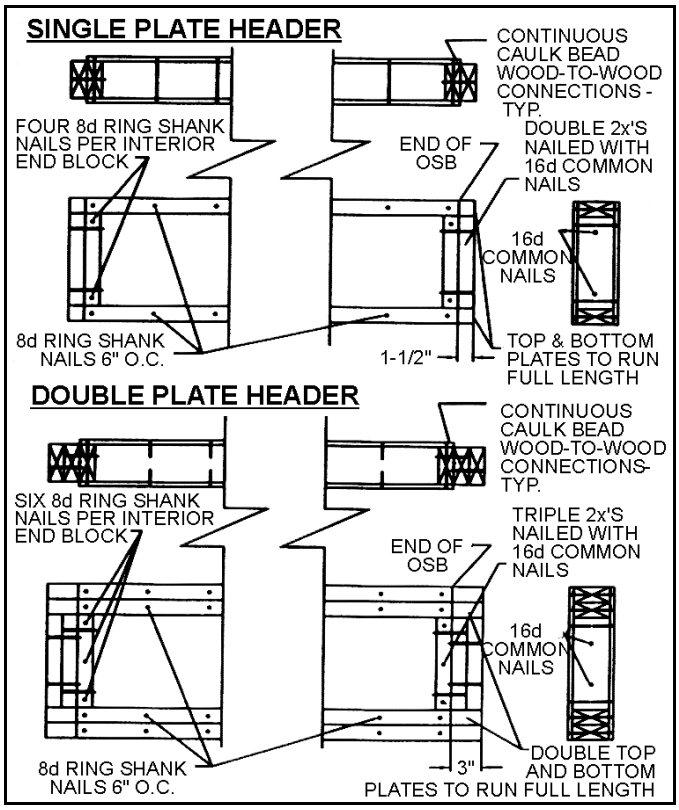

Figure H*

HEADER ASSEMBLY INSTRUCTION

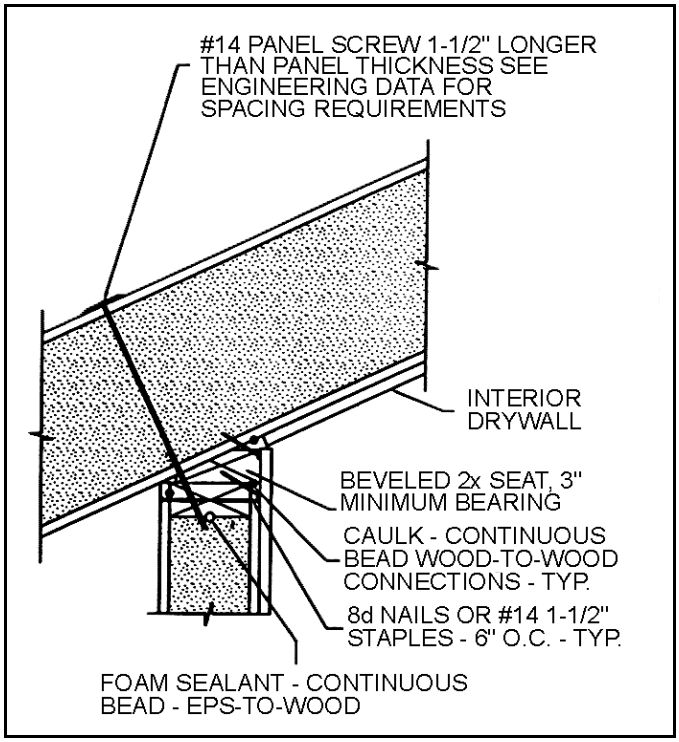

Figure I*

ROOF-TO-WALL CONNECTION

PITCHED ROOF-BEVELED SEAT

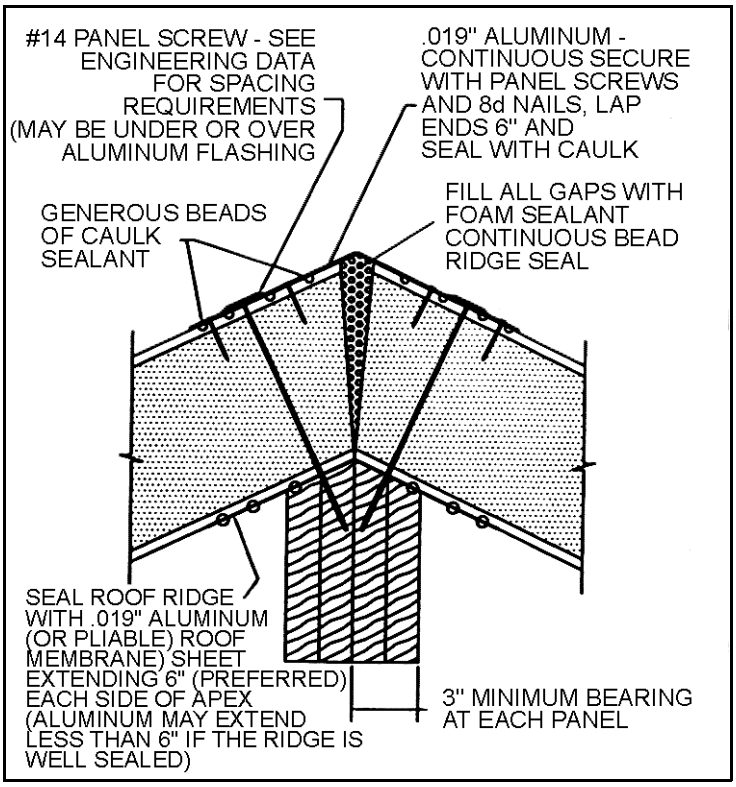

