CONTENTS

1. Introduction........................................................................................................3
2. CF Panel Profiles.................................................................................................6
3. Framing Alignment..............................................................................................9
4. Receiving...........................................................................................................10
5. Material Handling..............................................................................................13
6. Storage and Staging..........................................................................................20
7. Panel Cutting......................................................................................................21
8. Panel Sealant......................................................................................................24
9. Panel Fasteners..................................................................................................25
10. Cleaning............................................................................................................26
11. Touch-up..........................................................................................................26
12. Interior Trim Installation.................................................................................27
13. Panel Installation..............................................................................................34
14. Exterior Trim Installation................................................................................46
15. General Details (for reference only)...............................................................51
16. Penetrations.....................................................................................................75
17. Extrusions.........................................................................................................79
18. Tools, Hardware and Supplies........................................................................83

Disclaimer

This guide is intended to be used in conjunction with the project’s installation drawings. The installation drawings should identify the applicable wall conditions, specify the components and the required arrangement of the components. Specific building design and construction conditions may require variations from the information in this guide.

Metl-Span does not guarantee and is not liable for the quality of installation. Metl-Span is not responsible for defects that may be attributed to improper installation, the negligence of other parties, or for materials not provided by Metl-Span.

All safety procedures including but not limited to fall protection and material handling are the exclusive responsibility of the installing contractor.

Unless specified in writing, Metl-Span makes no expressed or implied warranties pertaining to the fitness of the wall panels or its components for any particular purpose, and shall not be responsible for any indirect or consequential damages, such as to building contents, nor for any further loss of any kind to the owner or contractor.

Metl-Span does not warrant any product or material as meeting the ordinances, laws or regulations of any particular state or local municipality, and Metl-Span is not responsible for conformance by the owner or contractor to such ordinances, laws or regulations.
1. INTRODUCTION

Welcome to Metl-Span, the dynamic industry innovator dedicated to manufacturing and marketing the highest quality insulated building panel products. Since our origination in 1968, we have been pioneers in research, design, production and sales of state-of-the-art insulated metal panels and building materials serving the commercial, industrial, institutional and cold storage industries.

Our mission is clearly defined: Deliver the highest quality energy-efficient solutions to insulate and protect our world.

*This installation guide is designed to provide step by step instructions for vertical commercial/industrial CF series wall panels.*

For more information regarding proper panel installation, please contact Metl-Span Technical Services:

1720 Lakepointe Drive, Suite #101
Lewisville, Texas 75057
TEL: (972) 221-6656
Fax: (972) 436-7028
E-mail: info@metlspan.com
Website: www.metlspan.com
1. INTRODUCTION

Safety

In the USA, the Occupational Safety and Health Act (OSHA) governs regulations with the objective of protecting workers from injury or accident. “Part 1926, Safety and Health Regulations for Construction” are applicable to the wall installation.

In Canada, Occupational Safety and Health (OSH) regulation is under the jurisdiction of the local provinces and territories. Federal employees and Crown agencies may be subject to federal OSH jurisdiction.

The OSHA and OSH regulations should be recognized as job site requirements and fully complied with. Safe installation practices may be further defined and made mandatory by state or local ordinances.

*All safety procedures are the responsibility of the panel installation contractor. If the installer determines that they cannot safely install the panels in accordance with the installation drawings or this guide, it is their responsibility to determine appropriate alternative procedures.*

Owner’s Responsibilities

“Owner” as used throughout this guide refers to the project’s owner and/or his representatives, such as the project’s architect, design engineer and general contractor. These parties are responsible for determining the following:

- Selection of a competent installer who is qualified and experienced in the proper installation of insulated metal panels and related construction.
- Installer has reviewed and understands the project’s installation drawings and this guide prior to installation.
- Panels and related components are installed in accordance with the project’s installation drawings and the applicable portions of this guide.
- Panels are suitable for the purpose intended.
- Project’s structural framing is properly designed and in satisfactory condition to accept the erection and design loads imposed by the wall panels.
- Location of interior and/or exterior panel joint and perimeter seals are properly specified for the project’s moisture and vapor control requirements.
- Panels and related components are installed in compliance with the applicable codes, regulations, service conditions and good engineering and construction practices.
1. INTRODUCTION

Installation Drawings

Installation drawings (also known as shop drawings) are usually prepared by the installation contractor, Metl-Span or some other party depending on preferences or contractual requirements.

Installation drawings must be “approved” by the project architect before they are to be used for construction. It is critical that the “approved installation drawings” are in agreement with the final architectural and structural drawings as well as all addenda.

Approved installation drawings (labelled “for construction” or “for production”) must be available at the job site during the preparation, installation and inspection of the wall support framing, wall panels, flashings and other related construction.

The installation drawings must be reviewed for differences with field conditions, and discrepancies should be resolved before proceeding with panel installation.

*In case of conflict between this guide and “for construction/for production” installation drawings, the drawings govern.*
2. CF PANEL PROFILES

Mesa

Light Mesa

Fluted

7.2 Insul-Rib

Santa Fe

Tuff-Cast
2. CF PANEL PROFILES

- **Tuff Wall**
- **Striated**
- **Partition** (interior use only)
- **HPCI**
- **Architectural**
2. CF PANEL PROFILES

Architectural
24", 30", 36"
2" - 4"

7.2 Insul-Rib
36"
2.5" - 6"

Mesa
30", 36", 42"
2" - 6"

Light Mesa
30", 36", 42"
2" - 6"
*5" and 6" interior use only

Fluted
42"
2" - 6"

Striated
24", 30", 36", 42"
2" - 4"

Santa Fe
24", 30", 36", 42"
2" - 4"

Tuff-Cast, Tuff Wall
36", 42"
2" - 6"
**5" and 6" require Mesa profile on both faces

HPCI
42"
2" - 6"

Partition
44.5"
2" - 6"
3. FRAMING ALIGNMENT

3.1 Framing alignment should be checked **before** panels are delivered to site.

3.2 Compare structural and panel shop drawings to ensure wall supports are in correct location. Field measure support spacing and overall building dimensions.

**WARNING: RESOLVE ALL DIMENSIONAL DIFFERENCES WITH SHOP DRAWINGS BEFORE PANEL INSTALLATION BEGINS!**

3.3 If base support is installed, verify it is aligned with slab edge/notch.

3.4. Check alignment at mid-span and column lines with a laser or plumb bob from the top wall support to the base support or slab edge.

