



# CastleRock™

## CastleRock/ICAP Thin-Series (2-3/4") NFPA 285 Installation Guide

### Laboratory Testing Information and Listings:

Intertek Laboratories - Warnock Hersey Test Reports W/N 20269  
Intertek Laboratories - test reports available at [www.spec-direct.com](http://www.spec-direct.com)  
Installation Guides available at [www.ICAP-USA.com](http://www.ICAP-USA.com)  
Or by contacting us at [les@castlerockx.com](mailto:les@castlerockx.com)

Testing conducted in accordance with the following:

Evaluation Guide: ICC EG 315

**ASTM E330(2002):** "Standard Test Method for Structural Performance for Exterior Windows, Doors, Skylights and Curtain Walls by Static Air Pressure Difference"

**ASTM E84(2009) -08a** "Standard Test Method for Surface Burning Characteristics of Building Materials"

**CAN/ULC S102 (2007)** "Standard Test Method for Surface Burning Characteristics of Building Materials"

**ASTM C578** "Standard Test Methods for EPS Foam"

**NFPA 285:** Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

**ANSI A137.1-2012** American National Standard Specifications for Ceramic Tile - Version 2013.1

**ASTM C373** Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products

### Summary

**ASTM E84, NFPA 285 Compliance**

**CAN/ULC S102 (2007)**

**Flame Spread Rating:** Zero

**Smoke Generation Rating:** Zero

**ASTM E330(2002)** "Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Static Air Pressure Difference"

**Ultimate Load:** See Fastener Table for various load ratings

This is the "NFPA 285 Compliance Manual" and details the correct installation requirements for NFPA compliance. The ICAP Series NFPA 285 Compliant product has been tested and is listed by Intertek Laboratories "as a wall system" to be installed as tested. Any alterations from the listed compliance of this product may result in the invalidation of the laboratory listing.

## Workmanship

This Installation Guide assumes the construction personnel have knowledge of the materials described and their proper methods of installation. The manufacturer recommends certified installers be used to install ICAP products. Installer certification is available through the ICAP-USA "Factory Certified Installer" program. Contact us at 208-895-8557 for details.

## Preparation

Prior to commencing activity related to the scope of this Guide, review all adjacent products and other subcontractor work that precedes the installation of ICAP-USA cladding ensure proper workmanship is reflected and that there are no recognizable errors or deficiencies.

## Building Code Requirements

Building code requirements vary from area to area. Check with local authorities for building code requirements for your area and application. Carefully read all sections of this guide and follow the manufactures Installation Instructions before proceeding with your ICAP application. In the event the local building codes conflict with other statements made in this document, contact the manufacture for additional guidance.

## Material Requirements:

## Flashing

All flashing and flashing accessories must be corrosion resistant materials and integrated with the WRB materials or flashings recommended by the air/water resistant barrier manufacturer for use with their products. Flashing must be installed at all through the wall penetrations and at terminations of ICAP panel system, around doors, windows and other protrusions in accordance with local building codes.

## Weep Screed

Some jurisdictions require weep screeds or termite barriers. These must be made of corrosion resistant metal a minimum of .019 inches or 26 gage thickness; or plastic weep screed a minimum of 0.050" with a minimum vertical attachment flange of 3 1/2" wide.

## Walls and Wall Systems

ICAP-USA ICAP 285 Panels are designed to attach to the following wall substrates with manufacturer approved fasteners. See table on the next page to determine the appropriate fastener for your application.

### Recommended Clearances:

- ICAP 285 Panels individually attach to the wall sheathing or studs and do not require a brick ledge support like masonry products.
- Check with your local building official for requirements above grade and concrete/paving in your area. (slope away from the structure in accordance with local building requirements)
- ICAP-USA™ is a cladding product and all components used in its manufacture are waterproof. Consult with your local building official regarding requirements in your area.

### Cautions:

- Do not subject ICAP-USA™ Claddings to frequent water contact such as sprinklers or direct spray. Place downspouts or drainage pipes so the water is not frequently contact the cladding.
- Do no subject ICAP-USA™ to contact with de-icing materials, salt, asphalt roofing material or its drainage, or other harsh chemicals. Prolonged exposure may damage the fascia or panel.
- Do not expose the EPS foam portion of the panel to extended periods of sunlight. All surfaces for EPS must be covered with fascia, flashing, other materials to protect it from UV exposure.

# ICAP-USA Panels

## Installation Guide

	<u>R-Value</u>	<u>Height Range</u>	<u>Length Range</u>
<b>Flat Panels</b>	7-12	5" - 24"	20" - 144"
<b>Outside Corners</b>	7-12	5" - 24"	<i>NIA</i>
<b>Fire Barrier</b>	R-4.3-5.5	3-1/2"	3-1/2"

**Note: Panels sizes are dictated by porcelain panel sizes. Check with ICAP for available sizes.**

<u>Tools Required</u>	
<b>Screw gun w/ adjustable torque chuck:</b>	
Torque Drives: See Fastener Table	
<b>Staple Gun for wood sheathing: 15/16" crown x 2-1/2" Leg</b>	
<b>Hot Knife Foam cutter &amp; grooving blade</b>	
<b>Hot Knife Table (for removing foam from back of the panels)</b>	
<b>Saws (Diamond Blade):</b>	
Tile Saw wet cut with a diamond porcelain blade	
Circular Saw w/ wet/dry diamond porcelain blade	
4" Right Angle Grinder with porcelain diamond blade	
<b>Scaffolding or manlift with an 8-foot-wide basket for 2 people</b>	
<b>Ladders</b>	
<b>Normal Carpentry and Construction Tools</b>	
<b>Safety Equipment</b>	

The Part numbers are for standard parts, Specific Project Part Numbers will be identified on Attachment "A"

Pre-Engineered Insulated Porcelain Panels (ICAP R10- Thin Series) continuous insulated tongue and groove interlock: Manufactured by CastleRock Building Materials, Inc. DBA: ICAP/InsulStone.

**A. Flat Panels:**

- 1. Fascia Manufacturer: a. Dekton b. Daltile c. Landmark d. Other
- 2. R-Value: a. R-8 b. R-10 c. 12
- 3. Facia: a. Porcelain b. Dekton
- 4. Min. Facia thickness: a. 6mm b. 8mm c. 3/8"
- 5. Colors: a. Custom: \_\_\_\_\_
- 6. Panel Sizes: a. Custom: \_\_\_\_\_ Note: Max. size: 24"x126"  
\_\_\_\_\_  
\_\_\_\_\_

**B Panel installation direction:**

- 1. Vertical (requires part# FS-78R furring channels located 16" on center horizontally)
- 2. Horizontal (requires 22 gauge min. metal studs located 16" on center vertically)
- 3. Diagonal (requires 22 gauge min. metal studs located 16" on center vertically)

**C. Corners:**

- |   | <b>Part Number</b> |
|---|--------------------|
| 1. Butt Fit (available in L-hand or R-Hand with fascia proud) | BFL-101            |
| 2. Mitered Fit  | BFR-102            |

**D. Window/door/openings trim:**

- |  |         |
|--|---------|
| 1. Above and below window/door/opening Fire-barrier Trim | AFB-101 |
| 2. Side Window/door/opening Fire-barrier Trim            | SFB-102 |

Note: Metal flashings can be use around the fire-barriers

**E. Fasteners and accessories:**

- |   |           |
|---|-----------|
| 1. Base Starter Strip   | SSS-048   |
| 2. Base Starter attachment screw (TEK)                          | SCW-103   |
| 3. TEK Screw/Washer Assembly through foam                       | SWT-104   |
| 4. Metal/Aluminum retainer T-clip for panels above window/door  | CLP-T10T  |
| 5. Panel Retainer for above wide windows/openings               | CLP-W16T  |
| 6. Vertical Corner Bracket for outside corners                  | CBJ-C19T  |
| 7. Windows over 24" span retainer clip                          | CWJ-W20T  |
| 8. Furring Channel across studs for vertical panel installation | FIR-78316 |

**Note #1:** Panel Retainer Clips above window/door/openings are required up to 96" above opening and the width of the opening.

- |          |                |
|----------|----------------|
| 1. R-10: | Part #CLP—T10T |
| 2. R-12: | Part #CLP—T12T |

**Note #2:** Used in area above window/opening and up to 96 inches above windows/openings

- |  |                |
|--|----------------|
| 1. Screw/washer assemblies for other areas: (to metal studs) | Part #SCW- 103 |
|--|----------------|

**Note #3:** Fasteners and clips are required to be supplied by CastleRock/ICAP per NFPA 285 compliance.

**Note #4:** Walls framing to be constructed of 22 gauge min. metal studs, furring strips required for vertical installation. A minimum of 5/8" 1-hour fire rated Type X Gypsum sheathing is required over metal studs.

# ICAP-USA

## Installation Guide for NFPA 285 Compliance (R-7 to R-12)

(Facia Styles: Porcelain, Dekton, Porcelain Stone, Porcelain Brick)

### A). Interface with Other Work:

Coordinate with installation of substrate required for installation. If Electrical, Plumbing and other Mechanical penetrations are installed after the exterior siding panels are installed, provisions for watertight sealing of all penetrations must be addressed.

**B). General: Construct the wall in accordance with local building codes. In the absence of local building codes, install in accordance with the requirements of the IRC/IBC and the manufacturers' installation instructions. Use a qualified installer. Wall preparation and requirements:**

**A. These instructions are for building structures in excess of 40 feet in elevation. NFPA 285 over 40':** A metal framed wall with a minimum of 22-gauge nominal 2" x 6" corrosion resistant steel studs located a maximum of 24" on center and framed in compliance with local building codes.

