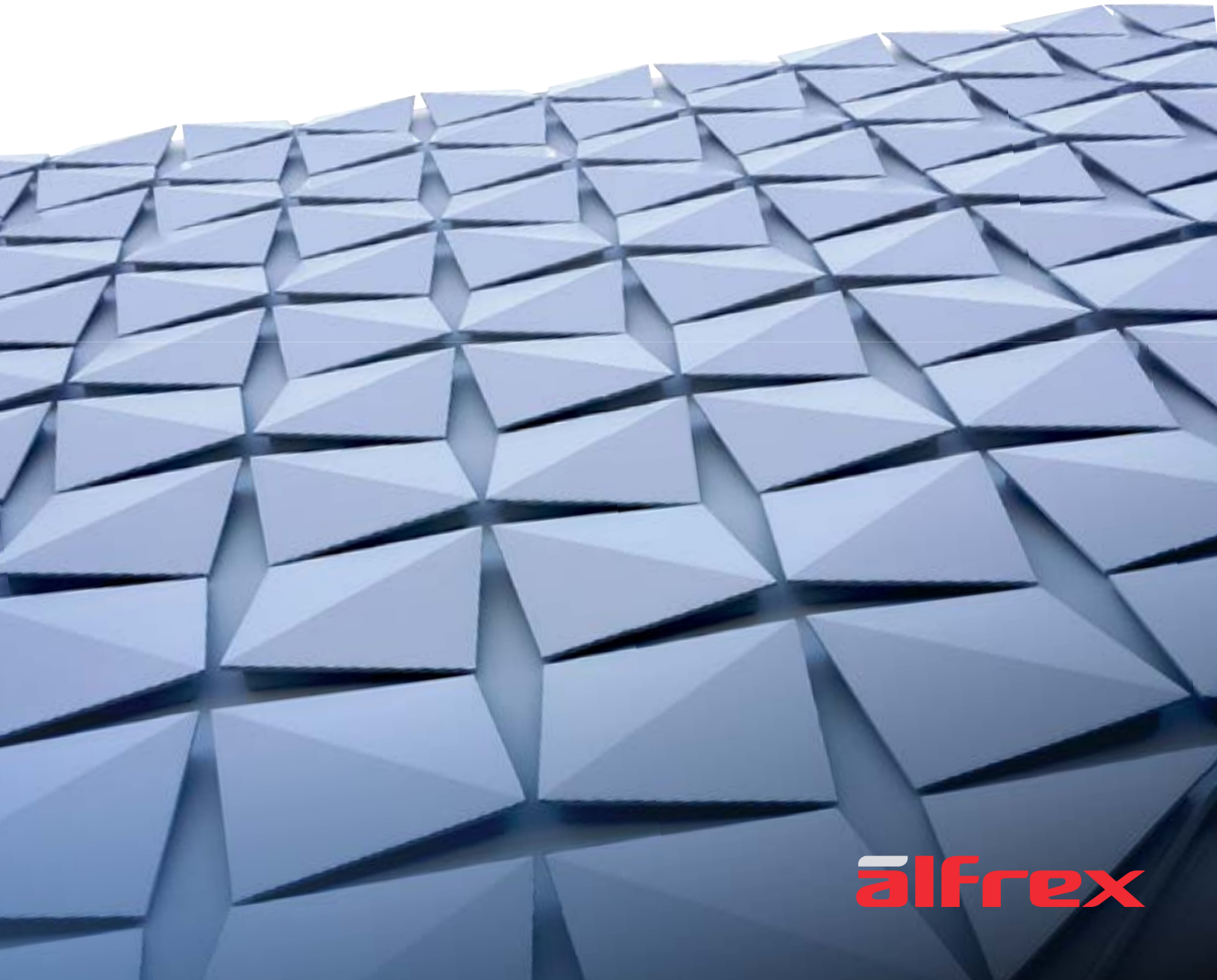
Alfrex FR

Metal Composite Material

Digital Architectural Binder



ALFREX OVERVIEW

Alfrex, Inc. is specialized in fire-resistant and non-combustible architectural metal wall cladding for the North American market. Its foundation as a manufacturer dates back to 2000 for fire-resistant compounds, coatings, and bonding materials; and back to 2008 as a global manufacturer of fire-resistant MCM. Its company history and highlights include:

2000 Parent company Unience, Ltd. founded manufacturing fire-resistant compounds

2008 Alfrex FR Metal Composite Material launched with 2 manufacturing lines

2016 Alfrex USA commercial offices opened

2017 Alfrex Canada commercial offices opened

2019 Alfrex Plate - coil coated architectural aluminum plate added to portfolio

2020 New FR-core only MCM manufacturing plate and global headquarters inaugurated in Buford, Georgia USA

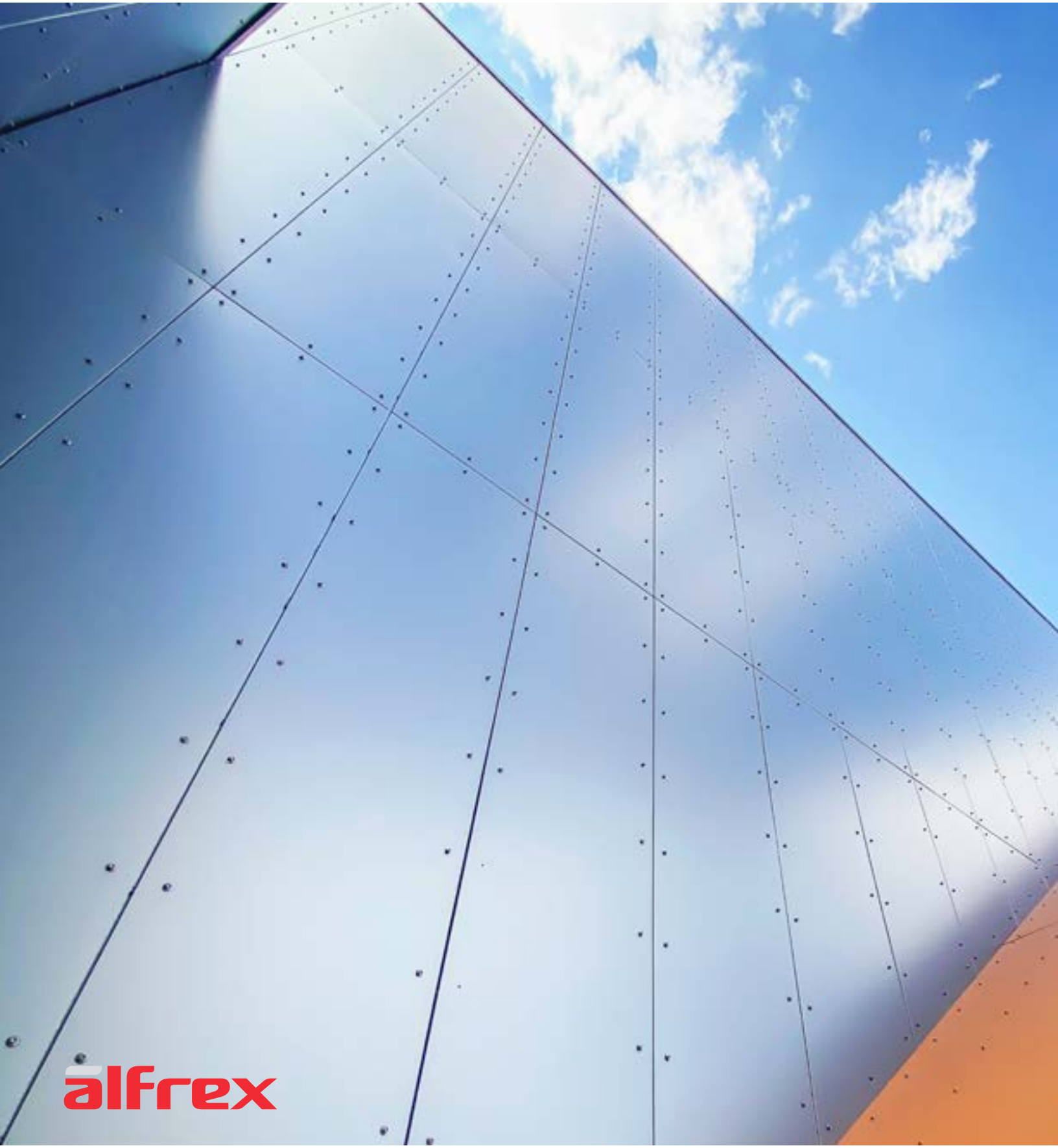
2020 All required product testing and certifications for the USA and Canada completed for Alfrex FR MCM and Alfrex Plate

PRODUCTS

Alfrex FR MCM - Metal Composite Material Wall Panels

Alfrex Plate Pre-Finished Architectural Wall Panels

Matching Flat Sheet and Trim Profiles


alfrex

PRODUCT OVERVIEW

Alfrex FR MCM *Metal Composite Material Wall Panels*

Alfrex FR is a continuous process manufactured metal composite material (MCM) consisting of an extruded fire-resistant core permanently bonded to pre-finished aluminum skins on each side. It is fully tested and compliant with building codes in both the USA and Canada - holding key certifications such as ICC ES Evaluation Report ESR-4566, ICC AC25, NPFA 285, CAN S134, Florida Product Approval for High Velocity Hurricane Zones, and many others.