3.5 Check support alignment against these tolerances for **vertical panel installation**:

- < 8’ spacing: +1/8”, -0”
- ≥ 8’ spacing: +1/4”, -0”

(Architectural flat panels: < 4’ spacing: +1/16”, -0”)

3.6 All supports not in alignment must be corrected by the responsible party **before** panel installation begins.

**WARNING: IMPROPER FRAMING ALIGNMENT CAN CAUSE DIFFICULTY WITH PANEL ENGAGEMENT AND RIPLING OR BUCKLING OF THE PANEL FACES.**

![Figure 3.3a](image1)

*Figure 3.3a*  
*Outward alignment within tolerances = acceptable*

![Figure 3.3b](image2)

*Figure 3.3b*  
*Inward alignment = not acceptable*

![Figure 3.4](image3)

*Figure 3.4*
4. RECEIVING

4.1 Proper offloading equipment must be on site prior to arrival of panels and accessories. All bundles and crates are packaged for side unloading by forklift or by crane. Maximum bundle weight is 5,000 lbs.

4.2 Check all materials immediately upon arrival for freight damage. Inspect for strap damage, forklift damage or packaging/bundle wrap damage.

4.3 Verify that the order number, quantities and descriptions of all bundles, crates and pallets on the bill of lading match those on the truck.

4.4 List all visible damages and/or shortages on the bill of lading, obtain the signature of the truck driver and an authorized representative of the Metl-Span customer.

4.5 Keep a copy of the marked-up bill of lading and send it with digital photos of the damage to Metl-Span Customer Relations.

4.6 Concealed damages/shortages must be reported to Metl-Span within 15 days of delivery.
4. RECEIVING

4.7 The panel bundling and accessories report lists the specific contents of each bundle, crate and pallet listed on the bill of lading.

![Panel Bundling Report](chart)

<table>
<thead>
<tr>
<th>Bundle #</th>
<th>Qty</th>
<th>Item #</th>
<th>Weight</th>
<th>Item Desc.</th>
<th>Thickness</th>
<th>Length</th>
<th>Panel Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-1</td>
<td>2</td>
<td>2</td>
<td>244</td>
<td>CFS1-1</td>
<td>4</td>
<td>11'10&quot;</td>
<td>CF42F</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>226</td>
<td>CFS1-2</td>
<td>4</td>
<td>10'11&quot;</td>
<td>CF42F</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>5</td>
<td>393</td>
<td>CFS1-3</td>
<td>4</td>
<td>12'8&quot;</td>
<td>CF42F</td>
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<tr>
<td></td>
<td>4</td>
<td>9</td>
<td>412</td>
<td>CFS3-1</td>
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<td>10'0&quot;</td>
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<td>2</td>
<td>6</td>
<td>226</td>
<td>CFS2-1</td>
<td>4</td>
<td>10'11&quot;</td>
<td>CF42F</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>7</td>
<td>244</td>
<td>CFS2-2</td>
<td>4</td>
<td>11'10&quot;</td>
<td>CF42F</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>262</td>
<td>CFS2-3</td>
<td>4</td>
<td>12'8&quot;</td>
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<td></td>
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<td>9</td>
<td>515</td>
<td>CFS3-1</td>
<td>4</td>
<td>10'0&quot;</td>
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<td>9</td>
<td>309</td>
<td>CFS3-1</td>
<td>4</td>
<td>10'0&quot;</td>
<td>CF42F</td>
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<tr>
<td></td>
<td>5</td>
<td>11</td>
<td>515</td>
<td>CFS4-1</td>
<td>4</td>
<td>10'0&quot;</td>
<td>CF42F</td>
</tr>
<tr>
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<td>7</td>
<td>11</td>
<td>721</td>
<td>CFS4-1</td>
<td>4</td>
<td>10'0&quot;</td>
<td>CF42F</td>
</tr>
<tr>
<td>6-5</td>
<td>8</td>
<td>1</td>
<td>936</td>
<td>CFR-1</td>
<td>5</td>
<td>10'-7 3/4&quot;</td>
<td>CF42R</td>
</tr>
<tr>
<td>6-6</td>
<td>8</td>
<td>1</td>
<td>936</td>
<td>CFR-1</td>
<td>5</td>
<td>10'-7 3/4&quot;</td>
<td>CF42R</td>
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<td>1</td>
<td>702</td>
<td>CFR-1</td>
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<td>10'-7 3/4&quot;</td>
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<td>88</td>
<td>CFR-2</td>
<td>5</td>
<td>8'-0&quot;</td>
<td>CF42R</td>
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</table>

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<thead>
<tr>
<th>Item #</th>
<th>Part #</th>
<th>(Alt #)</th>
<th>Weight</th>
<th>Qty</th>
<th>Description</th>
<th>Pkg Type</th>
<th>Pkg #</th>
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</thead>
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<td>23</td>
<td>F294</td>
<td></td>
<td>1100</td>
<td>6</td>
<td>Low Eave Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>24</td>
<td>F3243</td>
<td></td>
<td>1100</td>
<td>6</td>
<td>4&quot; Head Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>25</td>
<td>F3243</td>
<td></td>
<td>1100</td>
<td>1</td>
<td>4&quot; Head Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>26</td>
<td>F3243</td>
<td></td>
<td>1100</td>
<td>1</td>
<td>4&quot; Head Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>27</td>
<td>F3243</td>
<td></td>
<td>1100</td>
<td>1</td>
<td>4&quot; Head Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>30</td>
<td>F3432</td>
<td></td>
<td>1100</td>
<td>1</td>
<td>Rake Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>32</td>
<td>F3434</td>
<td></td>
<td>1100</td>
<td>2</td>
<td>Rake Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>33</td>
<td>F3434</td>
<td></td>
<td>1100</td>
<td>2</td>
<td>Rake Trim</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>34</td>
<td>F3444</td>
<td></td>
<td>1100</td>
<td>6</td>
<td>Rake Zee</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>36</td>
<td>F3510</td>
<td></td>
<td>1100</td>
<td>10</td>
<td>Rake Angle Lap Cover</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>38</td>
<td>F3700L</td>
<td></td>
<td>1100</td>
<td>4</td>
<td>Rake Closure/Left</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
<tr>
<td>39</td>
<td>F3700R</td>
<td></td>
<td>1100</td>
<td>4</td>
<td>Rake Closure/Right</td>
<td>10' Box</td>
<td>NV-4</td>
</tr>
</tbody>
</table>

*Figure 4.7*
4. RECEIVING

4.8 Every bundle and trim/accessory crate has a shipping label that contains information on the contents.

Figure 4.8
5. MATERIAL HANDLING - Bundles

Forklifts

5.1 Identify and mark off unloading area prior to material delivery.

5.2 Verify adequate material handling equipment with the proper reach and capacity is on site. Bundle weights are listed on the bill of lading, and have a maximum weight of 5,000 lbs.

5.3 Pre-determine the panel storage area prior to material delivery. It must be secure, flat, well-drained and reasonably level.