**B. Substrate Sheathing: Non-load bearing walls for NFPA 285 compliance:** The metal frame wall is required to be sheathed with 5/8" fire rated Type X Gypsum manufactured by Dens Glass or GlasRoc or equivalent as approved by local building officials. **Vertical Panel Installation requires metal furring strips installed horizontally 16" on center.**

**C. Air/Weather Resistant Barrier:** Required. **Special Instructions for NFPA 285:** A Liquid applied, Self-sealing, Air/Weather Resistant Barrier manufactured by the following manufacturers and listed for use with the ICAP NFPA 285 compliant system. The following manufacturers are recognized by ICAP and Intertek Laboratories for use with the ICAP system:

- Tremco brand identified as EXOAIR 230 Air/weather barrier, flashing and components. <http://www.tremcosealants.com/products/exoair-230.aspx>
- STO brand identified as gold air/weather barrier. <http://www.stocorp.com/air-moisture-barriers/>
- Master Wall brand identified as Roller Shield RS air/weather barrier. <http://masterwall.com/rollershields/>

These manufacturers and products are recognized and required as part of the ICAP NFPA 285 compliant system. Check with your local building official for weather resistant barrier requirements and codes in your area. For details regarding the installation of each specific air/weather barrier system, see their instructions available on the websites listed above.

### C.). Flashings:

Install flashings in accordance with the air/weather barrier, window and roofing manufacturer's installation instructions, or in the absence of these instructions, install per section 703.8 of the 2009 International Residential Code (IRC) at the following locations:

- a). Top of all doors and windows. A metal flashing is required at the top of each window, door, and protrusion to prevent water from entering the wall cavity.
- b). Flashing may be required at projecting lips or conversion to masonry or other sheathing, or an area that may allow water to enter.

Check with your local building official for requirements in your area.

### D). Installation of ICAP Interlocking Insulated Substrate Panels:

- a. **Inspect the wall to assure correct fit of substrates and framing. Studs: 24" or less on center with the Approved type X Gypsum sheathing as shown in this manual with the recognized air/weather resistant barrier listed above and as prescribed by the manufacturer and local building codes.**
- b. **Prior to installation** of the starter section, determine its desired location in regard to elevation and relationship with the foundation, grade and sidewalks, driveways, etc. Panels may be trimmed to fit at openings. See instructions in this manual for details of termination points.
- c. **Install the Starter Section (Part# SSS-048)** - Install the starter section at the bottom of area where the panels are to be installed in conformance with local building codes and overlap the starter metal a minimum of 1" over the foundation. If codes are not present, the manufacturer recommends a minimum of 6" above grade and 2" above pavement surfaces. Attach the starter section with corrosion resistant screws or nails to the sheathing or plate every 6 inches on center.

## CastleRock/ICAP Fastener Guide

### NFPA 285 Methods for attachment

**Metal studs:** Horizontal panel installation to Studs over

#### 1) Horizontal Panel Installation

**A.** 22 gauge minimum metal Studs 24" min. on Center with 5/8" Type X Gypsum Sheathing or concrete/CMU masonry walls

**B.** Attach with a stainless steel or corrosion resistant screw Part# SWA-104 to metal studs 16" on center. Insure screw attachment is not compromised.

#### Vertical panel installation

**A.** Install Part# FS-78RS Hat channel Furring horizontally to metal studs per manufacturers instructions 1horizontally 6" on center.

**B.** Attach with a stainless steel or corrosion resistant screw as specified to metal studs or furring strip with Part #SWA-104 Insure screw attachment is not compromised.

<u>Framing</u>	<u>Fasteners</u>	<u>Fastener Location</u>	<u>Uniform Load</u>
To Metal Studs 22 Gauge min.	#10x2-1/2" TEK Self-drilling TEK Screw	Attach to Vertical studs 16" On Center with screw/washer assembly SWA-104  Note: Vertical Panel Installation requires Metal Furring channel Part # FIR-78316 OC	88.0
CMU (Concrete Masonry Units)	#10 x 2-1/4" Tapon <sup>®</sup> Concrete Screws	Attach to studs 16" OC With screw/washer assembly SWA-104	88.0
NFPA 285 Approved wood structures	#10 x 2-1/2" Corrosion resistant screw	Attach to sheathing 3" OC with 1"x2-1/2" staples	126

## F. INSTALLING CLADDING PANELS

1. **STARTER SECTIONS:** Determine the location of the bottom panels and install the J-hook shaped "starter section" Part # SSS-048 at bottom of the wall and lap it a minimum of 1" (25.4 mm) over the foundation. Attach every 6" (152.4mm) to the plate or studs with appropriate fasteners. Note: ICAP panels will hang  $\frac{3}{4}$ " below the bottom of the j-hook starter. Check local building codes for code requirements above grade and sidewalks, etc. In the absence of local codes, locate the panels 2 inches (50.8 mm) above sidewalks, pavement etc. and 4 inches (101.6 mm) Above grade.
2. Begin by installing from the corner of the building aligning the first panel to fit to the panels from the adjacent walls with the tongue upward.
3. Upon reaching the bottom of an opening, cut the panels to fit to the fire board opening trim (Part# TRM-S08).

## G. INSTALLING PANELS AROUND OPENINGS

1. When you reach the bottom of the first opening, cut the porcelain to fit and remove the amount of foam to allow the gypsum and porcelain to fit over the Fire Barrier to the flashing.
2. Progress up the sides of the opening cutting and fitting the panels as required. It will be necessary to remove the foam from the back of the gypsum to allow the panels to slip over the fireboard.
3. In the area above the window, the width of the window and 96" above the window, will require the use of metal clips (CI-103 & CI- 104) with screws as shown in Drawing #7 & 8. You will also need to seal the edges of the gypsum board seams with Dow 791 sealant as required for NFPA 285 compliance. Install sealant on the top and side edges of the lower gypsum panel prior to installing the upper panel.
4. The panels on the bottom and sides of the opening do not require the use of metal clips. Use the same fasteners you are using elsewhere on the structure.

## CORNERS

1. Outside Corners are usually made with a Butt Corner with the porcelain "Proud" on the highly visible side of the building. Butt Corner: Notch (remove) the foam on one side as shown in Drawing #13 and align the panels for a tight fit. Foam can be cut at a 45-degree angle to fit the corner.
2. Inside Corners: See drawing #12.

Install panels until the last row will not fit under the soffit. Measure the distance between the top of the panel and the soffit. Cut the panel  $\frac{1}{4}$ " (19.05) shorter than the desired space. Install the panel by inserting it into the space between the uppermost panel and the soffit. The panel will slide down over the tongue of the panel below, leaving a space between the top of the cut panel and the soffit.

2. Screw the panel to wall through the tongue section on the side of the panels. Install backer rod and sealant into the space between the top panel and soffit. See detail #12

## L PARAPETS

1. Install panels up to the height of the parapet. Install with a metal cap as shown in Drawing 14.

## 3.4 CLEANING

### A. Cleaning Veneer Units:

Wash with soft bristle brush and water/dish detergent solution or mild house cleaner. Rinse immediately with clean water.

## 3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

## Fasteners



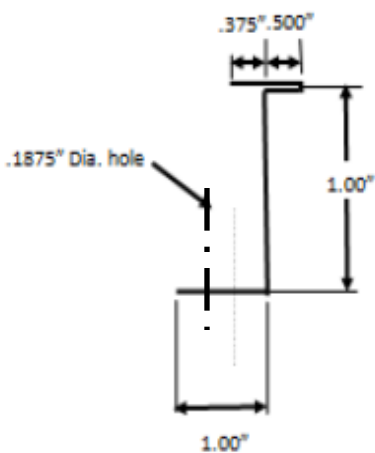
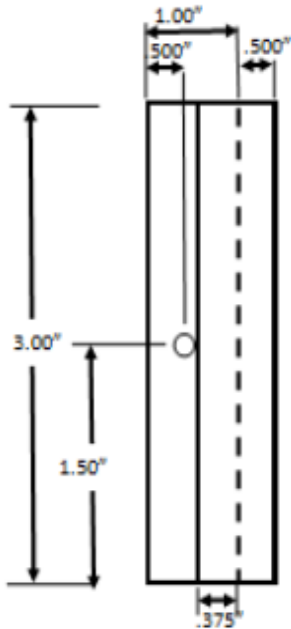
SC3103000

Standard ICAP 3" Screw: #9 min. x 2" Zinc Plated or Stainless Steel-T-25 Torque Drive, Course Auger Thread, Type 17 Point. Used to attach Panels and Window Side Trim.



SCW10300

Standard ICAP Screw/Washer Assembly: #9 x 3" Zinc Plated or Stainless Steel-T-25 Torque Drive, Course Auger Thread, Type 17 Point. Used to attach EPS Foam Panels to Studs.



55504800

**Starter Metal Screw:** #9 min. x 2" Zinc Plated or Stainless Steel-T-25 Torque Drive, Course Auger Thread, Type 17 Point. Used to attach Starter Strip.

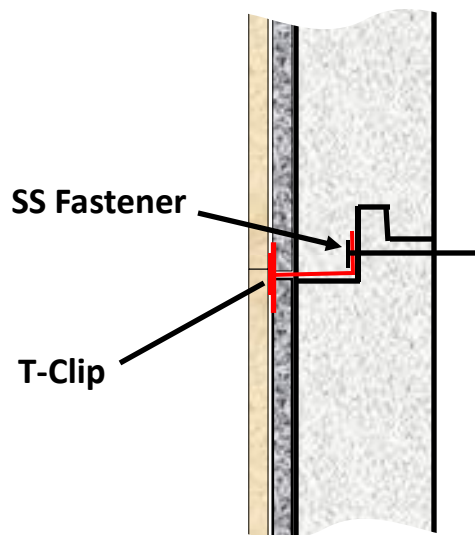
**Starter Strip:** 48" long section of the starter strip used at the bottom of the wall to receive the groove flange of first row of panels.