Alfrex Plate *Pre-Finished Architectural Wall Panels*

Alfrex Plate is a 100% solid aluminum, non-combustible wall cladding panel with a standard nominal thickness of 0.125" (3mm) by a maximum 62" width - allowing it to be fabricated and installed with the same methods and system assemblies utilized with MCM. Like MCM, it is pre-finished via coil coating lines - providing better color consistency and economics versus the post-painting of individual plate panels.

Matching Flat Sheet and Trim Profiles

Alfrex stocks tension leveled 0.040" (1mm) aluminum flat sheet in all MCM standard colors to address the challenge of coordinating color match between metal wall cladding products and sheet metal for trim and accessories.

CONTENTS

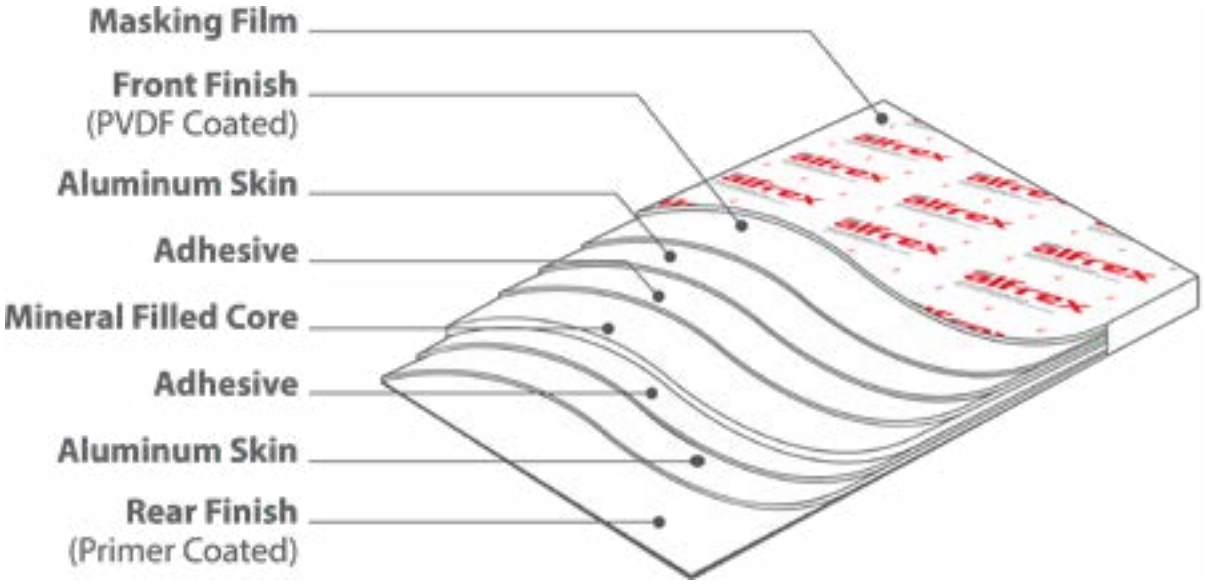
ALFREX FR PRODUCT GUIDE

INTRODUCTION

ALFREX FR is a continuous process manufactured aluminum composite material (ACM) consisting of an extruded fire-resistant core permanently bonded to pre-finished aluminum skins on each side. It is extremely lightweight and exceptionally flat, yet easy to fabricate into any shape.

Alfrex FR is coil coated utilizing 70% PVDF Kynar resin and other high-quality paint finishes - providing color uniformity, an extensive range of colors, unique coating patterns and textures, and the confidence of industry standard performance warranties. Its properties make **Alfrex FR** an ideal choice for most any architectural design intent imaginable.

ALFREX FR COMPOSITION



FEATURES

Non-Combustibility

Alfrex Plate is non-combustible 100% solid aluminum, 3003-H16 alloy. For applications where meeting local building codes or satisfying owner preference is mandated, a non-combustible metal wall cladding option may be desired. Alfrex Plate fits this requirement and much more.

Coil Coated Aluminum Plate

Architectural quality coil coated finishes are rarely available on plate thickness greater than 0.080". With Alfrex 3mm Plate, "Coil Coated" is the standard. Projects requiring a non-combustible solution with greater panel spans can count on Alfrex 3mm Plate, coil coated with the same wide range of finishes and exterior coating performance warranties as Alfrex FR MCM.

Custom Colors

Alfrex provides custom matching to transform your imagination into reality using the color or finish of your choice. Simply send us a color sample, coating manufacturer paint code, Pantone number, or PMS number and we will quickly turn around an accurate match that meets your project requirements.

Small Lot Custom Colors

Alfrex stocks 3mm thick aluminum plate in 62" wide x l65" and l96" long sheets with a primed back side. This enables the post-painting of sheets in either air dry or baked on spray finishes, eliminating the need for customers to source sheets from multiple sources. This capability also provides a more economical solution for small, custom color requirements where coil coating minimums cannot be met.

Cut to Length for the Project

Alfrex Plate is tension leveled and cut to length per the requirements of each individual project. With a minimum quantity of 20 sheets per length, customers can take off and optimize Alfrex Plate in the same manner as Alfrex FR MCM - reducing scrap and processing costs.

Compatibility and Formability

Alfrex Plate can be fabricated using proven methods such as: cutting, routing, shearing, bending, folding, and roll forming. It can be folded to a 2T bend naturally, and to 90 degrees when routed from the back side. This enables closer compatibility between Alfrex Plate and popular MCM installation systems with only slight modifications.

REFERENCE DATA

STANDARD SIZES

PROPERTY	4mm FR		UNITS
Panel Thickness	0.157		in
	4.0		mm
Top & Backer Skin Thickness *(nominal)*	0.020		in
	0.5		mm
Standard Widths	50	62	in
	1,270	1,575	mm
Other Available Widths *Widths only available upon request	40	49.2	in
	1,020	1,250	mm

TOLERANCES

PROPERTY	4mm FR	UNITS
Width	+ / - 0.080	in
	2.0	mm
Length	+ / - 0.157	in
	4.0	mm
Thickness	+ / - 0.008	in
	0.2	mm
Squareness	+ / - 0.157	in
	4	mm

TECHNICAL PROPERTIES

PROPERTY	STANDARD	4mm FR	UNITS
Panel Weight	-	1.51	lb/ft^2
		7.37	kg/m^2
Flexular Modulus *(Flexural Elasticity)*	ASTM C393	5.38×10^6	Psi
		3.79×10^3	Mpa
Modulus of Elasticity	ASTM E8	2.46×10^6	Psi
		17.00×10^3	Mpa
Tensile Strength	ASTM E8	6.96×10^3	Psi
		48	Mpa
Yield Strength	ASTM E8	6.23×10^3	Psi
		43	Mpa
Elongation	ASTM E8	5	%
Moment of Inertia	-	1.90×10^{-4}	in^4/in
		1.36×10^{-3}	cm^4/m
Section Modulus	-	1.81×10^{-3}	in^3/in
		6.77×10^{-3}	cm^3/m
Coefficient of Expansion	ASTM D696	1.44×10^{-5}	in/in/°F (@-22-86°F)

REFERENCE DATA

BUILDING CODES

ICC AC-25	Certificate WHI18-26206601 (Spec ID 36858)	
ICC-ESR Evaluation Report	ESR-4566	
ICC-ESR Supplements [California]	CBC	California Building Code
	DSA	Division of the State Architect
	OSHPD	Office of Statewide Health Planning Development
	LABC	Los Angeles Building Code
Los Angeles Research Report	Per IB119 exempt with ICC ESR	
Florida Product Approval	FL I5337 (R2, R3, R4, R5)	