5.4 Panels are shipped via flatbed trailer, and can be off-loaded from the side of the trailer using forklifts.

5.5 Guidelines for off-loading are as follows:

<table>
<thead>
<tr>
<th>Panel thickness</th>
<th>Bundle length</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-2.75” thick</td>
<td>&lt;36’ = 1 forklift</td>
</tr>
<tr>
<td>3” thick</td>
<td>&lt;40’ = 1 forklift</td>
</tr>
<tr>
<td>4-6” thick</td>
<td>&lt;48’ = 1 forklift</td>
</tr>
</tbody>
</table>

5.6 Tape foam blocks on forks to prevent over-engagement of panel bundles.
5. MATERIAL HANDLING - Bundles

Forklifts

5.7 Forklift blades must be level and centered under the weight of the bundle.

5.8 Longer bundles are pre-marked with two lift points at the factory. Each forklift should straddle one lift point (see figure 5.8)

5.9 Inspect travel route to make sure path is reasonably level, compacted and free of ruts. Move bundles into position as required for efficient installation.

5.10 Secure open bundles with straps before moving with forklifts. Spread forks as far as possible and center under the load. Use caution to prevent excessive bending as damage to panels may result. Avoid bumpy terrain.

**WARNING:** USE EXTREME CARE WHEN MOVING OPEN BUNDLES, ESPECIALLY THOSE WITH 2-3 INCH PANELS LONGER THAN 20'.

**WARNING:** WHEN RELOADING BUNDLES, MAKE SURE THE END MARKED "BACK" FACES THE BACK OF THE TRAILER. USE DUCT TAPE TO REPAIR TEARS IN THE BUNDLE WRAP.
5. MATERIAL HANDLING - Bundles

Lifting by crane

5.11 Use wood spreaders (1.5" minimum thickness, width as required for straps) on top and bottom of bundles at all pick points.

![Diagram showing wood spreaders on top and bottom of bundles](image)

**Figure 5.11**

5.12 Place foam blocks on sides of bundles at all sling locations as shown in figure 5.12.

5.13 Bundles under 4,000 lbs. and less than 44' may be lifted as shown in figure 5.12

![Diagram showing lifting of bundles](image)

**Figure 5.12**

**WARNING:** INSTALLER IS RESPONSIBLE FOR DESIGN, USE AND SAFETY OF RIGGING EQUIPMENT!

USE SLINGS OF SUFFICIENT SIZE AND STRENGTH TO LIFT BUNDLES. DO NOT USE CABLES OR CHAINS!
5. MATERIAL HANDLING - Bundles

Lifting by crane

5.14 Bundles over 4,000 lbs. and less than 44' may be lifted as shown in figure 5.14

![Figure 5.14](image1)

Figure 5.14

5.15 Bundles over 4,000 lbs. and/or over 44' may be lifted as shown in figure 5.15

![Figure 5.15](image2)

Figure 5.15
5. MATERIAL HANDLING - Individual Panels

**Manual Lifting**

5.16 Lift panels from here...

5.17 Rotate panels onto the leading edge (side with clip shelf) before carrying. Use foam blocks (from bundles) to prevent panel edge damage.

**WARNING:** TO AVOID SCRATCHING, DO NOT SLIDE PANELS OFF BUNDLES – **ALWAYS LIFT THEM.**

5.18 Carry panels on edge with sufficient manpower to prevent straining.
5. MATERIAL HANDLING - Individual Panels

Clamping Devices (not by Metl-Span)

5.19 Verify clamping device is securely attached to panels and of sufficient capacity for panel lifting.

5.20 Rotate panel on edge (see 5.17), and lift per figures 5.20a and 5.20b.

**WARNING:** PICKING PANELS FLAT OFF THE BUNDLE WITHOUT THE USE OF VACUUM LIFTING EQUIPMENT AND PROPER OUTRIGGERS IS **NOT** RECOMMENDED!

WHEN USING THROUGH BOLTS MAKE SURE HOLE LOCATIONS WILL BE CONCEALED BY TRIMS. FILL HOLES WITH EXPANDABLE FOAM.

5.21 Set panel in place as shown in figure 5.21a, remove clamp, engage and secure panel.

PANELS EXPOSED TO DIRECT SUNLIGHT MAY EXHIBIT THERMAL BOW WHICH CAN PREVENT PROPER ENGAGEMENT. MOVE PANELS TO SHADED AREA OR FLIP THEM OVER TO EXPOSE COOL SIDE TO SUNLIGHT FOR APPROXIMATELY 15 MINUTES.
5. MATERIAL HANDLING - Individual Panels

Vacuum Lifting

5.22 Panel installation time is typically reduced when using vacuum lifting equipment. Equipment must be designed for panel lengths, weights and profiles to be lifted – verify the requirements of your specific project with your lifting equipment supplier.

Rotaboy and Cladboy* – contact Automak Assembly Inc. at (219) 310-8458

www.automakassembly.com

Wood’s POWR-GRIP®* – contact Woods Powr-Grip Co., Inc. at (406) 628-8231

www.wpg.com

*provided for informational purposes only, and does not imply specific endorsements
6. STORAGE AND STAGING

6.1 Panels should be stored in secure location(s), on level ground that is well drained and free from standing water.

6.2 Elevate one end of panel bundles to provide adequate drainage - use graduated blocking under bundle bearing pads as required (figure 6.2).

6.3 Slit bottom wrapping as shown for ventilation (figure 6.3).

6.4 Cover opened bundles at the end of the day with a tarp. Secure the bundle with straps to protect against weather damage.

6.5 Items on bundle report match panel callouts on Metl-Span installation drawings. Use this info to stage panels.

**WARNING:** DO NOT OVERTIGHTEN STRAPS AS DAMAGE TO PANELS MAY OCCUR. USE PROTECTIVE EDGE PADS.

**WARNING:** KEEP PANELS A SAFE DISTANCE FROM OTHER TRADES THAT ARE TORCHING, CUTTING, WELDING OR PAINTING.
7. PANEL CUTTING

7.1 Personnel cutting panels should always wear safety glasses, gloves and long sleeve shirts.

7.2 Panel cutting should take place prior to installation when possible.

7.3 Use the following cutting tools to avoid panel damage:

- Circular saw with carbide tipped metal cutting blade
- Insulated metal panel saw
- Band saw with metal cutting blade

7.4 Use care when using reciprocating saws to avoid panel delamination: make sure the blade is sharp and let the saw cut at its own pace - do not force.

7.5 Do NOT use abrasive saws to cut panels.

- Abrasive saws

WARNING: USE OF ABRASIVE SAWS/GRINDER BLADES WILL DAMAGE THE PAINT FINISH AND THE METAL FACINGS!