### Metal T-Clip Clip T14-R

R10 requires: T-Clip #: TCLP-R10

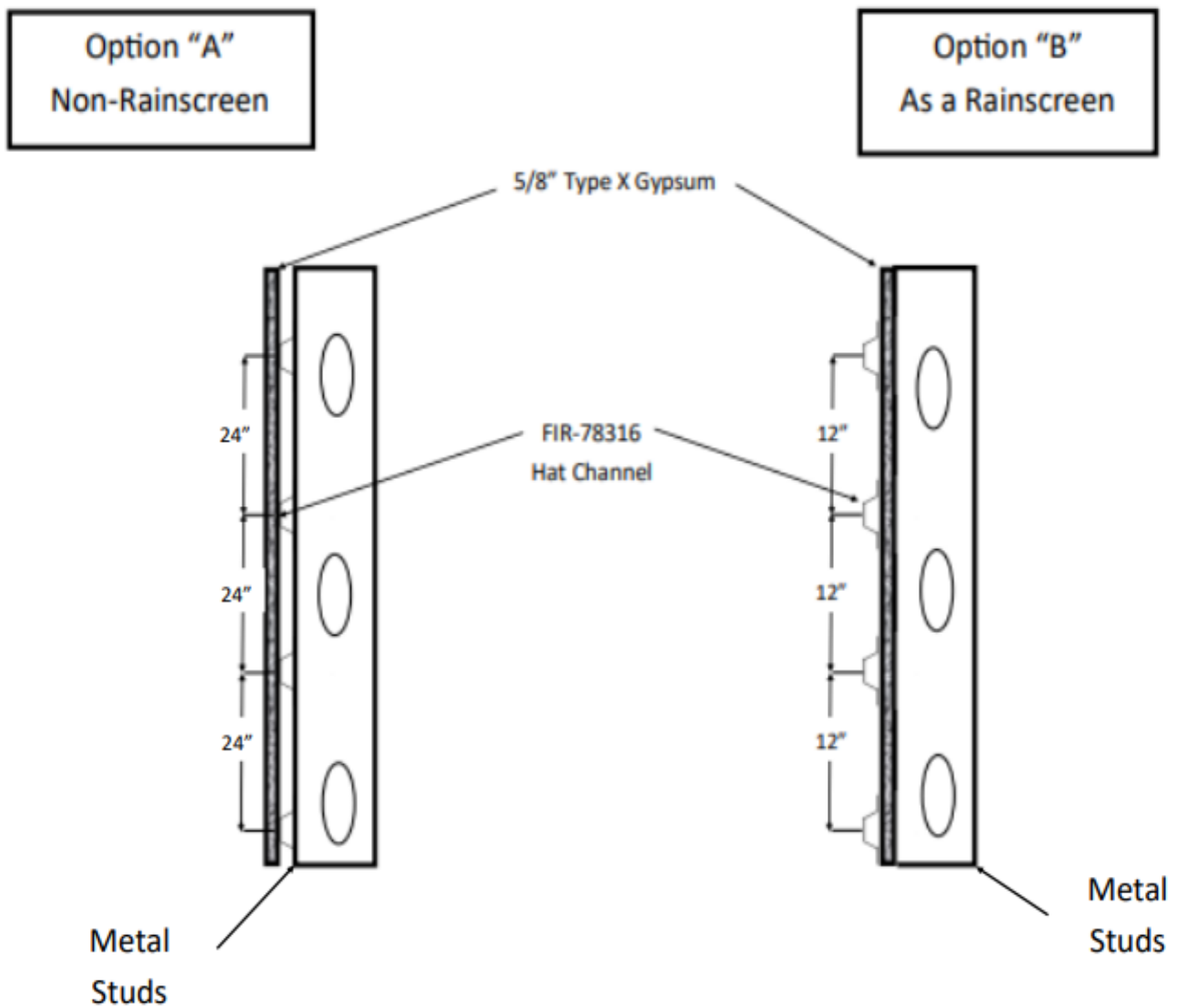
R-12 requires: T-CLP#: TCLP-R12

**Note:** Cut a thin groove between the Type X Gypsum and the Dekton/porcelain fascia for the T-Clip to interlock. Locate every 24" in the seams the width of the window and up to 96" above.



# Vertical Panel Installation

Required for Vertical Panel Installation  
Options without or with a Rainscreen  
(wall preparation)



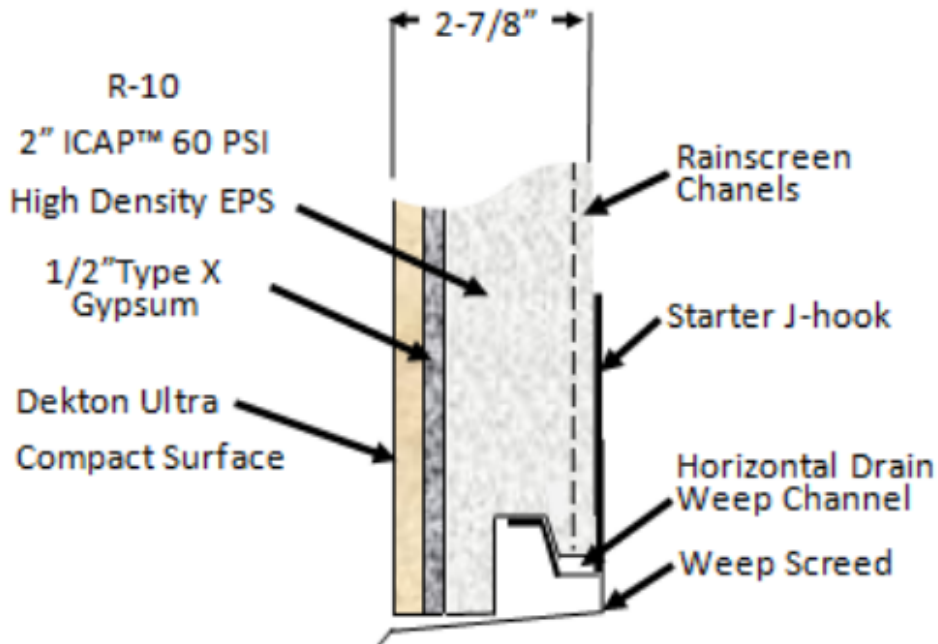
# ICAP™ NFPA 285 Compliant

Part# SSS-101

Starter with rainscreen drainage  
and

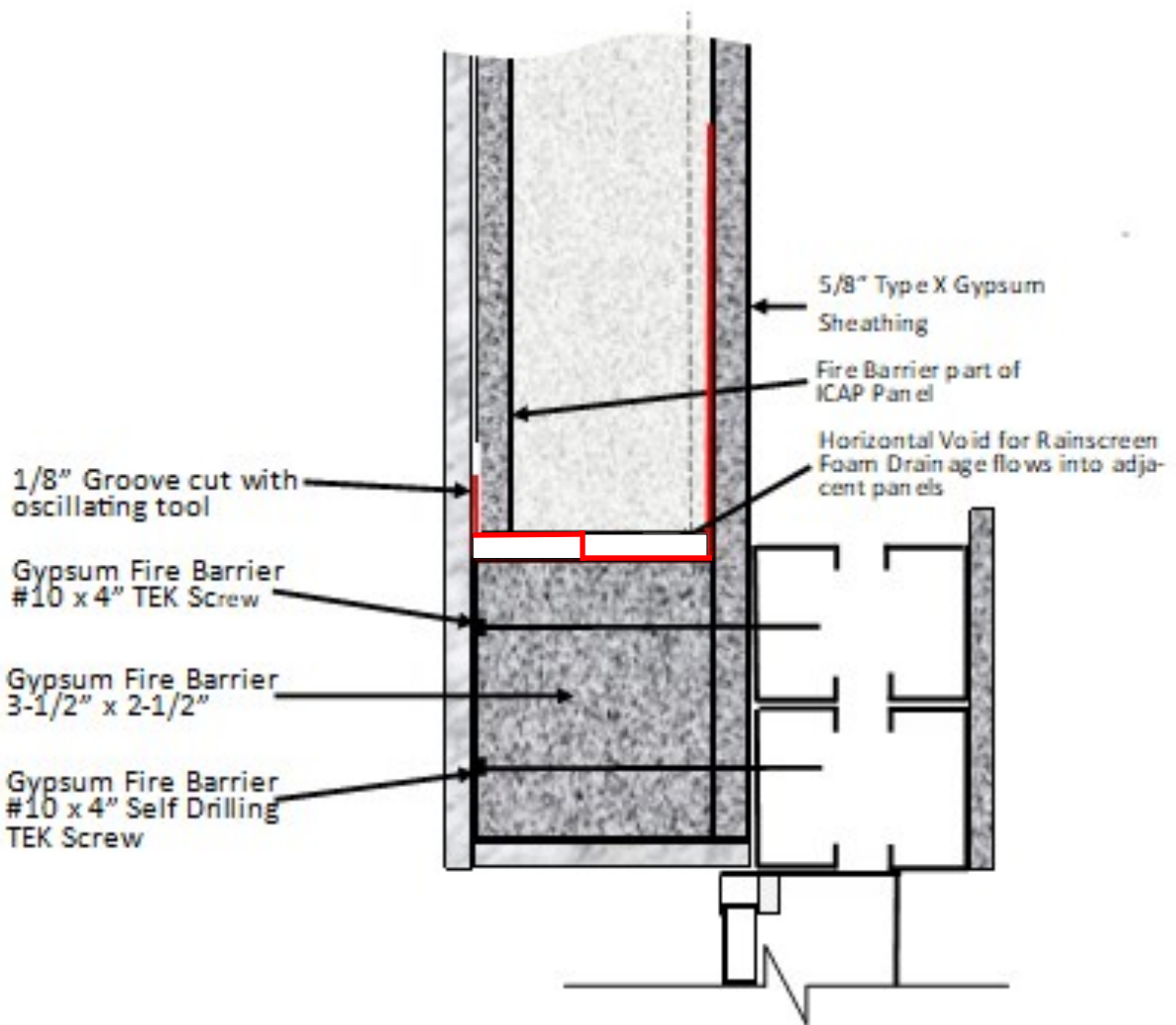
Part# SSS-102 Weep Screed

For use at base of wall and above openings (windows, etc.)