FIRE PERFORMANCE

ASTM E84	Class A
ASTM E119	Fire Rating - 2 hours
NFPA 285	Passed
CAN/ULC S102	Class A
CAN/ULC S134	Passed
ASTM D635	Classified CC1

ALFREX FR MCM EXECUTIVE SUMMARY

ALFREX FR MCM EXECUTIVE SUMMARY

4mm Aluminum Composite Material

Fire Resistant & Non-Combustible Cladding

ALFREX 4mm FR MCM

- Fire Resistant Core Only - No PE
- In-house produced FR core
- Minimal price difference between solids, micas and metallics
- Thickness: Standard 4mm
  [Available in 3mm and 6mm]
- Width: Standard 62in
  50in in select colors
  40.2in and 49.2in also available
- 10 Year Bond Integrity Warranty
- 10, 20 & 30 Year Finish Warranties
- 48 Stocking Items in Finished Goods

STANDARD COLORS

Matching 0.040" Flat Sheet in Inventory

ALFREX FR MCM

- 2-Coat Solids:
- Vivid Solids
- 2-Coat Micas:
- 3-Coat Metallics:
- Wood Series:
- Metal Series:
- Specialty Series:
- Natural Zinc Series:

* Hover over finishes for Finish Name.*

MATCHING FLAT SHEET

- Sheet Size: 0.040in x 48in x 120in
- 46 standard matching colors in stock
- Perfect for trim and accessories
- Same paint finishes as Alfrex FR

FINISHED GOODS

- Stocking Locations: Atlanta and Toronto
- FR MCM: 46 standard colors - 4mm x 62in x 196in lengths
- Matching Flat Sheet: 40 colors - 0.040in x 48in x 120in
- 3mm Plate: 62in x 165in and 196in in 5 standard colors

CUSTOM COLORS

- Minimum 1,000 sqft production quantity
- No Setup Charges
- Require color sample, paint code, PMS or Pantone number
- Custom Matching Flat Sheet Available - 1,000 sqft minimum

MATCHING TRIM PROFILES

- All standard colors stocked on the floor in MCM and Flat Sheet
- 2-3 day lead times for standard color orders from inventory
- 2-3 week lead times for standard color production orders
- Proactive communication and stewardship of orders
- Parapet Flashing, Z-Flashing

PRODUCT CERTIFICATIONS

ALFREX FR MCM - BUILDING CODES		
ICC AC-25	Certificate WHI22-32958101 (Spec ID 36858)	
ICC-ESR Evaluation Report	ESR-4566	
ICC-ESR Supplements [California]	CBC	California Building Code
	DSA	Division of the State Architect
	OSHPD	Office of Statewide Health Planning Development
	LABC	Los Angeles Building Code
Los Angeles Research Report	Per IB119 exempt with ICC ESR	
Florida Product Approval	FL 15337 (R2, R3, R4, R5)	

ALFREX FR MCM - FIRE PERFORMANCE	
ASTM E84	CAN/ULC S102
ASTM E119	CAN/ULC S134
NFPA 285	ASTM D635

LEED CERTIFICATION RECYCLED CONTENT MR CREDIT 4 - 26.07%

- LEED v3 : 2 Points
- LEED v4 : 1 Point

USA MANUFACTURING PLANT

- 100,000 sqft facility in Buford, Georgia USA
- MCM Production Line:
  - Painted coil stocked in all standard colors for quick production
  - Custom sheet lengths up to 300" (25ft)
  - BABA "Build America - Buy American" compliant upon request
  - Comprehensive process scrap recycling program

ALFREX FR MCM SPECIFICATION COMPLIANCE CHECKLIST

SPECIFICATION COMPLIANCE CHECKLIST

Section 07 42 13 - Metal Composite Wall Panels

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Fire Resistant & Non-Combustible Cladding

PART 1: GENERAL

ASTM E330 Structural Performance

Perimeter Framing Deflection ≤ L/175
Panel Deflection ≤ L/60

Panel Deflection - Compliant
±75 psf, 20.0 psf water penetration per ASTM E330

		Deflection (in)		Permanent Set (in)	
		Measured	Allowed Per TAS 202 (L/250)	Measured	Allowed Per TAS 202 (L/720)
Design Pressure	+ 75.0/psf	0.15	0.48	0.01	0.17
	- 75.0/psf	0.10	0.48	‹ 0.01	0.17
Test Pressure	+ 112.5/psf	0.23	0.48	0.17	0.17
	- 112.5/psf	0.17	0.48	0.02	0.17

Perimeter Framing Deflection - Compliant

		Deflection (in)		Permanent Set (in)	
		Measured	Allowed Per TAS 202 (L/1333)	Measured	Allowed Per TAS 202 (L/3899)
Design Pressure	+ 75.0/psf	0.01	0.09	0.01	0.03
	- 75.0/psf	0.02	0.09	‹ 0.01	0.03
Test Pressure	+ 112.5/psf	0.01	N/A	‹ 0.01	0.03
	- 112.5/psf	0.12	N/A	‹ 0.01	0.03

Quality Assurance

Product Certifications & Test Report Compliance

ICC-ESR Certification Report (ESR-4566)	View
ICC-AC 25 Certification of Compliance Listing	View
ICC Supplements California	CBC
	DSA
	OSHPD
	LABC
Florida Product Approval HVHZ	FL 15337-R5

MCM Manufacturer Qualifications

17 Years Manufacturing Experience
Produces FR core material in-house
Intertek - Product Testing, Certification, Listing Compliance
Project References View

ASTM E283, Air Leakage

< 0.06 cfm per sf at 1.57psf

0.02 cfm/ft² (0.10 L/s/m²) at 1.57 psf (25 mph)	Compliant
0.04 cfm/ft² (0.20 L/s/m²) at 6.27 psf (50 mph)	Compliant

ASTM E331, Water Penetration

No water infiltration at 6.24 psf (0.299 kPa)

No water infiltration at 20 psf (0.96 kPa)	Compliant

Fire Performance

Compliant with regulatory fire code testing

NFPA 285, ASTM E84, ASTM E119, ASTM D1929, CAN/ULC S102, CAN/ULC S134, ASTM D635

*** See page 2 for result summaries for each test.*

Warranty

Bond Integrity Bond Integrity	10 Years	Product
Hairline Aluminum	10 Years	Finish
2 Coat Solid / 2 Coat Mica	30 Years	Finish
Vivid Solid	20 Years	Finish
3 Coat Metallic	30 Years	Finish
Wood and Metal Series	20 Years	Finish

PART 2: PRODUCT

MCM Material

Two sheets of aluminum sandwiching a solid core of extruded thermoplastic fire-resistant solid material formed in a continuous process with no glues or liquid adhesives between dissimilar materials.

MCM Face Sheets

Aluminum Alloy	3003-H16
Thickness	0.5mm (0.020") nominal of each

PART 2: PRODUCT (con't)

MCM Panel Dimensions

Thickness	4mm (0.157 in) & 6mm (0.236 in)
Widths	40", 50", 62"
Lengths	Made to order 48" min - 300" max

MCM Fire Resistant Core

Fire Resistant Mineral Core:	
3.0 mm (0.117 in) nominal	4mm FR panel
5.0 mm (0.197 in) nominal	6mm FR panel

Finishes

AAMA 2605 Compliant Coil Coated
70% KYNAR® 500 based Polyvinylidene Fluoride (PVDF) finishes

PROPERTY	STANDARD	COIL COATED ALUMINUM
Color Uniformity	ASTM D2244	Max. 2 Delta E
Color Retention - Fade	ASTM D2244	≤ 5 Delta E units
Chalk Rating	ASTM D4214	≤ 8 units
Specular Gloss	ASTM D523	± 5 units
Dry Film Hardness	ASTM D3363	F - 2H
Dry Adhesion	ASTM D3359	No coating removal
Abrasion Resistance	ASTM D968	Abrasion Coefficient Value ≥ 40
Reverse Impact	ASTM D2794	No coating removal
Muriatic Acid Resistance (10% HCl, 15 min)	ASTM D1308	No blistering or visual change
Nitric Acid Resistance (HNO_3, 30 min)	ASTM D1308	≤ 5 Delta E
Alkali Mortar Resistance (10%, 25% NaOH, 60 min)	ASTM D1308	No removal No loss of adhesion or visual change
Flexibility	ASTM D4145	2T - no pick off
Humidity Resistance	ASTM D714 ASTM D2247	4000 hour exposure Less than "few" blisters Size No. 8
Cyclic Corrosion	ASTM B117 AAMA 2605-13	2000 hour exposure Min rating of 7 scribe or cut edge Min. blister rating of 8