7.6 For small penetrations, cut each panel face with a portable router, then cut the foam with a serrated knife.

7.7 Metal flashings may be cut with power snips, nibblers or hand snips.
7. PANEL CUTTING

7.8 Place the panel on padded sawhorses with the interior side up.
7.9 Wipe mud and debris off panel face to be cut with clean rag.
7.10 Mark cut line with chalk or washable felt tip marker (figure 7.10).
7.11 Masking tape may be applied on both sides of cut line to minimize panel scratching.
7.12 Recheck measurements and cut with appropriate tool per 7.3, 7.4.
7.13 Remove burrs at cut edges with deburring tool.

---

**Figure 7.10**

**CHECK BLADE SHARPNESS OFTEN WHEN CUTTING TUFF COTE® PANELS AS THE FINISH CONTAINS ABRASIVES.**

**WARNING: TO PREVENT DAMAGE TO THE PAINT FINISH REMOVE ALL METAL SHAVINGS FROM PANEL SURFACES AFTER CUTTING!**

**TEST FIT PANEL BEFORE INSTALLING JOINT SEALANT!**
7. PANEL CUTTING

Framed Openings

7.14 For panels located at framed openings where 50% or more of panel width is removed:
   a. mark cut lines on BOTH panel faces
   b. drill 1/4" holes at corner locations
   c. cut the exterior face to a depth of 1/4"
   d. flip panel over and cut interior face to a depth of 1/4"
   e. cut all the way through panel sidejoints at the framed opening area
   f. lift panel into place, set on bottom support
   g. cut foam with serrated knife and remove panel section
   h. engage panel and secure with fasteners
   i. de-bur and remove metal shavings

CUT METAL FACINGS ONLY - DO NOT CUT FOAM CORE UNTIL PANEL IS LIFTED INTO PLACE!
8. PANEL SEALANT

**WARNING:** THE TYPICAL AIR/VAPOR BARRIER LOCATION FOR COMMERCIAL/INDUSTRIAL PROJECTS IS THE LINER (INTERIOR) SIDE JOINT. HOWEVER, THE PROJECT ARCHITECT IS RESPONSIBLE FOR DETERMINING THE ACTUAL VAPOR BARRIER LOCATION, WHICH MAY VARY FROM THE DETAILS SHOWN IN THIS GUIDE.

8.1 Joint must be clean and dry before applying sealant.

8.2 Apply continuous non-curing (non-skinnning) butyl sealant to the interior panel joint with a bead size of approximately ¼” as shown in figure 8.2. Sealant should provide continuous seal between the tongue and groove, but not overflow onto panel faces.

8.3 Inspect factory applied sealant (if any) for consistent bead size - add sealant as required.

**COLD WEATHER = STORE BUTYL IN A WARMING BIN UNTIL READY FOR USE**

**HOT WEATHER = STORE BUTYL IN THE SHADE AND OUT OF DIRECT SUNLIGHT**

**REMOVE SEALANT FROM PAINTED PANEL FACES BY USING WD-40 OR MINERAL SPIRITS APPLIED WITH A CLEAN COTTON RAG.**

**FOR TUFF-COTE PANELS CONTACT METL-SPAN FOR SEALANT REMOVAL INSTRUCTIONS.**
9. PANEL FASTENERS

**WARNING:** REFER TO PROJECT INSTALLATION DRAWINGS FOR FASTENER TYPES AND REQUIRED FASTENING PATTERNS!

Self-drilling, self-tapping fasteners contain a built-in drill point, and do not require pre-drilling. They are the quickest and easiest way to attach insulated metal panels to light-medium gauge supports.

![Figure 9.1a](image)

B point fasteners are used to attach panels to medium-heavy gauge supports that are difficult or not possible to drill with self-drilling type fasteners. They require a two-step operation:

1. pre-drill holes through panels and structure
2. insert fastener and tighten

![Figure 9.1b](image)

**Suggested fastener driving speeds:**

Carbon, Zinc Plated and 410 Stainless Steel: 1,800 rpm

304 Stainless Steel: 1,000 rpm

**Recommended self-drilling, self-tapping types for various support thicknesses (¼” diameter):**

<table>
<thead>
<tr>
<th>Support thickness</th>
<th>Type</th>
<th>Threads per inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 gauge (.048)</td>
<td>#2, #3</td>
<td>14</td>
</tr>
<tr>
<td>16 gauge (.060)</td>
<td>#2, #3</td>
<td>14</td>
</tr>
<tr>
<td>14 gauge (.075)</td>
<td>#2, #3</td>
<td>14</td>
</tr>
<tr>
<td>12 gauge (.105)</td>
<td>#3</td>
<td>14</td>
</tr>
<tr>
<td>1/8” (.125)</td>
<td>#3</td>
<td>14</td>
</tr>
<tr>
<td>10 gauge (.134)</td>
<td>#3</td>
<td>14</td>
</tr>
<tr>
<td>3/16” (.187)</td>
<td>#5</td>
<td>20 minimum</td>
</tr>
<tr>
<td>1/4” (.250)</td>
<td>#5</td>
<td>24</td>
</tr>
<tr>
<td>3/8” (.375)</td>
<td>#5</td>
<td>24</td>
</tr>
<tr>
<td>1/2” (.500)</td>
<td>#5</td>
<td>24</td>
</tr>
</tbody>
</table>

**Pilot Hole Sizes for ¼” diameter B point fasteners:**

<table>
<thead>
<tr>
<th>Support thickness</th>
<th>Bit Size</th>
<th>Threads per inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 gauge (.048)</td>
<td>3/16”</td>
<td>14</td>
</tr>
<tr>
<td>16 gauge (.060)</td>
<td>.9 (.196)</td>
<td>14</td>
</tr>
<tr>
<td>14 gauge (.075)</td>
<td>.9 (.196)</td>
<td>14</td>
</tr>
<tr>
<td>12 gauge (.105)</td>
<td>.7 (.201)</td>
<td>14</td>
</tr>
<tr>
<td>1/8” (.125)</td>
<td>.2 (.221)</td>
<td>14</td>
</tr>
<tr>
<td>10 gauge (.134)</td>
<td>.2 (.221)</td>
<td>14</td>
</tr>
<tr>
<td>3/16” (.187)</td>
<td>.2 (.221)</td>
<td>20 minimum</td>
</tr>
<tr>
<td>1/4” (.250)</td>
<td>.1 (.228)</td>
<td>20</td>
</tr>
<tr>
<td>3/8” (.375)</td>
<td>.1 (.228)</td>
<td>24</td>
</tr>
<tr>
<td>1/2” (.500)</td>
<td>.234</td>
<td>24</td>
</tr>
</tbody>
</table>

USE A TORQUE CONTROL OR DEPTH SENSING NOSE PIECE FOR PROPER FASTENER PERFORMANCE.
10. CLEANING

10.1 Metal shavings from cutting and drilling should be removed as panels are erected using a soft bristle brush or clean cotton rag.