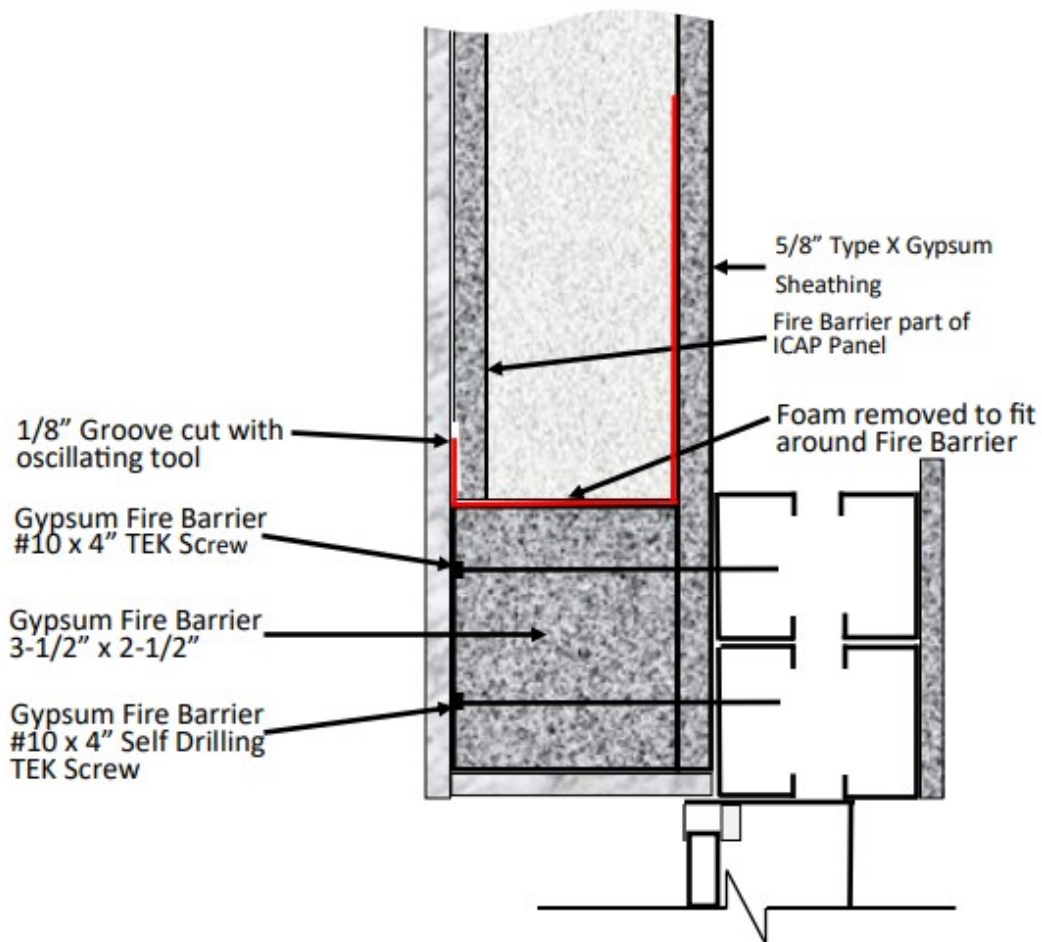


- Part# SSS-101 is available in 48" sections and requires a 1/2" space for drainage between each section.
- Part# SSS-102 are available in 48" or 96" sections
- Both parts are available in aluminum or stainless steel

# NFPA 285 With Horizontal Rainscreen above the window

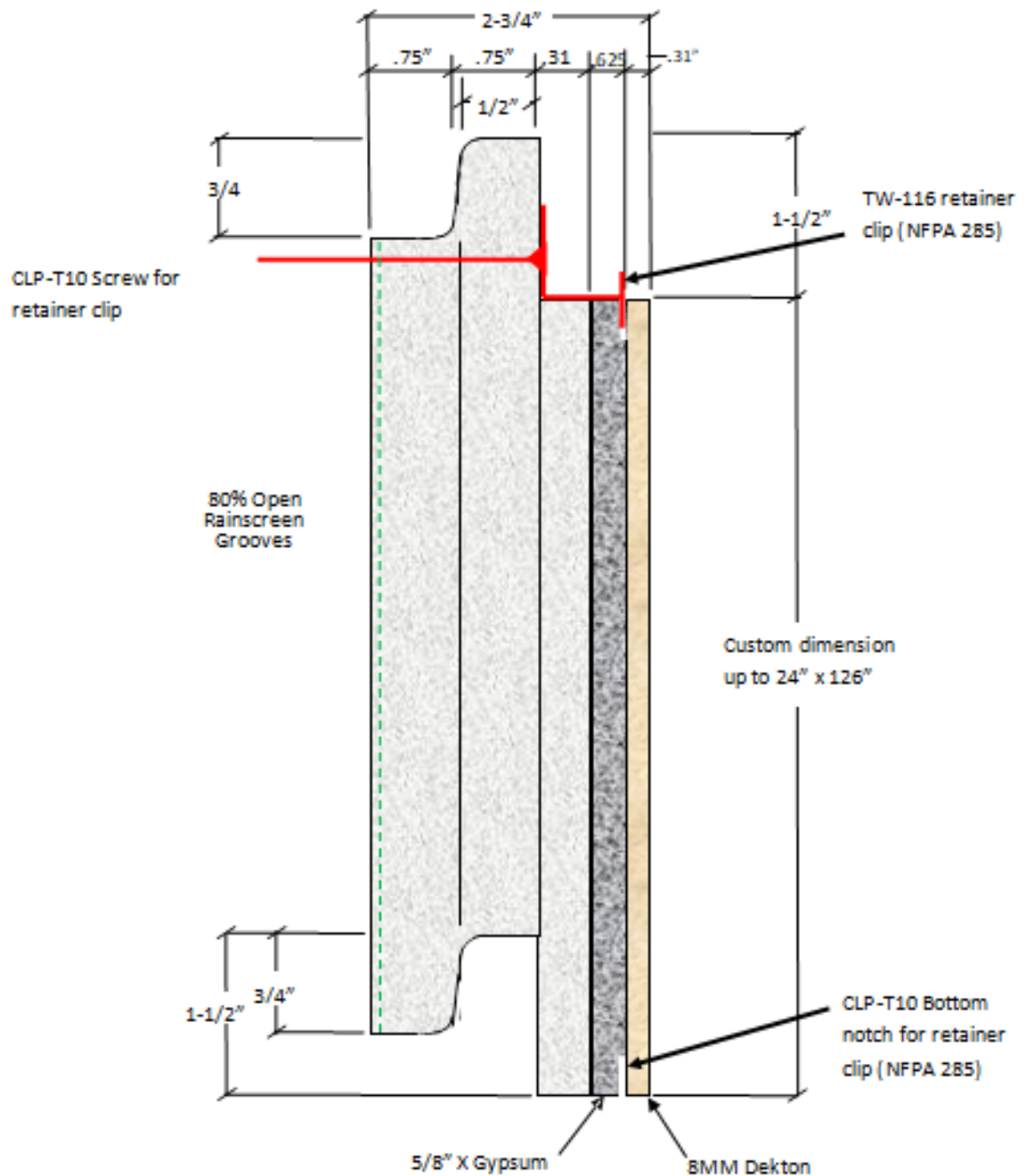


# NFPA 285 Retainer Clip for above the window installation without a rainscreen



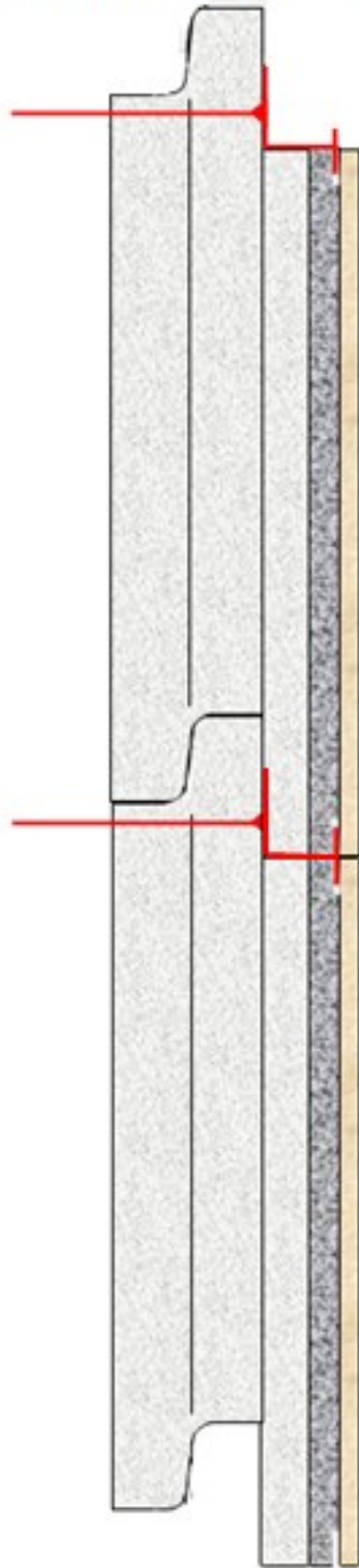
# ICAP 2-3/4" thick (R-10) NFPA 285 Panel