Bond Integrity

No failure of bonding when tested to ASTM D1781

ICC-AC 25 ASTM D1781 Intertek Report No. J6080.01-106-16 R0

Condition	Peel Torque (in•lb/in)		Result
	Average	Required	
Control	39.91	22.5	Pass
8 Hour Boil	48.71	22.5	Pass
21 Day Water	40.31	22.5	Pass
Freeze - Thaw	42.21	22.5	Pass

Fire Performance

Intertek Cerified Test	Results
NFPA 285 Multi-Story Fire Test	Passed
ASTM E84: Flame spread <25 Smoke Developed <450	Class A Flame Spread: 0 Smoke Developed: 0
CAN/ULC S102	Class A Flame Spread: 0 Smoke Developed: 0
CAN/ULC S134	Passed
ASTM E119	Passed - 2 Hour rating
ASTM D1929 Ignition Temperature	Flash: 716 °F (380 °C) Ignition: 752 °F (400 °C)
ASTM D635 Rate of Burning	Classified CC1

Technical Properties Data Sheet

Alfrex MCM 4mm FR	View
Alfrex MCM 6mm FR	View

Related Materials

Matching trim and accessories formed from sheet metal to match MCM panel finish.

Alfrex stocks 0.040" x 48" x 120" flat sheet in 46 colors that match Alfrex FR MCM standard colors.

ALFREX FR MCM COMPETITIVE COMPARISON CHART

EXPANDED COMPETITIVE COMPARISON CHART

MCM Competitor Technical Data Comparison

alfrex
Fire Resistant & Non-Combustible Cladding

	Company MCM Brand	Alfrex, Inc Alfrex FR	Arconic Reynobond FR	Mitsubishi Chemical Alpolic fr	Company A Brand A
GENERAL COMPARISON	**Product** 4mm FR Aluminum Composite Material (ACM/MCM)	✓	✓	✓	✓
	ACM Manufacturing Experience 15+ Years	✓	✓	✓	✓
	ACM Manufacturing Process Continuous Process Manufactured with No Glues or Adhesives	✓	✓	✓	✓
	Fire Resistant Mineral Filled Core	✓	✓	✓	✓
	FR Core Manufactured In-House	✓		✓	✓
	USA Manufacturing Plant Location	Buford, GA	Eastman, GA	Chesapeake, VA	Benton, KY
	Product Bond Integrity Warranty	✓	✓	✓	✓
	Metal Composite Manufacturer Alliance Member	✓	✓		✓
PRODUCT CERTIFICATIONS	**3rd Party Certifying Agencies** Intertek / International Code Council, Inc. (ICC)	✓	✓	✓	✓
	ICC-ESR Certification Report	ESR-4566	ESR-3435	ESR-2653	ESR-1185
	ICC-AC 25 Certification for ACM / MCM	✓	✓	✓	✓
	Fire Performance Certification USA NFPA 285, ASTM E84, ASTM E119	✓	✓	✓	✓
	Fire Performance Certification Canada CAN / ULC S102, S134	✓	✓	✓	✓
	ICC Supplement CBC California Building Code	✓		✓	
	ICC Supplement DSA Division of the State Architect - California	✓			
	ICC Supplement OSHPD Office of Statewide Health Planning Development - California	✓			
	ICC Supplement LABC Los Angeles Building Code - California	✓	✓	✓	
	Los Angeles Resarch Report Per IB119 exempt with ICC ESR	✓	✓	✓	✓
	Florida State Product Approval	✓	✓	✓	✓
	High Velocity Hurricane Zone	✓	✓	✓	✓

EXPANDED COMPETITIVE COMPARISON CHART

MCM Competitor Technical Data Comparison

alfrex
Fire Resistant & Non-Combustible Cladding

	Company MCM Brand	**Alfrex, Inc Alfrex FR**	Arconic Reynobond FR	Mitsubishi Chemical Alpolic fr	Company A Brand A
FIRE PERFORMANCE	**ASTM E84** Class A	✓	✓	✓	✓
	NFPA 285 Passed	✓	✓	✓	✓
	CAN/ULC S102 Class A	✓	✓	✓	✓
	CAN/ULC S134 Passed	✓	✓	✓	✓
ARCHITECTURAL PAINT SYSTEMS	**Primary System**	70% Kynar PvDF	70% Kynar PvDF	Lumiflon	70% Kynar PvDF
	Secondary System	Lumiflon	Lumiflon	70% Kynar PvDF	Lumiflon
	Primary Paint Suppliers	PPG Beckers Sherwin Williams	PPG Beckers	Sherwin-Willams PPG	PPG Akzo Noble
	AAMA 2605 Compliant	✓	✓	✓	✓
	30 Year Finish Performance Warranty	✓	✓	✓	✓
ARCHITECTURAL PRODUCT OFFERING AND SERVICES	**Standard Widths (62" / 50")**	✓	✓	✓	✓
	Other Widths (49.2" / 40")	✓	✓	✓	✓
	Custom Lengths : Panels are Cut to Length during Manufacturing	✓	✓	✓	✓
	Standard Colors : 30+ Solid, Mica, 3-coat Metallic, Wood Grain, Brushed Metal, Natural Metals, Corten Rust	✓	✓	✓	✓
	Custom Colors	✓	✓	✓	✓
	Finished Goods ACM Panels	✓	✓	✓	✓
	Company Finished Goods Locations	USA & Canada	USA only	USA only	USA only
	Matching Flat Sheet	✓	✓	✓	✓
	Matching Flat Sheet Thickness	0.040"	0.040"	0.032"	0.040"

EXPANDED COMPETITIVE COMPARISON CHART

MCM Competitor Technical Data Comparison

alfrex
Fire Resistant & Non-Combustible Cladding

	Company MCM Brand	Alfrex, Inc Alfrex FR	Arconic Reynobond FR	Mitsubishi Chemical Alpolic fr	Company A Brand A
TECHNICAL DATA COMPARISON	**Product** 4mm FR Aluminum Composite Material (ACM/MCM)	✓	✓	✓	✓
	Aluminum Alloy 3000 Series	✓	✓	✓	✓
	Product Thicknesss 4mm / 0.157"	✓	✓	✓	✓
	Aluminum Skin Thickness (inches) ***[nominal]*** 0.020" Top Skin / 0.020" Bottom Skin	✓	✓	✓	✓
	Panel Weight Pounds per Square Foot	1.51	1.53	1.56	1.56
	Minimum Bond Strength ASTM D1781 (in•lb/in)	22.5	22.5	22.5	22.5
	Flatwise Tensile Strength ASTM C297 (Psi)	938	961	949	765
	Flexular Modulus ASTM C393 (Psi)	5.38×10^6	6.7×10^6	5.77×10^6	-
	Modulus of Elasticity ASTM E8 (Psi), **ASTM D638 (Psi)	2.46×10^6	-	-	$**2.93 \times 10^6$
	Moment of Inertia (in^4/in)	1.9×10^{-4}	1.89×10^{-4}	-	-
	Tensile Strength (aluminum skin) ASTM E8 (Psi), **ASTM D638 (Psi)	6.96×10^3	-	7.13×10^3	$**7.75 \times 10^3$
	Yield Strength (aluminum skin) ASTM E8 (Psi), **ASTM D638 (Psi)	6.23×10^3	6.37×10^3	6.34×10^3	$**6.57 \times 10^3$
	Elongation ASTM E8 (%)	5	-	5	-
	Coefficient of Expansion ASTM D696 (in/in/°F)	1.44×10^{-5}	1.31×10^{-5}	1.71×10^{-5}	1.11×10^{-5}
	Deflection Temperature ASTM D648 (°F)	› 239	-	› 242	› 185
	Self Ignition Temperature ASTM D1929 (°F)	775	-	811	783

ALFREX COLOR OFFERING

FR MCM FINISHES Standard Stocking

Painted coil and finished goods panel inventory
2,000 sqft Production Order Minimum
Matching 0.040in Flat Sheet finished goods inventory