10.2 For general cleaning, use a low pressure power wash with plain water. If necessary, use carwash soap or a 5% solution of mild laundry detergent (such as Tide). Use a clean cotton rag, sponge or soft bristle brush as required. Rinse thoroughly.

10.3 Sealants, grease, tar and wax can be removed from panels and trim by using WD-40 or mineral spirits. Apply to a clean cotton rag, and avoid smearing over a large area. Follow up with general cleaning instructions per 10.2.

10.4 For rust stains, remove the source (typically metal filings), then clean the affected area using one of the following methods: soap and water or Rid O’Rust®.

10.5 Concrete/mortar splatter must be washed off immediately with a high pressure wash and mild detergent.

11. TOUCH-UP

11.1 Contact Metl-Span Customer Relations for color matched touch-up paint with applicator brush.

11.2 Touch-up paint is for minor scratches only. For deep scratches or larger areas of repair, contact Customer Relations for detailed instructions.

11.3 Clean affected area with a clean cloth, dampened with isopropyl alcohol.

11.4 Air and panel temperatures must be above 50°F before attempting repairs.

11.5 Apply touch-up in the scratch using an artist brush.

11.6 Allow 30-45 minutes for tack free and 24 hours for complete drying.

11.7 For more information regarding touch-up refer to the Owner’s Maintenance Manual.
12. INTERIOR TRIM INSTALLATION - BASE

12.1 Re-verify framing alignment per Chapter 3 Framing Alignment.

12.2 Confirm base condition as overhang or notched slab.

12.3 If base angle has not yet been installed, place urethane sealant under angle and butyl sealant on vertical leg of angle as shown in figure 12.3a (overhung) and 12.3b (if notched slab).

12.4 If base angle is already installed, place sealant as shown in figure 12.4a (overhung) and figure 12.4b (if notched slab).
12. INTERIOR TRIM INSTALLATION - BASE

12.5 Attach base flashing to base attachment using #12 pancake stitch fasteners (12” on center).

For base conditions matching 12.3:

For base conditions matching 12.4

FOR MORE BASE CONDITIONS SEE CHAPTER 15 GENERAL DETAILS.
12. INTERIOR TRIM INSTALLATION - BASE

12.6 Lap base flashing with urethane sealant, install 1/8" color matched pop rivets as shown.

12.7 Cut flashing section at end of wall at 45 degree angle. Notch end of opposing flashing section with tabs that lap underneath. Apply urethane sealant, join pieces together using 1/8" color matched stainless steel pop rivets.
12. INTERIOR TRIM INSTALLATION - CORNERS

12.8 Install interior portion of two piece corner trims using 1/8" stainless steel pop rivets.

12.9 Trim hems 2", apply 2 rows of urethane sealant, lap and fasten with 1/8" stainless steel painted pop rivets.
12. INTERIOR TRIM INSTALLATION - FRAMED OPENINGS

12.10 For two piece jambs, apply minimum 1/4" bead of butyl sealant at head and jambs of framed openings.

12.11 For one piece jambs, apply minimum 1/4" bead of butyl sealant at head conditions only.

Figure 12.10a  Figure 12.11

REFER TO PROJECT INSTALLATION DRAWINGS TO DETERMINE IF ONE OR TWO PIECE JAMB SYSTEM IS REQUIRED.

Figure 12.10b  Figure 12.10c
12. INTERIOR TRIM INSTALLATION - FRAMED OPENINGS

12.12 Notch interior head trim at framed opening corners and bend tabs downward at each end.

12.13 For two piece jambs, install interior head and jamb trims with 1/8" stainless steel pop rivets at 12" on center.

12.14 For one piece jambs, install interior head trim only with 1/8" stainless steel pop rivets at 12" on center.
12.15 Notch interior jamb trims as required at intersection of base flashing.
13. PANEL INSTALLATION - SEALANT

13.1 Starting at a building corner, apply 1/4" minimum bead of non-skinning butyl sealant to base flashing, interior corner trim and eave strut (figure 13.1).

13.2 Cut trailing edge of first panel per layout shown on installation drawings (figure 13.2a).

**WARNING:** ALIGNING PANEL JOINTS WITH JAMBS IS NOT RECOMMENDED DUE TO DIFFICULTY WITH WEATHER SEALING! IF UNAVOIDABLE, CONTACT METL-SPAN FOR RECOMMENDATIONS.
13. PANEL INSTALLATION - STARTER PANEL

13.3 Lift panel into place and firmly set into butyl sealant.

13.4 Place level on leading edge (side with clip shelf), align and fasten trailing cut edge with 1/4" pancake fasteners into structural supports as required per installation drawings.

**WARNING:**

- INSPECT ALL PANELS BEFORE INSTALLING - CHECK FOR DENTS, DEEP SCRATCHES, JOINT DAMAGE AND FACE RIPPLING. DO NOT INSTALL DAMAGED MATERIALS - CONTACT METL-SPAN BEFORE PROCEEDING.

**WARNING:**

- DO NOT OVERDRIVE FASTENERS - THIS DAMAGES PANEL APPEARANCE AND CAN CAUSE FASTENER STRIP-OUT.
13. PANEL INSTALLATION - ATTACHMENT

13.5 Attach leading edge of panel to structure per shop drawings (use Metl-Span fastening pattern(s) indicated).

**WARNING:** REFER TO PROJECT INSTALLATION DRAWINGS FOR FASTENER SIZES, TYPES AND REQUIRED FASTENING PATTERNS!

![Figure 13.5a](image1)

**WARNING:** INSTALLED CLIPS SHOULD BE SNUG, BUT DO NOT COMPRESS FOAM CORE MORE THAN 1/16".

Figures 13.5a - d are used with Metl-Span Fastening Patterns 1-8 (see pages 71-74 for more information)

![Figure 13.5b](image2)

![Figure 13.5c](image3)

![Figure 13.5d](image4)
13. PANEL INSTALLATION - ATTACHMENT

**WARNING:** REFER TO PROJECT INSTALLATION DRAWINGS FOR FASTENER SIZES, TYPES AND REQUIRED FASTENING PATTERNS!

Figures 13.5e and f are examples of back fastening used with Metl-Span Fastening Patterns 2-5 (see pages 71-72 for more information).

Figures 13.5g and h are examples of back fastening used with Metl-Span Fastening Patterns 6-8 (see pages 72-73 for more information).
WARNING: REFER TO PROJECT INSTALLATION DRAWINGS FOR FASTENER SIZES, TYPES AND REQUIRED FASTENING PATTERNS!