## Retainer T-Clips for above the window, door & openings

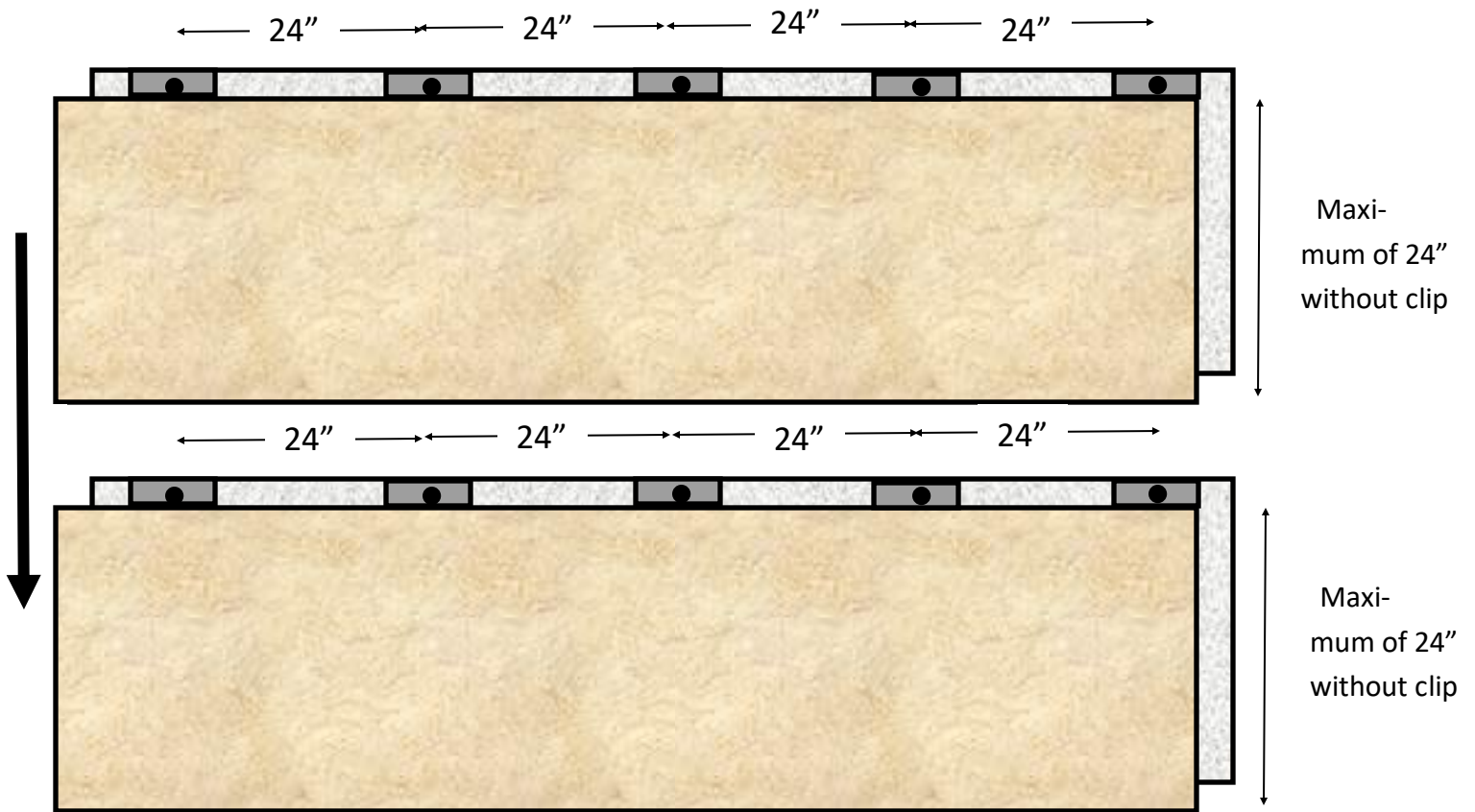


<b>R-10 Nominal (11.04 actual)</b>			
<b>ICAP Panel Material</b>	<b>Total Panel Inches</b>	<b>Millimeters</b>	<b>Panel R-Value</b>
EPS Foam (60 PSI Type XV)	1.81"		8.874
Type X Gypsum	.500	12.7	1.125
Bonding Adhesive	.025	0.635	.34
DEKTON/Porcelain	.31	0.	10.339

ICAP NFPA 285 Assembly Drawing the width of the window,  
Door or Opening and up to 96" above the opening



Screw attachment can replace the screw/washer assembly if mounted to the stud on 24" centers



Panels can be stacked (as shown) or staggered as desired

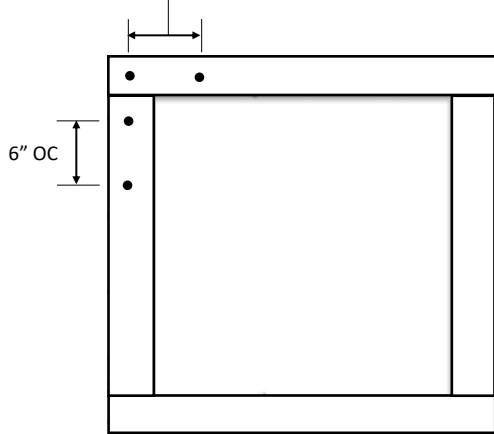
Note: panels outside of the area directly above and 24" to each side of the opening (window, door or other openings)

Do not require the T-clip system.

### Vertical Installation

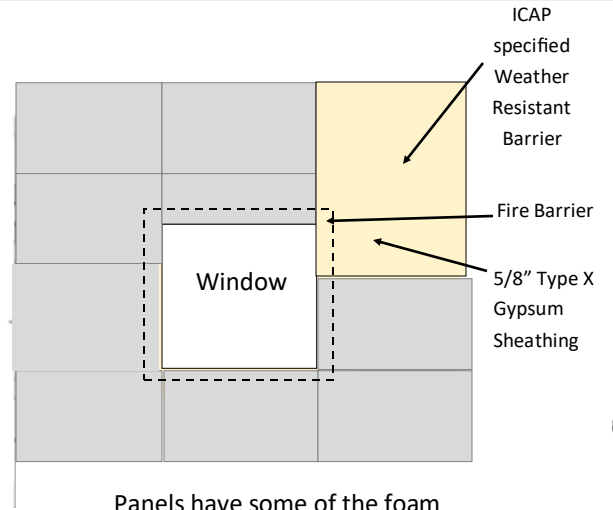
Vertical installation require the metal T-lips in the same zone above windows, doors & opening and 24" to each side.

Attach Fire Barrier sections 6" on center around the perimeter of the opening



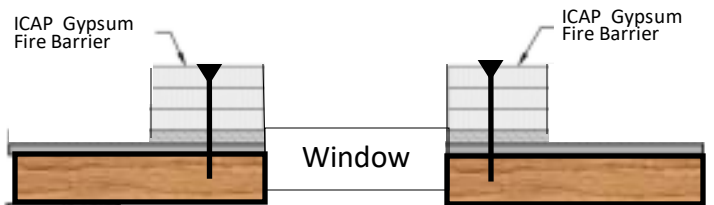
9

R-12.25 / U-.0616 SERIES WINDOW TRIM ELEVATION

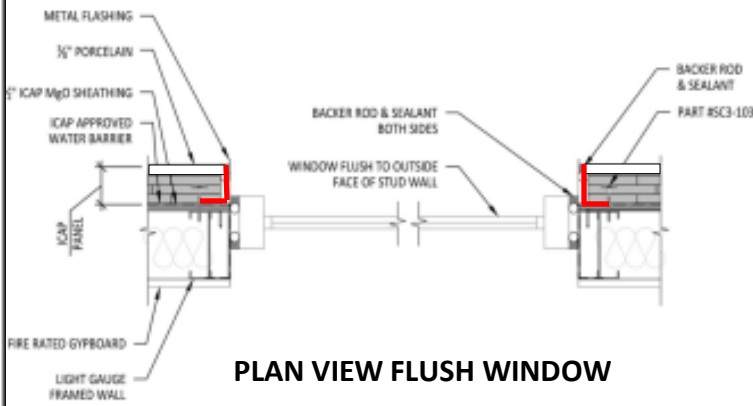


Panels have some of the foam removed to allow the Dekton/porcelain facia to overlap the Fire barrier.