2 COAT SOLIDS

▪ 30 Year Finish Warranty ▪ AAMA 2605

Matching 0.040" Flat Sheet in Inventory

Classic White
JY-5195

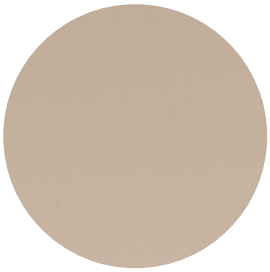
Bone White
JY-5165

Ascot White
JY-5110

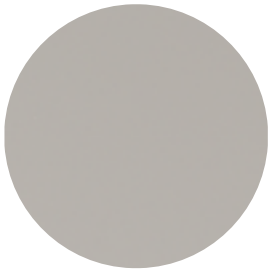
Alabaster
JY-6165

Oyster
JY-5125

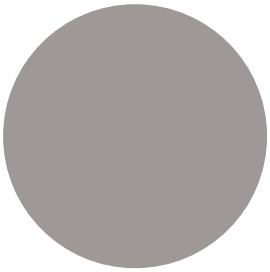
Castle Gray
JY-6160



Sea Wolf
JY-6175

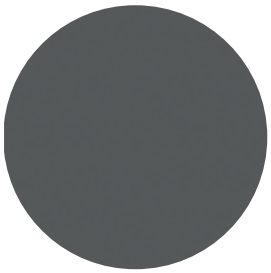


Dove Gray
JY-6120

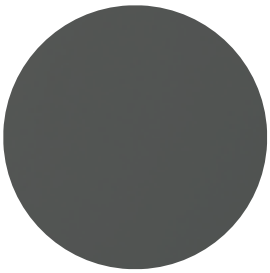


Slate Gray
JY-6145

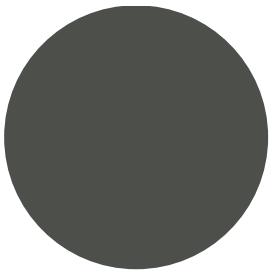
Fashion Gray
JY-6130



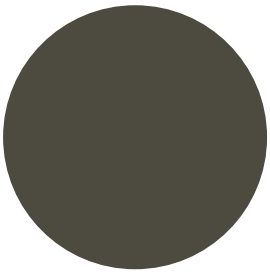
Greyhound
JY-6155



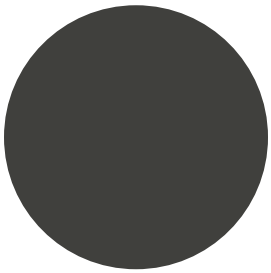
Dark Gray
JY-6140



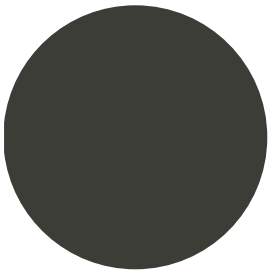
Charcoal
JY-6150



Bronze
JY-6180



Black
JY-6220

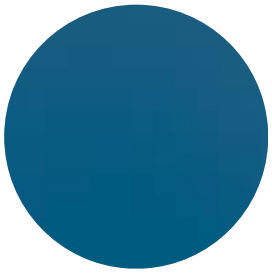


Midnight Black
JY-6230

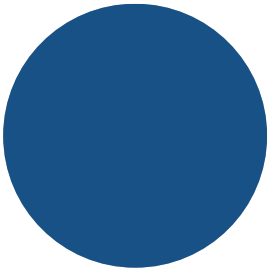
Solid colors are non-directional finishes therefore, directional arrows do not need to be installed in the same direction. However, special precautions must be taken since slight variations in color and gloss still occur between different production batches. These variations, though within industry tolerances, may still be detectable by the human eye in certain light conditions.

VIVID SOLIDS* ▪ 20 Year Limited Finish Warranty ▪ AAMA 2605

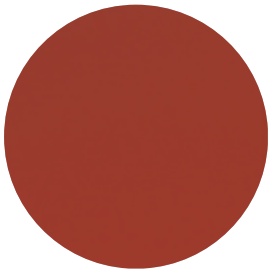
Matching 0.040" Flat Sheet in Inventory



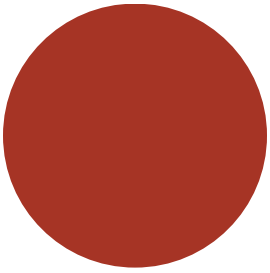
Signal Blue
JY-7110 | 2 Coat Solid



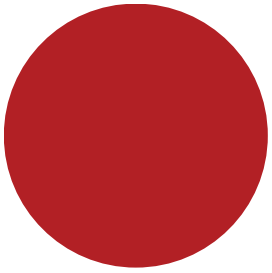
Harmony Blue
JY-7115 | 2 Coat Solid



Vibrant Red
JY-7120 | 3 Coat Solid



Patriot Red
JY-7140 | 3 Coat Solid



Ron Red *
JY-7150 | 3 Coat Solid

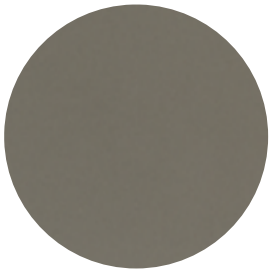
2 COAT MICAS ▪ 30 Year Finish Warranty ▪ AAMA 2605

Matching 0.040" Flat Sheet in Inventory

Anodic Clear Mica
JY-2510

Exotic Silver Mica
JY-2520

Silversmith
JY-2515



Gray Silver Mica
JY-2530

Pewter Mica
JY-2540

MZG Gray Mica
JY-2535

Champagne Mica
JY-2550

Medium Bronze Mica
JY-2560

Driftwood Mica
JY-2555

Copper Penny Mica
JY-2570

Hazelnut Mica
JY-2575

New Age Dark Bronze Mica
JY-2580

**Please contact us for warranty details.*

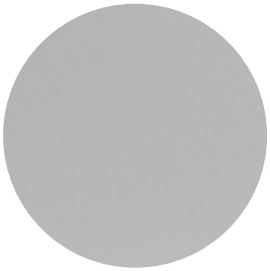
Mica, Metallic, and Design Series Finishes are directional finishes - requiring special precautions during planning, purchasing, fabrication, and installation in order to minimize the chance of visual color differences due to color batch variation and metallic flop. It is highly recommended that all material for a single project be ordered at the same time. With these finishes, directional arrows on product protective film should always be installed in the same direction.

3 COAT METALLICS

▪ 30 Year Finish Warranty ▪ AAMA 2605

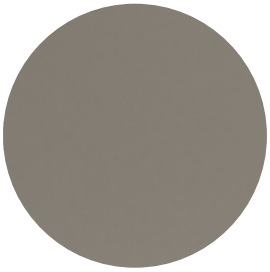
Matching 0.040" Flat Sheet in Inventory

Bright Silver Metallic
JY-3510



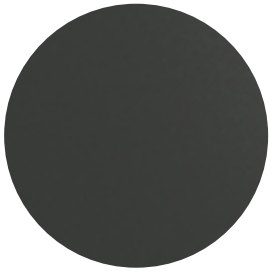
Champagne Metallic
JY-3520

PEX Pewter Metallic
JY-3540



JLR Gray Metallic
JY-3550

Anthracite Silver Metallic
JY-3560



Graphite Metallic
JY-3530

METAL SERIES

▪ 20 Year Finish Warranty ▪ AAMA 2605

Matching 0.040" Flat Sheet in Inventory

Faux Zinc Lite
JY-MI30

Faux Zinc
JY-MI20

Faux Zinc Graphite
JY-MII0

Tile Corten
JY-MI40

WOOD SERIES

▪ 20 Year Finish Warranty ▪ AAMA 2605

Matching 0.040" Flat Sheet in Inventory

Teak
JY-WI20

Golden Oak
JY-WI40

Dark Walnut
JY-WI50

NATURAL ZINC SERIES*

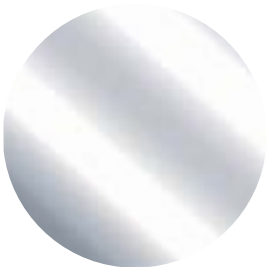
Non-stocking item subject to minimum quantities. Bond integrity warranty only.

Blue Grey
JY-ZII0

Graphite Grey
JY-ZI00

SPECIALTY SERIES*

Hairline Clear
JY-HI00



Mirror
JY-AI60

CUSTOM COLORS

- Matching custom colors is part of our everyday business.
- To begin the process, send us either a physical color sample (preferred), a coating manufacturer paint code, or a color reference such as a Pantone number. Please also detail specified performance requirements.
  - *Subject to minimum order quantities, matching 0.040" flat sheet can be coated at the same time as coil for MCM or Plate.*
  - *Achieving perfect color matches may not be possible every time due to inherent differences in substrate types, paint systems, pigments, and application methods.*
  - *For more information, please contact us for specific details.*

Metal Wall Panels / Curtain Wall

Color Swatches / Codes / Physical Sampes

All finishes shown are print reproductions and may differ slightly from actual product finishes. Product samples are available for color verification and approval. Please visit our website at www.alfrexusa.com for sample requests. Alfrex, Inc. reserves the right to modify all contents herein without prior notice.