Figures 13.5i - l are used with Metl-Span Fastening Patterns 9-10 (see page 74 for more information)
13. PANEL INSTALLATION - MARRIAGE BEADS

13.6 Marriage beads must be placed at ALL panel terminations.

Figure 13.6a

PANEL TERMINATION AT EAVE STRUT

Figure 13.6b

PANEL TERMINATION AT BASE
13. PANEL INSTALLATION - SIDEWALL ELEVATION

13.7 Install remaining panels on wall elevation with marriage beads at top and bottom of EVERY panel.

13.8 Verify joint spacing is as shown in figure 13.8.

ACTUAL COVERAGE WIDTH MAY VARY -1/8” TO + 1/8” DUE TO PANEL, CAULKING AND STRUCTURAL TOLERANCES!

13.9 Verify vertical alignment at every panel using level on leading edge.

ALL GUIDE GRAPHICS SHOW LEFT TO RIGHT INSTALLATION FOR CLARITY. PANELS MAY BE INSTALLED RIGHT TO LEFT BY ROTATING PANELS 180 DEGREES LENGTHWISE. REFER TO INSTALLATION DRAWINGS FOR PROPER DIRECTION.

13.10 Engage bottom corner of panels first, then allow gravity to rotate panel into position. Hold top of panels 1” off structurals to minimize smearing butyl sealant on eave strut.
13. PANEL INSTALLATION - OUTSIDE CORNER

13.11 Cut leading edge of panel P2, trailing edge of panel P3. Attach cut edges of panels at corner with 1/4" pancake fasteners at base angle, girts, sheeting angle and eave strut.

Figure 13.11a

Figure 13.11b

13.12 Apply expandable foam as shown in the figure below.
13. PANEL INSTALLATION - INSIDE CORNER

13.13 Cut leading edge of panel P2, trailing edge of panel P3 at inside corner. Attach cut edges of panels at corner with 1/4" pancake fasteners at base angle, girts, sheeting angle and eave strut.

---

**Figure 13.13a**

**Figure 13.13b** direction of installation

---

**Figure 13.13c**

- SUPPORTS
- EXPANDABLE FOAM (NOT BY PANEL MANUFACTURER)
- CORNER TRIM
- 1/8" RIVETS @ SUPPORTS
- BUTYL SEALANT
13. PANEL INSTALLATION - ENDWALL ELEVATION

13.14 Install panels and cut in place to match roof slope. Apply marriage beads at top and bottom of EVERY panel.
13. PANEL INSTALLATION - FRAMED OPENINGS

13.15 Apply urethane sealant on head trim and at each end to create end dams.

13.16 Apply urethane or non-skimming butyl sealant on jamb and sill areas.

**WARNING:** END DAMS ARE REQUIRED TO PREVENT WINDOW LEAKS!

STANDARD TWO PIECE WINDOW JAMB VERIFY PER INSTALLATION DRAWINGS.

OPTIONAL ONE PIECE WINDOW JAMB VERIFY PER INSTALLATION DRAWINGS.

STANDARD TWO PIECE DOOR JAMB VERIFY PER INSTALLATION DRAWINGS.
13. PANEL INSTALLATION - FRAMED OPENINGS

13.16 Cut panels at framed openings per Chapter 7 PANEL CUTTING - Framed Openings.

13.17 Lift panels and secure to perimeter of framed opening using 1/4" pancake fasteners (if required by installation drawings).

STANDARD TWO PIECE WINDOW JAMB VERIFY PER INSTALLATION DRAWINGS.

OPTIONAL ONE PIECE WINDOW JAMB VERIFY PER INSTALLATION DRAWINGS.

13.18 Apply marriage bead of non-skinning butyl sealant at all head and sill panels.
14. EXTERIOR TRIM INSTALLATION - FRAMED OPENINGS

14.1 Apply butyl tape at sill and jambs.

14.2 Install one piece sill trim with tabs bent up using 1/8" stainless steel painted pop rivets at 8" on center.
14. EXTERIOR TRIM INSTALLATION - FRAMED OPENINGS

14.3 Install exterior jamb trims using 1/8" stainless steel painted pop rivets at 8" on center.

14.4 Apply urethane sealant at lap and attach exterior head trim using 1/8" stainless steel painted pop rivets at 8" on center.
14. EXTERIOR TRIM INSTALLATION - FRAMED OPENINGS

Completed window trim with two piece jambs

Figure 14.4d

Completed window trim with one piece deep jambs

Figure 14.4e
14. EXTERIOR TRIM INSTALLATION - BASE

14.5 Install exterior base trims with 1/8" stainless steel painted pop rivets at 8" on center.
14. EXTERIOR TRIM INSTALLATION - CORNERS

14.6 Apply butyl tape to interior side of corner trims (if required per installation drawings) and install with 1/8" stainless steel painted pop rivets at 8" on center.
15. GENERAL DETAILS

WARNING: THIS CHAPTER CONTAINS GENERAL DETAILS ONLY - REFER TO PROJECT INSTALLATION (SHOP) DRAWINGS FOR PROJECT SPECIFIC DETAILS!

Clip and Fastener Assembly

Joint Sealant Application

Detail A

CI-CF-JT-03
PANEL JOINT DETAILS
15. GENERAL DETAILS

CI-CF-FSTN-01A
ATTACHMENT SIDEJOINT - PRE-ENGINEERED

CI-CF-FSTN-01B
ATTACHMENT SIDEJOINT - STRUCTURAL
15. GENERAL DETAILS

CI-CF-FSTN-01C
ATTACHMENT BACK-FASTENED W/GIRT CLIPS

CI-CF-FSTN-01D
ATTACHMENT BACK-FASTENED W/RIVETS
15. GENERAL DETAILS

CI-CF-BE-06
BASE - OVERHANG W/DRIP TRIM
15. GENERAL DETAILS

CI-CF-BE-07
BASE - OVERHANG W/EDGE TRIM

1/8” RIVETS @ 8” O.C.