Intentionally Blank

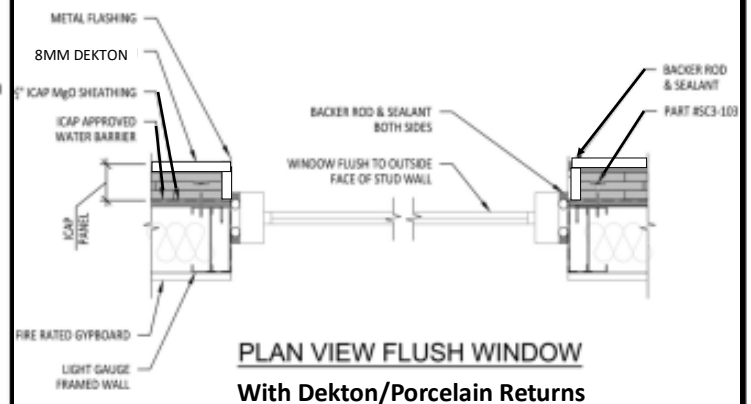


12



**PLAN VIEW FLUSH WINDOW WITH METAL TRIM**

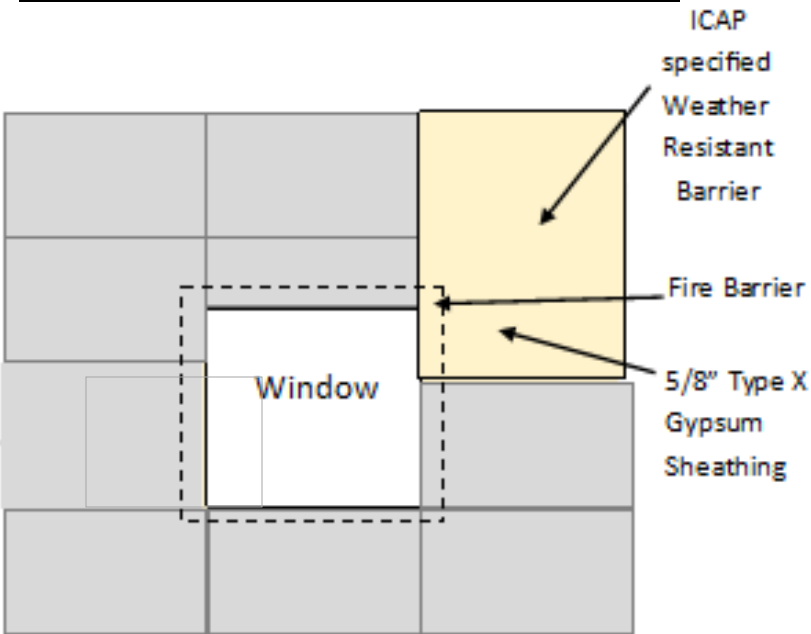
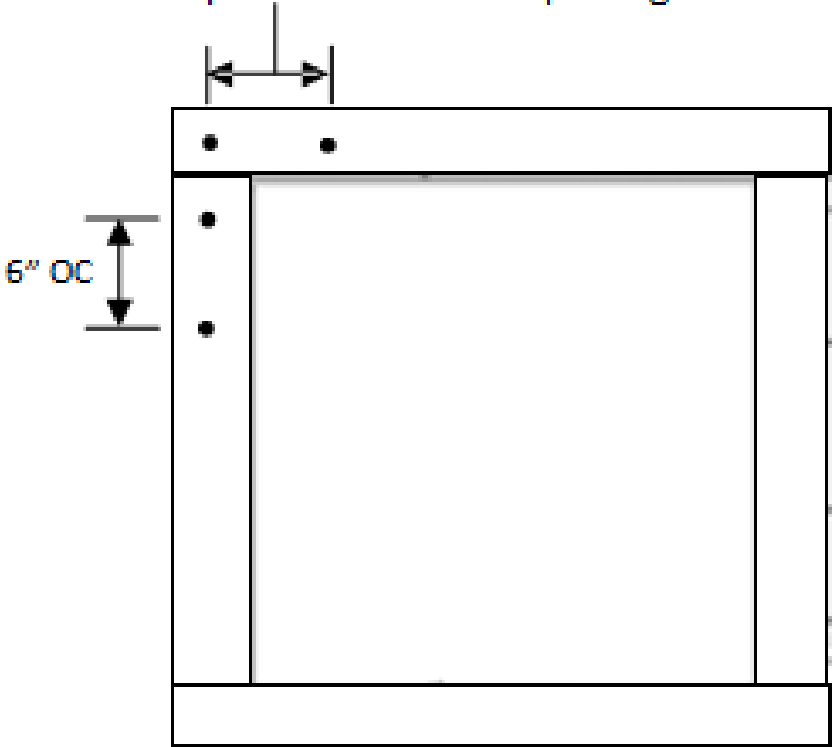
13



**PLAN VIEW FLUSH WINDOW With Dekton/Porcelain Returns**

14

Attach Fire Barrier sections 6" on center around the perimeter of the opening



Panels have some of the foam removed to allow the Dekton/ porcelain facia to overlap the Fire barrier.

## ICAP Panel Termination at the Soffit

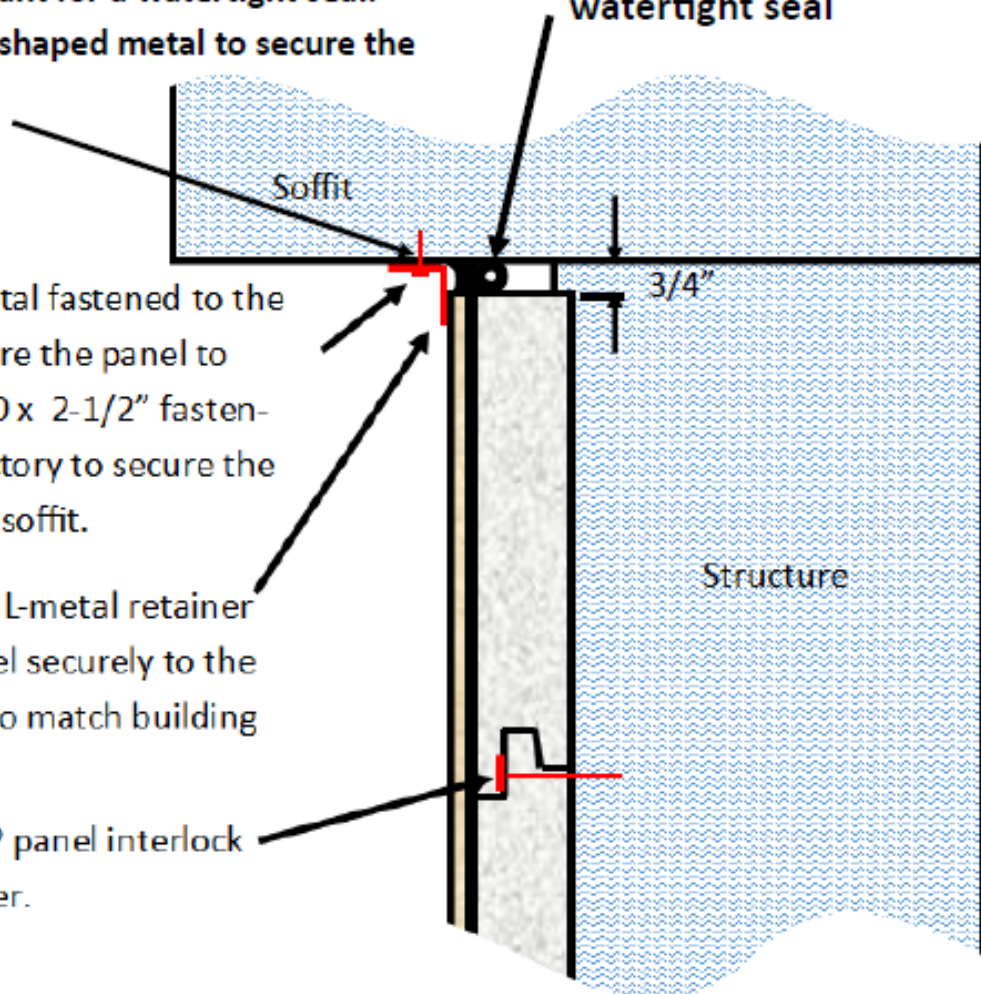
Cut the top panel 3/4" below the soffit. Use baker rod and sealant for a watertight seal. Then, install the L-shaped metal to secure the panel to the wall.

Backer rod and Caulking for watertight seal

L-shaped metal fastened to the soffit to secure the panel to the wall. # 10 x 2-1/2" fastener or satisfactory to secure the metal to the soffit.