*Please contact us for warranty details.

ALFREX FR MCM SPECIFICATION 07 42 13 COMPOSITE METAL WALL PANELS

ALFREX FR MCM SPECIFICATION 07 42 13

Composite Metal Wall Panels

PART 1: GENERAL

1.01 SCOPE

A. Section Includes
   1. MCM - Fire Resistant Composite Metal Panels
   2. Panel systems requirements of composite fire resistive panels including exterior and interior installation assemblies, components, and accessories.

B. Related Sections: Section(s) related to this section include:
   1. Division 05 Metal Framing Sections
   2. Division 07 Air and Vapor Barrier
   3. Division 07 Flashing and Trim Sections
   4. Division 07 Joint Treatment Section
   5. Division 08 Aluminum Windows Section
   6. Division 08 Glass and Glazing Section
   7. Division 08 Curtain Wall Sections

1.02 QUALITY ASSURANCE

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed have either been identified by the International Building Code (IBC), local building code, or specific requirement for this building construction type.

B. Aluminum Association (AA)
   1. Aluminum Design Manual
   2. AA-MI2C22A41: Anodized - Clear Coating
   3. AA-MI2C22A44: Anodized - Color Coating

C. American Society for Testing and Materials (ASTM) International
   1. ASTM DI781 Standard Test Method for Climbing Drum Peel for Adhesives
   2. ASTM DI929 Standard Test Method for Determining Ignition Temperature of Plastics
   3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
   4. ASTM D635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
   5. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference
   6. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Curtain Wall, and Doors By Uniform Static Air Pressure Difference

D. American Architectural Manufacturers Associations (AAMA)
   1. AAMA 2605 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
   2. AAMA 509 Voluntary Test and Classification Method of Drained and Back Ventilated Rain Screen Wall Cladding Systems.

E. National Fire Protection Association (NFPA)
   1. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

1.03 SYSTEM DESCRIPTION

A. Performance Requirements:
   1. Provide installed MCM system designed to withstand specified loadings while maintaining allowable deflection, thermal movement performance as defined by the Manufacturer, Fabricator, or Installer required by this section without defects, damage, or failure.

B. Deflection and Thermal Movement: Provide installed MCM systems that have been designed to resist to wind loading, acting inward and outward.
   1. Perimeter Framing Deflection: Deflection of panel perimeter framing member shall not exceed L/175 normal to plane of the wall where L is the unsupported span of the perimeter framing member.
   2. Panel Deflection: Deflection of the panel face shall not exceed L/60 at design load where L is the unsupported span of the panel.
   3. Anchor Deflection: At connection points of framing members to anchors, anchor deflection in any direction shall not exceed 0.0625in (1.6mm).
   4. At 150% pressure, no permanent deformation exceeding L/1000 or failure to structural members is permitted.
   5. Thermal Movements: Allow for free and noiseless horizontal and vertical thermal movement due to expansion and contraction of component parts over a temperature range of -20°F (-29°C) to +180°F (82.2°C) at the material surface.
      a. Buckling,opening of joints, undue stress on fasteners, failure of sealants, or any other detrimental effects of thermal movement will not be permitted.
      b. Fabrication, assembly and erection procedures shall take into account the ambient temperature range at the time of the respective operation.

C. Water and Air Leakage - Provide systems that have been tested and certified to conform to the following criteria:
   1. ASTM E283: Air Leakage - Not more than 0.06cfm per ft2 of wall area (0.003L/s m2) when tested at 6.24psf (300Pa)
   2. ASTM E331: Static Water Penetration – When tested under static pressure at 12.0 psf (575 Pa) minimum, for a time period of 15 minutes. MCM systems must have:
      a. No uncontrolled water leakage to the room side of the assembly when tested as
   3. AAMA 501.1 – Dynamic Water Penetration – When tested with a wall pressure equivalent to 12.0 psf (575 Pa) for a time period of 15 minutes, the MCM system must have:
      a. No uncontrolled water leakage to the room side of the assembly when tested as defined by the procedure.
   4. ASTM E330 – Structural Performance – MCM system must be engineered to meet the project design loads, however the MCM system must meet or exceed the following criteria when tested to a minimum pressure of 30.0 psf (1436 Pa):
      a. Deflections do not exceed limitations defined within the section on Deflection and

D. Fire Performance: Where required by governing code, provide fire retardant MCM that has been evaluated and is in compliance with code requirements specified herein.
      a. Fire Performance: Wall assemblies containing MCM System shall meet the requirements of the Intermediate Scale Multi-story test, NFPA 285, where required by code based for the design of this project.

1.04 SUBMITTALS

A. Submit in accordance with Conditions of the Contract and Division 01 Submittal Procedures Sections.
B. Submit product data, including manufacturer's brochures and Spec-Data Sheets.
C. Shop Drawings: Submit shop drawings showing project layout and elevations; fastening and anchoring methods; detail and location of joints, sealants, and gaskets, including joints necessary to accommodate thermal movement; trim; flashing; and accessories.
D. Samples: Submit selection and verification samples for finishes, colors and textures.
   1. Selected Samples: Manufacturer's color charts or chips illustrating full range of colors, finishes and patterns available for composite metal panels with factory applied finishes.

2. Verification Samples:
    a. Panel System Assembly: Two samples of each assembly 12in x 12in (304mm x 304mm)
    b. Two samples of each color in coil coated, or draw down samples on aluminum substrate, not less than 3in x 4in (76mm x 102mm)

E. Quality Assurance Submittals - Submit the following:
1. Product Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties, or a third-part listing documenting compliance to a comparable code section.
2. Product Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
3. Manufacturer's Product Literature
4. Manufacturer's Field Reports: Manufacturer's field reports.

F. Closeout Submittals - Submit the following:
1. Warranty: Warranty documents specified.

1.05 QUALITY ASSURANCE

A. MCM Manufacturer Qualifications
1. MCM Manufacturer Qualifications: Company with a minimum of 10 years of continuous experience manufacturing MCM of the type specified.
    a. Able to provide specified warranty on finish.
    b. Able to provide a list of other projects of similar size, including approximate date of installation and name of Architect for each.
    c. Able to produce the composite material without outsourcing of the fire-resistant core manufacture and compounding, or panel bonding process.

B. MCM Fabricator Qualifications
1. MCM system fabricator will have at least (3) years of continuous documented experience fabricating the panel material type specified.
2. MCM system fabricator will have been in business under its present name for at least five (5) years prior to the start of this project.
3. MCM system fabricator will be capable of providing field service representation during construction.
4. MCM system fabricator will not have filed for protection from creditors under state or federal insolvency or debtor relief statues or codes

C. MCM System Installer Qualification
1. MCM system fabricator will have been in business under its present name for at least five (5) years prior to the start of this project and have experience with similar sized MCM system projects.
2. MCM system fabricator will be capable of providing field service representation during construction.
3. The MCM System Installer must be an approved installer by the MCM Fabricator for the installation of their MCM System and have undergone proper traning for the specifed system thereof.

D. Mock-up
1. At location on building and to extent directed by Architect, install areas of specified wall panels, support framing, flashing, trim and accessories to show:
    a. Substrate preparation
    b. Support framing, furring, and flashing
    c. Clearances and gaps between members
    d. Fastening methods
    e. Trim details
    f. Joint protection

g. Workmanship

2. Prepare mock-up for Architect's approval before start of wall panel work. Prepare additional mock-ups, if required by Architect, until approved.
3. Maintain approved mock-up during construction to establish required standard of workmanship and basis of comparison for installation of wall panel work. Approved mock-up may remain as part of finished work.

E. Installation Documents On-Site
   I. Maintain copies of installation instructions, approved subittal and other execution related documents on-site; make available as needed to confirm proper installation.