CONTINUOUS BUTYL SEALANT
WITH MARRIAGE BEAD TO
VERTICAL PANEL JOINT SEALANT

BASE ATTACHMENT
(NOT BY PANEL MANUFACTURER)

BUTYL SEALANT

#12 PANCAKE STITCH FASTENER

CONC. FASTENERS
(NOT BY PANEL MANUFACTURER)

BASE ATTACHMENT
SET IN CONTINUOUS
BEAD OF URETHANE SEALANT

CONTINUOUS BUTYL SEALANT
WITH MARRIAGE BEAD TO
VERTICAL PANEL JOINT SEALANT

PANEL SUPPORT ANGLE
(NOT BY PANEL MANUFACTURER)

14 GA. PANEL CLIP

1/4” HWH FASTENERS

BASE TRIM

BUTYL SEALANT

ALTERNATE PLACEMENT OF SEALANT

URETHANE SEALANT

CONTINUOUS BUTYL SEALANT
WITH MARRIAGE BEAD TO
VERTICAL PANEL JOINT SEALANT
15. GENERAL DETAILS

CI-CF-BE-08
BASE - OVERHANG W/BASE SUPPORT

14 GA. PANEL CLIP
1/4" HWH FASTENERS
1/8" @ 8" O.C.
BASE TRIM

CI-CF-EB-02
BASE - OVERHANG W/EXTRUSION

14 GA. PANEL CLIP
1/4" HWH FASTENERS
WIPER GASKET
BASE EXTRUSION
FIELD DRILL 3/8" MIN.
WEEP HOLES @ 24" O.C.
SPlice PLATE

CONTINUOUS BASE ATTACHMENT
( NOT BY PANEL MANUFACTURER)
BASE ATTACHMENT
SET IN CONTINUOUS
Bead of URETHANE SEALANT

CONTINUOUS BUTYL SEALANT
WITH MARRIAGE BEAD TO
VERTICAL PANEL JOINT SEALANT

CONC. FASTENERS
( NOT BY PANEL MANUFACTURER)

#12 PANCAKE STITCH FASTENER

FINISH FLOOR

CONTINUOUS BUTYL SEALANT
WITH MARRIAGE BEAD TO
VERTICAL PANEL JOINT SEALANT

ALTERNATE PLACEMENT OF SEALANT

CONTINUOUS BUTYL SEALANT
WITH MARRIAGE BEAD TO
VERTICAL PANEL JOINT SEALANT

URETHANE SEALANT
15. GENERAL DETAILS

CI-CF-BE-02
BASE - OVERHANG W/NOTCHED SLAB
15. GENERAL DETAILS

**CI-CF-BE-04**
**BASE - OVERHANG W/NOTCHED SLAB ALT.**
15. GENERAL DETAILS

CI-CF-EB-01
BASE - OVERHANG W/NOTCHED SLAB, EXTRUSION
15. GENERAL DETAILS

**CI-CF-CE-01**
OUTSIDE CORNER W/FLUSH TRIM

**CI-CF-EC-01**
OUTSIDE CORNER W/TWO PIECE EXTRUSION
15. GENERAL DETAILS

CI-CF-CE-03
INSIDE CORNER W/FLUSH TRIM

CI-CF-EC-02
INSIDE CORNER W/TWO PIECE EXTRUSION
15. GENERAL DETAILS

CI-CF-HD-01
HEAD W/TWO PIECE TRIM

CI-CF-EH-01
HEAD W/TWO PIECE EXTRUSION
15. GENERAL DETAILS

CI-CF-JB-01
JAMB W/TWO PIECE TRIM

CI-CF-JB-02
JAMB W/DEEP TRIM
CI-CF-EJ-01
JAMB W/EXTRUSION

CI-CF-SL-01
SILL W/FLAT TRIM
15. GENERAL DETAILS

CI-CF-ES-01
SILL W/EXTRUSION

#12 PANCAKE STITCH SCREW @ 12” O.C.
PERIMETER SEALANT (NOT BY PANEL MANUFACTURER)
SILL EXTRUSION
BUTYL SEALANT
WIPER GASKET
FLUTE PLUG STRIP (1) PER PANEL (IF REQUIRED) SET IN URETHANE SEALANT
CONTINUOUS BUTYL SEALANT WITH MARRIAGE BEAD TO VERTICAL PANEL JOINT SEALANT
1/4” HWH FASTENERS
14 GA. PANEL CLIP
SUPPORT
WINDOW/LOUVER/DOOR/FRAMING (NOT BY PANEL MANUFACTURER)
15. GENERAL DETAILS

CI-CF-HD-02
O.H. DOOR HEAD W/TWO PIECE TRIM

CI-CF-EH-02
O.H. DOOR HEAD W/TWO PIECE EXTRUSION
15. GENERAL DETAILS

CI-CF-DJ-01
O.H. DOOR JAMB W/TWO PIECE TRIM

CI-CF-ED-01
O.H. DOOR JAMB W/EXTRUSION
15. GENERAL DETAILS

CI-CF-SJ-01
STACK JOINT W/TRIM

WARNING: VERIFY THAT STRUCTURAL SUPPORTS AT STACK JOINT LOCATION ARE OF PROPER GAUGE, LOCATION AND SIZE.

WARNING: IN ORDER TO ENSURE PROPER ALIGNMENT OF PANELS IT IS RECOMMENDED THAT BOTH LOWER AND UPPER ROWS ARE INSTALLED AT THE SAME TIME.
15. GENERAL DETAILS

Ci-CF-VE-01
EAVE - CONVENTIONAL ROOF

14 GA. PANEL CLIP

1/4" HWH FASTENERS

WIPER GASKET

STACK JOINT EXTRUSION

1/2" 3/8"

FIELD DRILL 3/8" MIN. WEEP HOLES @ 24" O.C.

WIPER GASKET

SPLICE BAR

#12 PANCAKE STITCH FASTENER

URETHANE SEALANT

CONTINUOUS BUTYL SEALANT WITH MARRIAGE BEAD TO VERTICAL PANEL JOINT SEALANT

SUPPORT

CONTINUOUS BUTYL SEALANT WITH MARRIAGE BEAD TO VERTICAL PANEL JOINT SEALANT

NOTE:
THIS DETAIL IS FOR INFORMATIONAL PURPOSES ONLY. ALL ROOF COMPONENTS, PERIMETER FLASHING AND SEALANTS ARE NOT BY PANEL MANUFACTURER.

Flashing Sealant Tape

Flute Plug Strip (1) PER PANEL (IF REQUIRED) SET IN URETHANE SEALANT

1/4" HWH FASTENERS

14 GA. PANEL CLIP

CONTINUOUS BUTYL SEALANT WITH MARRIAGE BEAD TO VERTICAL PANEL JOINT SEALANT

SUPPORT
15. GENERAL DETAILS

CI-CF-EP-02
PARAPET (SUPPORTED W/EXTRUSION)

CI-CF-TP-01
PARAPET (SUPPORTED) W/TRIM
15. GENERAL DETAILS

CI-CF-FP 1  FASTENING PATTERN #1

DIMENSION IS FROM FEMALE EDGE +/- 1.5"

CI-CF-FP 2  FASTENING PATTERN #2

DIMENSION IS FROM FEMALE EDGE +/- 1.5"

CI-CF-FP 3  FASTENING PATTERN #3

DIMENSION IS FROM FEMALE EDGE +/- 1.5"
15. GENERAL DETAILS

**CI-CF-FP 4  FASTENING PATTERN #4**

SIDE JOINT FASTENING WITH THREE DOME HEAD BULB–TITE® RIVETS

INSTALL RIVET THROUGH GIRT FLANGE INTO MESA WHERE THE SKIN MAKES CONTACT WITH THE STEEL

DIMENSION IS FROM FEMALE EDGE +/- 1.5"