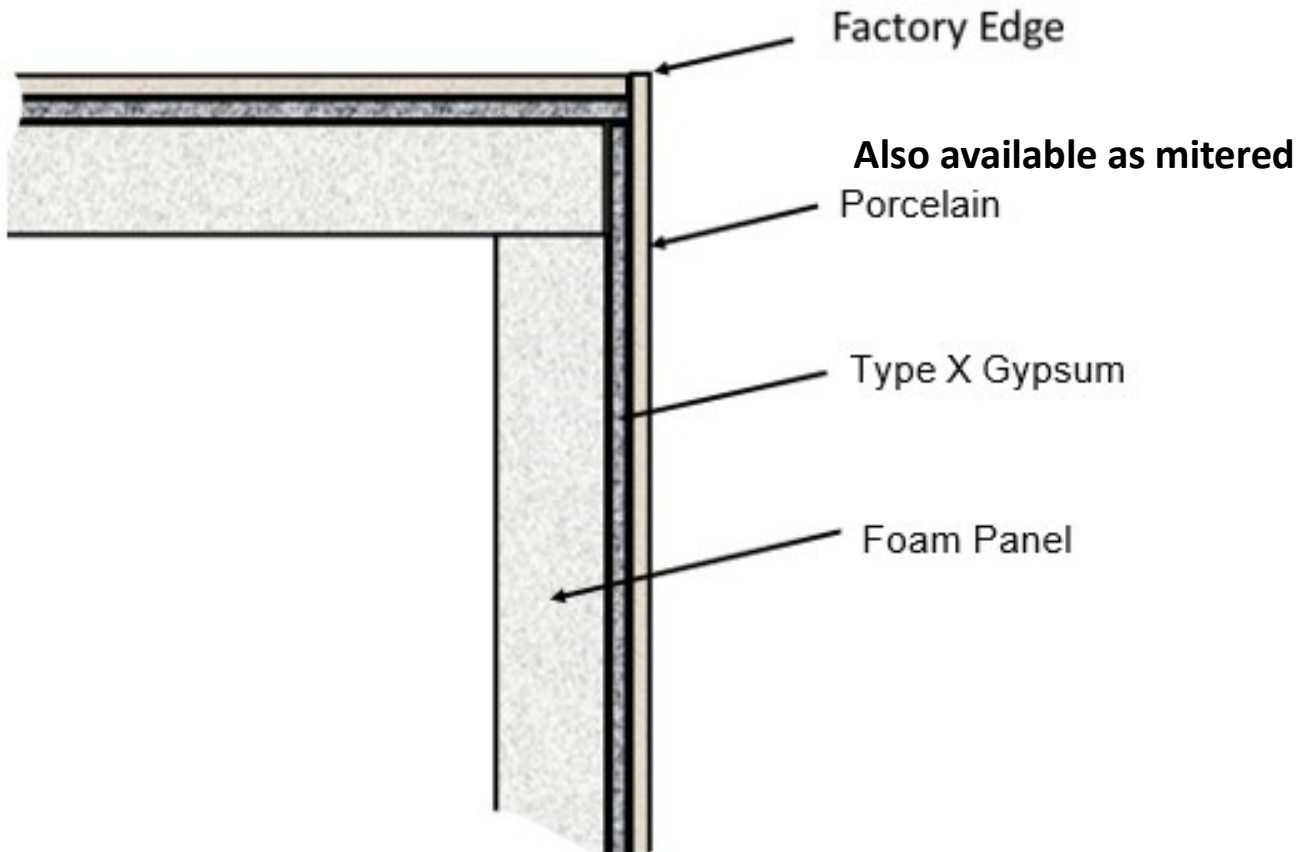
22 ga. Min. L-metal retainer to hold panel securely to the wall. Color to match building colors.

Typical ICAP panel interlock with fastener.

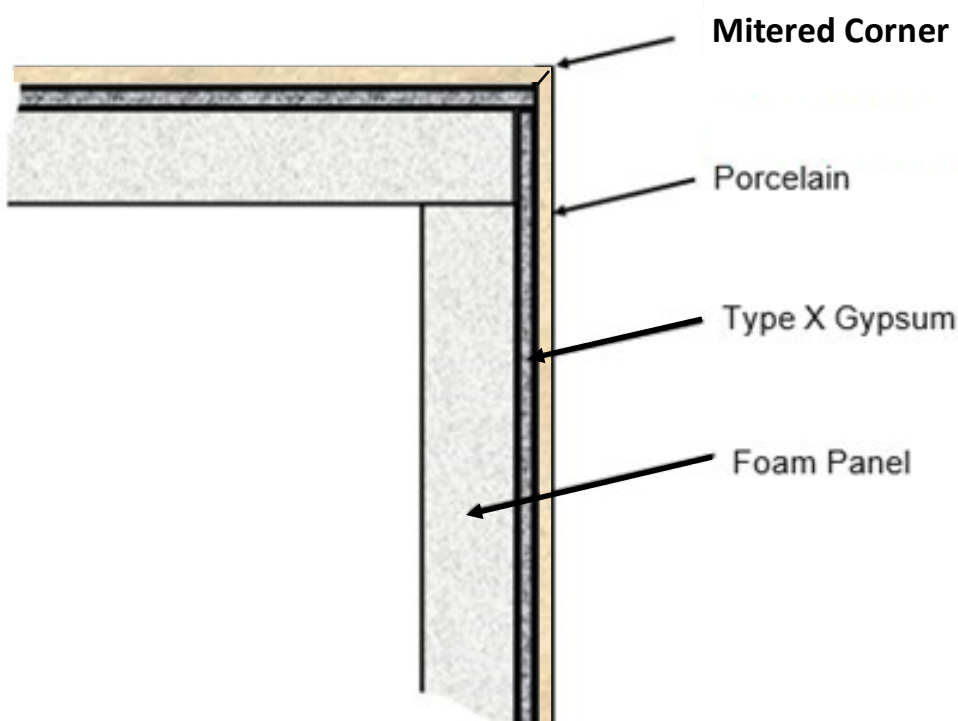


# Outside Butt Fit Corner Assembly

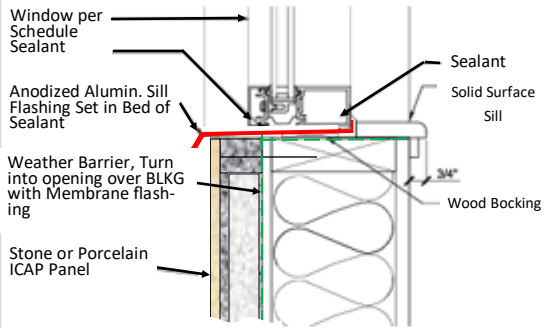
(Can be fabricated on-site or ordered pre-fabricated)



## Mitered Corner



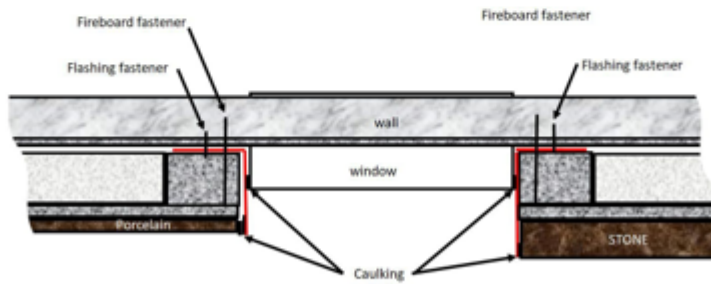
## Windowsill Flashing



9

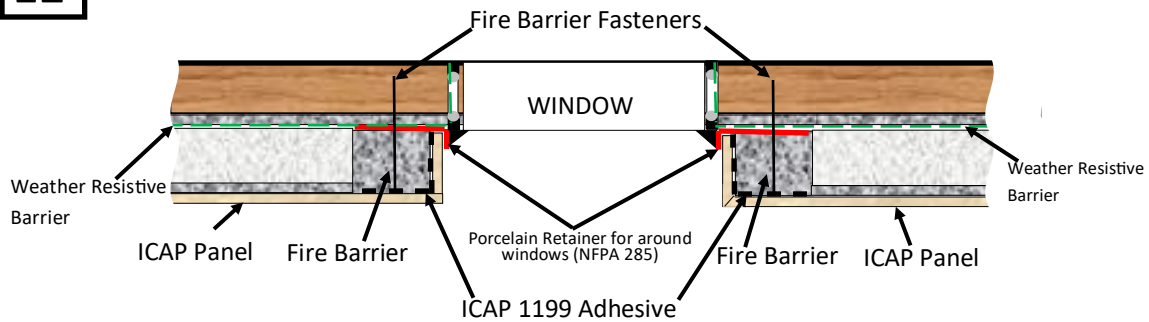
10

## L-Shaped Metal Flashings Up to 24" high panels



11

12

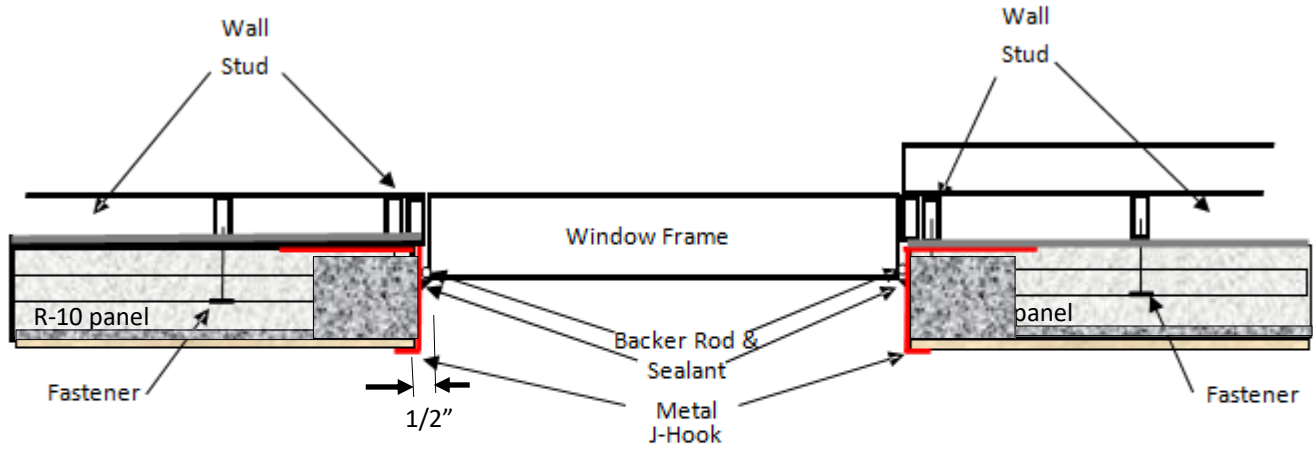


Window/Door Caulking examples only. Follow the architects caulking instructions.