F. [____]

1.06 DELIVERY, STORAGE & HANDLING

A. Adhere to manufacturer's ordering instructions and lead time requirements to avoid delays.
B. Deliver materials to fabricator in manufacturer's original, unopened, undamaged containers with indentification labels intact.
C. Protect finish of panels by applying heavy-duty removable plastic film during production.
D. After fabrication, package composite wall panels for protection against transportation damage.
E. Store material in accordance with manufacturer's guidelines.
   I. Exercise care unloading, storing and installing panels to prevent bending, warping, twisting and surface damage to the factory applied finish.
   2. Store materials protected from exposure to harmful weather conditions, out of direct sunlight when unpackaged, and at temperatures not to exceed 120°F.
   3. Protect panels from moisture and condensation with tarpaulins or other suitable weather tight covering installed to provide ventilation.
   4. Slope panels to ensure positive drainage of any accumulated water.
   5. Avoid contact with any other materials that might cause staining, denting or other surface damage to the factory applied finish.

1.07 WARRANTY

A. Manufacturer's Warranties: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.
B. Warranty Periods:
   I. Panel Integrity: 10 Years commencing on Date of Substantial Completion.
   2. Painted Finish: 30 Years commencing on Date of Substantial Completion.
   3. MCM Natural Metals: No finish warranty

PART 2: PRODUCTS

2.01 FIRE RESISTANT METAL COMPOSITE MATERIAL (MCM)

A. Fire Resistant Metal Composite Material (MCM) Manufacturer
   I. Alfrex, Inc. 943 Gainesville Hwy. Bldg 100-4000, Buford, GA 30518
   Phone - (470) 589-7449
   Website - http://alfrexusa.com
   Email - alfrex@alfrexusa.com

2.02 BASIS OF DESIGN

A. Alfrex FR - Metal Composite Material

B. Description: Two sheets of aluminum sandwiching a solid core of extruded thermoplastic fire-resistant material formed in a continuous process with no glues or liquid adhesives between dissimilar materials. The core material shall be free of voids and/or air spaces and not contain foamed insulation material. Products that are laminated sheet by sheet in a batch process using glues of adhesives between materials shall not be acceptable.

C. MCM Thickness:
   I. 4mm (0.157in)
   2. 6mm (0.236in)

D. MCM Face Sheets:
   I. Front Face: 0.5mm (0.020in) nominal
   2. Fire Resistant Mineral Core:
      a. 3.0mm (0.117in) nominal - 4mm FR panel
   3. Back Face: 0.5mm (0.020in) nominal

E. Aluminum Alloy: 3003-H16

F. Weight:
   I. 4mm: 1.51lb/ft^2 (7.37kg/m^2)
   2. 6mm: 2.13lb/ft^2 (10.40kg/m^2)

G. Finishes
   I. Coil coated KYNAR® 500 or HYLAR® 5000 based Polyvinylidene Fluoride (PVDF) or Fluoroethylene - Alkyl Vinyl Ether (FEVE) resin in conformance with the following general requirements of AAMA 2605.
      a. Color: (Select on of the following)
         I) Standard color as selected by the owner / architect / engineer from manufacturer's standard, color selection.
            a) 2 Coat Solid
            b) 2 Coat Mica
            c) 3 Coat Metallic
            d) [____]
         2) Custom color to be matched by the panel supplier
            a) 2 Coat Solid
            b) 2 Coat Mica
            c) 3 Coat Metallic
            d) [____]
         3) Clear coat over hairline aluminum substrate.
      b. Dry Film Thickness:
         I) 2 Coat: 1.0mil (±0.2mil)
         2) 3 Coat: 1.0mil (±0.2mil) + 0.50mil (±0.05mil)
      c. Hardness: ASTM D3383; HB minimum using Eagle Turquoise Pencil
      d. Impact Resistance
         I) Test method: ASTM D2794; Gardner Variable Impact Tester with 5/8" mandrel
         2) Coating shall withstand reverse impact of 1.5in/lbs per mil substrate thickness
         3) Coating shall adhere tightly to metal when subjected to #600 Scotch Tape pick-off test. Slight minute cracking permissible. No removal of film to substrate.
      e. Adhesion:
         I) Test Method: ASTM D3359: Coating shall not pick-off when subjected to an 11in x 11in x 1/16in grid and taped with #600 Scotch Tape.
      f. Humidity Resistance:

1) Test Method: ASTM D2247
2) No formation of blisters when subject to condensing water fog at 100% relative humidity and 100°F for 4000 hours.

g. Salt Spray Resistance:
1) Test Method: ASTM B117; Expose coating system to 4000 hours, using 5% NaCl solution.
2) Corrosion creepage from scribe line: 1/16" max.
3) Minimum blister rating of 8 within the test specimen field.

h. Weather Exposure:
1) Outdoor:
a) 10 Year exposure at 45° angle facing south Florida exposure.
b) Maximum color change of 5 Delta E units as calculated in accordance with ASTM D2244
c) Minimum chalk rating of 8 in accordance with ASTM D4214
d) No checking, crazing, adhesion loss

i. Chemical Resistance:
1) ASTM D1308 utilizing 10% Muriatic Acid for an exposure time of 15 minutes. No loss of film adhesion or visual change when viewed by the unaided eye.
2) ASTM D1308 utilizing 20% Sulfuric Acid for an exposure time of 18 hours. No loss of film adhesion or visual change when viewed by they unaided eye.
3) AAMA 2605 utilizing 70% reagent grade Nitric Acid vapor for an exposure time of 30 minutes. Maximum color change of 5 Delta E units as calculated in accordance with ASTM D2244.

2.03 ALTERNATES

A. Base Bid/Contract Manufacturer: [Specify base bid/contract manufacturer].
1. Product: [Specify product base bid/contract brand/trade name with product attributes and characteristics].

B. Alternate No. [Specify #]: [Specify alternate manufacturer].
1. Product: [Specify product alternate brand/trade name with product attributes and characteristics].

C. Alternate No. [Specify #]: [Specify alternate manufacturer].
1. Product: [Specify product alternate brand/trade name with product attributes and characteristics].

2.04 MCM PRODUCT PERFORMANCE

A. Bond Integrity: Tested for resistance to delamination as follows:
1. Peel Strength (ASTM D1781): 22.5in-lb/in (100N-m/m) minimum.
2. No degradation in bond performance after 8 hours of submersion in boiling water at 212°F (100°C).
3. No degradation in bond performance after and 21 days of immersion in water at 70°F (21°C).
4. Thermally bonded to the fire-resistant core material in a continuous process under tension.

B. Fire Performance:
1. Flamespread, ASTM E84: ‹25.
2. Smoke Developed, ASTM E84: ‹450.
3. Ignition Temperature:
a. Flash, ASTM D1929: 716°F (380°C)
b. Ignition: 752°F (400°C)
4. Flammability, Exterior, Non-load-bearing wall assemblies and panels, NFPA 285: Pass.

C. Production Tolerances:
1. Width: ± 0.080in (2.0mm)
2. Length: + 0.197in (5mm)
3. Thickness
a. (4mm Panel): ± 0.008in (0.2mm)

b. (6 mm Panel): +/- 0.012 inch (0.3 mm)

4. Bow: Maximum 0.2% length or width.
5. Squareness: Maximum 0.157in (4mm)

2.05 FABRICATION

A. General: Shop fabricate to sizes and joint configurations indicated on drawings.
   1. Fabricate panels too dimensions indicated on drawings based on an assumed design temperature of 70°F (21°C). Allow for ambient temperature range at time of fabrication.
   2. Formed MCM panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.
   3. Fabricate panels with sharply cut edges and no displacement of face sheet or protrusion of core.

B. Fabrication Tolerances: Shop-fabricate panels to sizes and joint configurations indicated on drawings.
   1. Width: ± 0.079in [± 2.0mm] @ 70°F (21°C)
   2. Length: ± 0.079in [± 2.0mm] @ 70°F (21°C)
   3. Squareness: ± 0.079in [± 2.0mm] @ 70°F (21°C)

PART 3: EXECUTION

3.01 METAL PLANT FABRICATOR AND INSTALLER INSTRUCTIONS

A. Compliance: Comply with provide product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 EXAMINATION AND PREPARATION

A. Verify that conditions of substrates previously installed under other sections or divisions are acceptable for metal plate panel rainscreen system installation. Documentation should be provided indicating any conditions detrimental to the performance or installation of the metal plate wall panel rainscreen system.
   1. Notify [Architect] of unacceptable conditions once discovered.
   2. Proceed with preparation and installation only after unacceptable conditions have been corrected.