**CI-CF-FP 5  FASTENING PATTERN #5**

SIDE JOINT FASTENING AND FOUR DOME HEAD BULB–TITE® RIVETS

INSTALL RIVET THROUGH GIRT FLANGE INTO MESA WHERE THE SKIN MAKES CONTACT WITH THE STEEL

DIMENSION IS FROM FEMALE EDGE +/- 1.5"

**CI-CF-FP 6  FASTENING PATTERN #6**

SIDE JOINT FASTENING AND ONE GIRT CLIP WITH TWO DOME HEAD BULB–TITE® RIVETS

INSTALL RIVET THROUGH GIRT FLANGE INTO MESA WHERE THE SKIN MAKES CONTACT WITH THE STEEL

DIMENSION IS FROM FEMALE EDGE +/- 1.5"
15. GENERAL DETAILS

DIMENSION IS FROM FEMALE EDGE +/- 1.5"

CI-CF-FP 7  FASTENING PATTERN #7

SIDE JOINT FASTENING AND TWO GIRT CLIPS WITH FOUR DOME HEAD BULB-TITE® RIVETS
INSTALL RIVET THROUGH GIRT FLANGE INTO MESA WHERE THE SKIN MAKES CONTACT WITH THE STEEL

CI-CF-FP 8  FASTENING PATTERN #8

SIDE JOINT FASTENING WITH THREE GIRT CLIPS WITH SIX DOME HEAD BULB-TITE® RIVETS
INSTALL RIVET THROUGH GIRT FLANGE INTO MESA WHERE THE SKIN MAKES CONTACT WITH THE STEEL
15. GENERAL DETAILS

(FP9)

FOUR SELF-TAPPING SCREWS WITH MIN. 20 GA. NEOPRENE BONDED WASHER

CI-CF-FP 9  FASTENING PATTERN #9

(FP10)

FIVE SELF-TAPPING SCREWS WITH MIN. 20 GA. NEOPRENE BONDED WASHER

CI-CF-FP 10  FASTENING PATTERN #10
16. PENETRATIONS - PIPE

16.1 Locate penetration(s) on wall panel and cut hole with 1/2” minimum clearance. (Refer to Chapter 7 for panel cutting instructions).

**figure 16.1a**
Penetration through field of panel

**figure 16.1b**
Penetration at panel joint

**figure 16.1c**
Penetration at panel edge

16.2 For penetrations at panel joints or edges:
- plug interior joint above and below opening with butyl sealant (figure 16.2a)
- fill *exterior* reveal above penetration with color matched urethane sealant (not by panel manufacturer) to top of panel (figure 16.2b)
16. PENETRATIONS - PIPE

16.3 Fill gap around penetration(s) with expandable foam.

16.4 Apply urethane sealant around penetration(s). Cut sheet metal trims for lower and upper halves of opening and attach using 1/8" painted stainless steel pop rivets.

16.5 Apply 3/8" minimum bead of color matched urethane sealant around penetration(s).

16.6 Repeat steps 16.4 and 16.5 for interior side.
16. PENETRATIONS - BEAM

16.7 Locate penetration(s) on wall panel and cut hole with 1/2" minimum clearance. (Refer to Chapter 7 for panel cutting instructions).

Penetration through middle of panel

Penetration at panel edge

Penetration at panel joint

16.8 For penetrations at panel joints or edges:
- plug interior joint above and below opening with butyl sealant (figure 16.8a)
- fill exterior reveal above penetration with color matched urethane sealant (not by panel manufacturer) to top of panel (figure 16.8b)
16. PENETRATIONS - BEAM

16.9 Fill gap around penetrations(s) with expandable foam.

16.10 Apply urethane sealant around penetration(s). Cut sheet metal trims for lower and upper halves of opening and attach using 1/8" painted stainless steel pop rivets.

16.11 Apply 3/8" minimum bead of color matched urethane sealant around penetration(s).

16.12 Repeat steps 16.10 and 16.11 for interior side.
17. EXTRUSIONS

CHECK W/METL-SPAN FOR AVAILABILITY: NOT ALL EXTRUSIONS ARE AVAILABLE FOR ALL PANEL THICKNESSES.

Base
Soffit
Stack Joint

Inside Corner
Outside Corner

Sill

Optional Wiper Gaskets and Splice Bars

Wiper Gasket
Extruded Aluminum Splice Bar
17. EXTRUSIONS

ALUMINUM SPLICE BARS ARE USED TO ALIGN THESE EXTRUSIONS AT LAP JOINTS.

LAP STRIPS ARE MADE FROM FLAT STOCK, COLOR TO MATCH EXTRUSIONS.

LAP STRIPS ARE USED:
1. FOR IMPROVED APPEARANCE AT SPLICES
2. TO PROTECT AGAINST LEAKS AT SPLICES

WARNING: FOR FRAMED OPENING HEAD CONDITIONS WITH SPLICES, SET EACH END OF LAP STRIP IN 2 ROWS OF URETHANE SEALANT. DRILL WEEP HOLES IN EXTRUSIONS WITHIN 2" OF SPLICE.
래프 스트립스 - 배치 - 소프트 - 스택 조인트 - 내부 코너 - 외부 코너 - 사ill - 갈대/헤드 - 수직 H 조인트

주의: 끝 조인트의 레이어의 1/8" - 3/16" 갑을 띄우고 있어야 합니다. 열 확장에 대한 허용을 제공하기 위함입니다.
17. EXTRUSIONS - WINDOW ASSEMBLY

17.1 Notch interior and exterior head and sill extrusions as required.

17.2 Attach extrusions to structure with #12 pancake fasteners - see Chapter 15 Installation Details.

17.3 Drill 3/8" weep holes less than or equal to 24" on center.

**WARNING:** DO NOT INSTALL WINDOW WITHIN EXTRUSION AREA. WINDOW SHOULD BE FLUSH WITH STRUCTURAL LINE.
18. TOOLS, HARDWARE AND SUPPLIES

CUTTING AND BENDING TOOLS
- circular saw w/carbide tip blade
- panel saw
- serrated knife
- Dremel kit
- power shears
- nibbler
- snips
- seamer/bender
- duckbills

FASTENERS, CLIPS
- TEK (self-drilling, self-tapping fastener)
- B point fastener
- pancake fastener
- stitch screw
- pop rivets
- panel clip
- beam clip

SEALANTS
- butyl tape

MISCELLANEOUS
- level
- caulking gun (electric)
- power drill
- Phillips head bit
- #2, #3 square drive bits
- hex head socket set
- deburring tool
- scraper
- tape measure
- rivet tool
- rivet tool (electric)