Figure J*

ROOF RIDGE CONNECTION WITHOUT SOLID BLOCKING

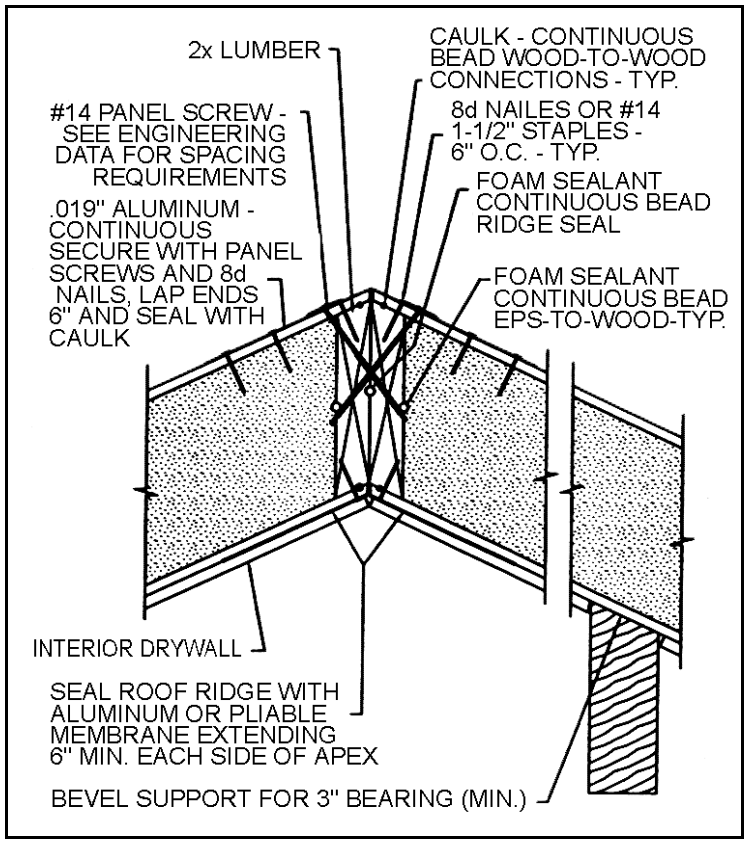

Figure K*

CANTILEVER ROOF RIDGE

CONNECTION WITH SOLID BLOCKING

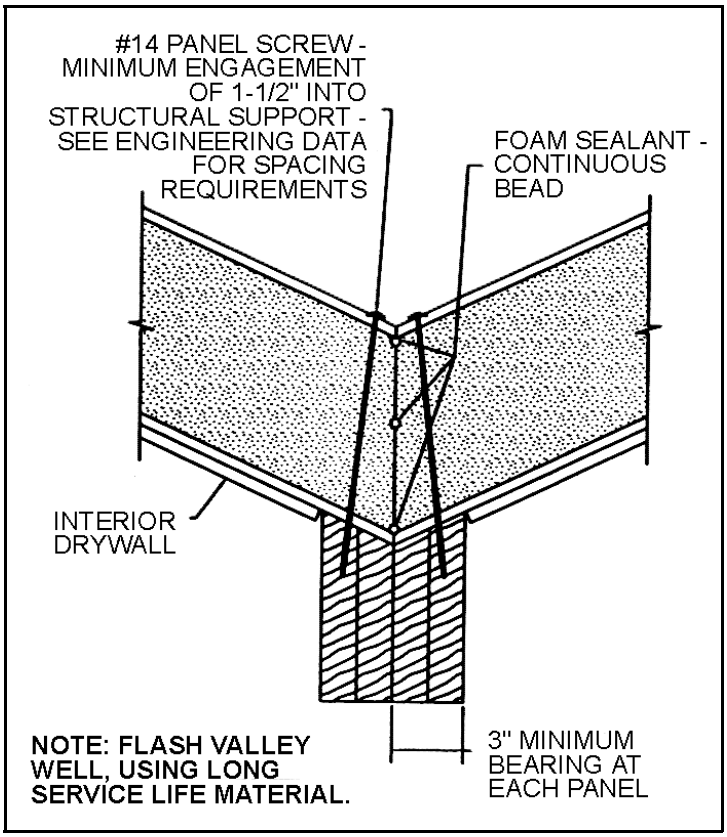

Figure L*

ROOF VALLEY CONNECTION