# Window Caulking\_Options

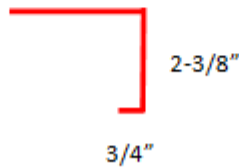
13

## Metal J-hook Trim Around Windows/Doors



28 gauge min. colored metal to match window  
with a hem on the outside edge or;

22 gauge min. Mill Finish stainless steel

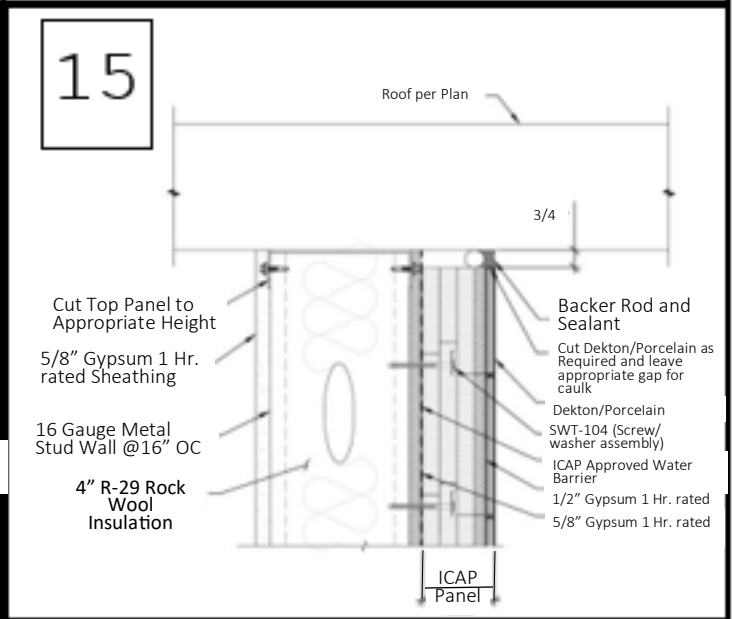
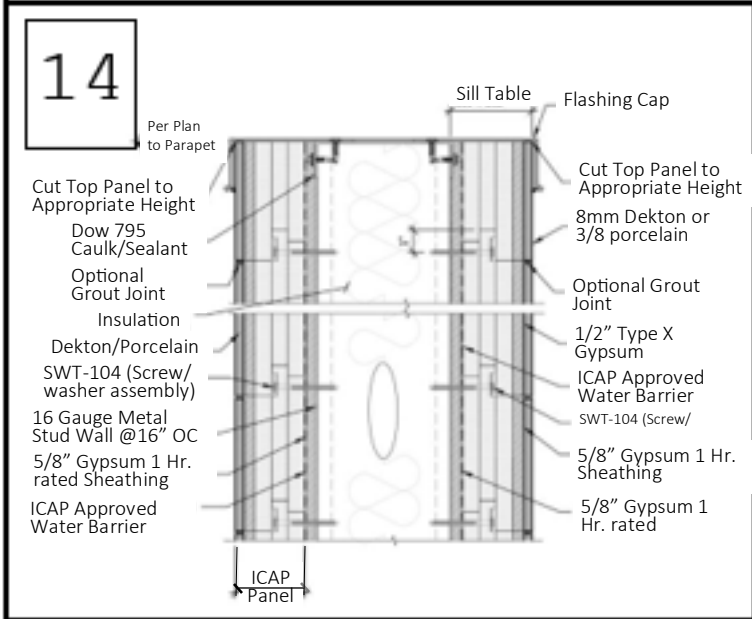
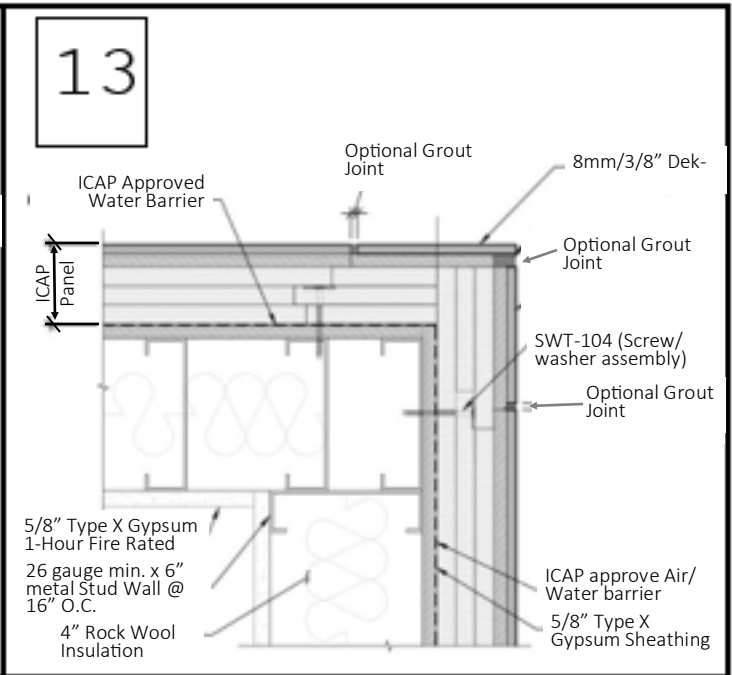
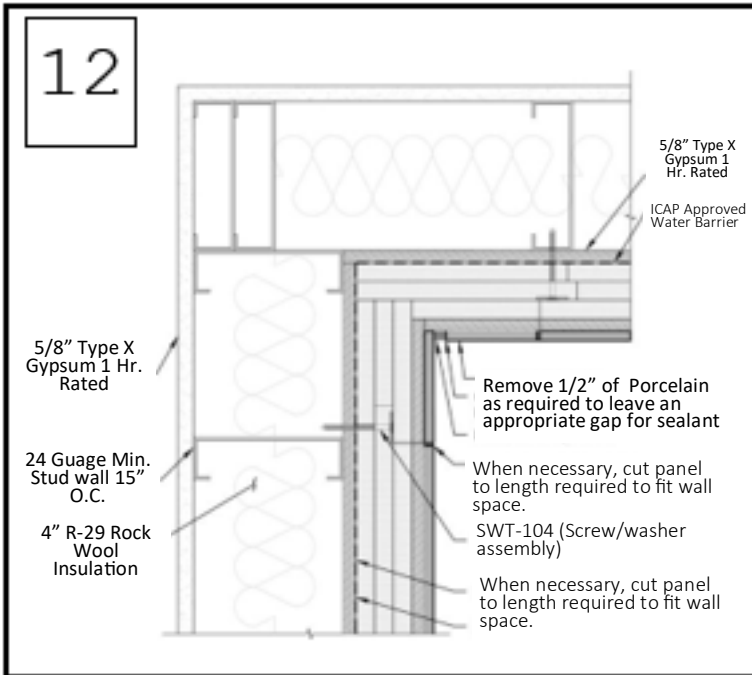


J-Hook Window/Door Caps

Part# TW-114, 114R, 115 R-21

**Note: Leave 1/2" between the window frame and the flashing for Sealant.**

R-10:	WT-114
Rain Screen:	WT-114R
R-21:	WT-115
<u>See Trim Chart for Dimensions</u>	



# ICAP-USA

## Porcelain & Stone Maintenance Instructions

ICAP Porcelain Cladding can be installed in numerous design possibilities and a variety of looks. The Porcelain is easily cleaned due to the nature of the porcelain and its impervious surface. The grout joints are more vulnerable and should be treated carefully based on the type of grout :

### Routine Porcelain or Stone Tile Care

Regular, basic cleaning with warm water and mild soap is sufficient to keep porcelain cladding looking good. You can also use gentle, everyday multipurpose spray cleaner to remove hard water deposits and mildew. Do not use cleaning products that contain acids or ammonia (and other harsh chemicals) as these can damage grout and glazed surfaces of the tile. Cladding can be spray washed at normal residential water pressure levels or with low pressure washers. Do not hold nozzle closer than 24 inches from the tile or grout to avoid damage of force water between joints.

### Grout Care

100% Silicone Grout: This grouting method may be cleaned in the same manner as routine porcelain care described above. Be careful not to force water in the grout seams or damage the silicone.

Cementitious Grouts: This type of grout should not be cleaned until it is completely dried and cured, then the grout should be treated with a silicone sealer. Grout, the material used to fill the spaces between tiles, is porous, and sealing it at this time will simplify maintenance in the future (Epoxy grouts and 100% silicones grouts do not require a sealer). We recommend you apply a sealer at least twice a year for maximum stain protection over cementitious grouts.

### Heavy Duty Cleaning

Neglected or situations where extreme dirt, smog, mold, mildew or dust is common may require more intensive cleaning. Clean glazed wall tiles with a scouring powder or all-purpose cleaner applied to a non-metallic pad. Rinse and wipe dry. In extreme cases use a commercial tile cleaner, or apply a strong solution of an all-purpose, non-oil-based cleaner or scouring powder paste. Let stand for five minutes, brush and scrub. Then rinse with clean water and wipe dry.

### Purchasing Maintenance Products

Ceramic tile and Natural Stone cleaning products and sealants may be purchased at your local home center or floor covering store. Consult the manufacturer of the cleaner or sealant for usage instructions and more detailed information about how its use.

### DO NOT...

Use cleansers containing acid or bleach for routine maintenance.

Use wax cleaners, oil-based detergents or sealants to maintain your tile (sealants may be used on grout joints).

Use ammonia (it will discolor grout).

Use harsh cleaning aids like steel wool pads or scouring pads containing metal.

Use a cleaning agent that contains color