B. Field Measurements
   1. If required per project conditions, field measurements of the site condition are to be taken prior to beginning fabrication work and notification of any material modifications and resulting schedule adjustment shall be formally documented.
   2. Field measurements are to be made once all substrate and adjacent materials are installed, verifying the locations of wall framing members and wall opening dimensions before commencement of installation. Indicate measurements on the “As Build Shop Drawings”.

C. Project Schedule: Provisions in the project schedule must accommodate the time interval between field measurements and fabrication/installation.

D. Miscellaneous Framing: Install miscellaneous MCM system support members and anchorage according to MCM System written instructions and drawings supplied by the MCM System Fabricator.

3.03 INSTALLATION

A. General:
   1. Install panels plumb, level and true in compliance with fabricator’s recommendations.
   2. Anchor panels securely in place in accordance with fabricator;s approved shop drawings.
   3. Comply with fabricator’s instructions for installation of concealed fasteners and with provisions of Section 07 90 00 for installation of joint sealers.
   4. Installation Tolerances: Maximum deviation from horizontal and vertical alignment of installed panels: 0.25in in 20ft (6.4mm in 6.1m), noncumulative.

5. Separate contact of dissimilar metals with bituminous paint, approved plastic shims, or other approved methods as defined within the Aluminum Design Manual (ASD). Use gasketed or approved coated fasteners where needed to eliminate the possibility of corrosive of electrolytic action between metals.

B. Related Products
   I. General: Refer to other related sections in Related Sections paragraph specified herein for related materials, including cold-form metal framing, flashing and trim, joint sealants, aluminum windows, glass and glazing and curtain walls.

3.04 FIELD QUALITY REQUIREMENTS

A. Field Quality Control: Comply with panel system fabricator's recommendations and guidelines for field forming of panels.
B. Field Quality Control: When required by contract, mock-up shall be constructed and tested at the expense of the Architect/Owner/General Contractor.
C. Testing Agency: If required, the Owner shall engage a qualified testing agency top perform tests and inspections.
D. Fabricator's Field Services: Upon Owner's request, provide fabricator's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with fabricator's instructions.

3.05 ADJUSTING AND CLEANING

A. Adjusting
   I. Remove and replace panels damaged beyond repair as a direct result of the panel installation. After installation, panel repair and replacement are the responsibility of the General Contractor.
   2. Removal of panels damaged by other trades is the responsibility of the General Contractor.
   3. Repair components of the MCM system that present with minor damage provided said repairs are not visibly apparent at a distance of I0ft (3m) from the surface at a 90° angle per AAMA 2605.
   4. Remove and replace components of the MCM system damage beyond repair.
   5. Remove protective film immediately after installation of MCM and immediately prior to completion of the MCM system work. Protective film intentionally left in plate after panel installation on any elevation at the direction of the General Contractor, is the responsibility of the General Contractor.
   6. Any additional protection, after installation, is the responsibility of the General Contractor.
   7. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.
   8. Promptly remove from the job site any damaged MCM panels, protective film, and other debris attributable to MCM system and installation, and legally dispose of said materials.
B. Cleaning
   I. After MCM system installation remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

3.06 PROTECTION

A. Protect installed products from damage during subsequent construction work until final inspection and acceptance by Owner
B. [____]

END OF SECTION

ALFREX FR MCM TECHNICAL DATA

TECHNICAL DATA SHEET

Alfrex FR Metal Composite Material 4mm

Fire Resistant & Non-Combustible Cladding

COMPOSITION

PROPERTY	4mm FR	UNITS
Aluminum Skin Alloy	3003-H16	
Panel Thickness	0.157	in
	4.0	mm
Skin Thickness (nominal)	0.020	in
	0.5	mm
Core Material	Fire rated mineral filled core	
Panel Weight	1.51	lbs/ft^2
	7.37	kg/m^2
Specific Gravity (Product)	1.76	
Specific Gravity (Core Layer)	1.43	

STANDARD SIZES

PROPERTY	4mm FR		UNITS
Standard Widths	50	62	in
	1,270	1,575	mm
Other Available Widths	40	49.2	in
	1,020	1,250	mm
Standard Lengths	Max 25 (300)		ft (in)
	7,620		mm

PRODUCTION TOLERANCES

PROPERTY	4mm FR	UNITS
Width	+ / - 0.080	in
	2.0	mm
Length	+ / - 0.157	in
	4.0	mm
Thickness	+ / - 0.008	in
	0.20	mm
Squareness	+ / - 0.157	in
	4.0	mm

FIRE PERFORMANCE

TEST	RESULT
ASTM E84 (Product)	Class A
ASTM E84 (Core Exposed)	Class A
NFPA 285	Passed
CAN/ULC S102	Class A
CAN/ULC S134	Passed
ASTM E119	2 Hour Rating
ASTM D635	Classified CC1

PRODUCT WARRANTY

See warranty tables and sample warranties for conditions and exclusions

Bond Integrity	Alfrex FR MCM	10 Years

FINISH WARRANTIES

See warranty tables and sample warranties for conditions and exclusions

2 Coat Solid / 2 Coat Mica	Alfrex FR MCM	30 Years
3 Coat Metallic	Alfrex FR MCM	30 Years
3 Coat Vivid Solid	Alfrex FR MCM	20 Years
Wood and Metal Series	Alfrex FR MCM	20 Years
Hairline Aluminum / Mirror	Alfrex FR MCM	10 Years

TECHNICAL PROPERTIES

PROPERTY		4mm FR	UNITS
Minimum Bond Strength	ASTM D1781	22.5	in•lb/in
		100	Nm/m
Flatwise Shear Strength	ASTM C273	978 PSI	Psi
		6.74 Mpa	Mpa
Flatwise Tensile Strength	ASTM C297	938 PSI	Psi
		6.47 Mpa	Mpa
Core Shear Modulus	ASTM C393	9.42 x 10^3	Psi
		64.9	Mpa
Transverse Shear Stress	ASTM C393	3.34	Psi
		23 x 10^{-3}	Mpa
Flexular Stiffness	ASTM C393	1.02 x 10^3	Psi
		7.03	Mpa
Flexular Modulus *(Flexural Elasticity)*	ASTM C393	5.38 x 10^6	Psi
		3.79 x 10^3	Mpa
Modulus of Elasticity	ASTM E8	2.46 x 10^6	Psi
		17 x 10^3	Mpa
Tensile Strength	ASTM E8	6.96 x 10^3	Psi
		48	Mpa
Yield Strength	ASTM E8	6.23 x 10^3	Psi
		43	Mpa
Elongation	ASTM E8	5	%
Moment on Inertia	-	1.90 x 10^{-4}	in^4/in
		I.36 x 10^{-4}	cm^4/m
Section Modulus	-	1.81 x 10^{-3}	in^3/in
		6.77 x 10^{-4}	cm^3/m
Coefficient of Expansion	ASTM D696	1.44 x 10^{-5}	in/in°F (@-22-86°F)
Deflection Temperature	ASTM D648	› 239	°F
		› 115	°C
Self Ignition Temperature	ASTM 1929	775	°F
		413	°C
Core Density	-	0.054	lb/in^3
		1.5	g/cm^3

COATING PROPERTIES

70% Kynar 500 / Hylar 5000 Pvdf Resin Coatings
AAMA 2605 Compliant

PROPERY	STANDARD	COIL COATED ALUMINUM
Color Uniformity	ASTM D2244	Max. 2 Delta E
Color Retention - Fade	ASTM D2244	Delta E ≤ 5 units
Chalk Rating	ASTM D4214	≤ 8 units
Specular Gloss	ASTM D523	± 5 units
Dry Film Hardness	ASTM D3363	F - 2H
Dry Adhesion	ASTM D3359	No coating removal
Abrasion Resistance	ASTM D968	Abrasion Coefficient Value ≥ 40
Reverse Impact	ASTM D2794	No coating removal
Muriatic Acid Resistance	ASTM D1308	No blistering or visual change
Nitric Acid Resistance	ASTM D1308	≤ 5 Delta E
Alkali Mortar Resistance	ASTM D1308	No removal. No loss of adhesion or visual change
Flexibility	ASTM D4145	2T - no pick off
Humidity Resistance	ASTM D714	4000 hour exposure
	ASTM D2247	Less than "few" blisters Size No. 8
Cyclic Corrosion	ASTM B117	2000 hour exposure
	AAMA 2605-13	Min. rating of 7 scribe or cut edge Min. blister rating of 8

STRUCTURAL PERFORMANCE TESTING SUMMARY DATA

Alfrex FR Metal Composite Material 4mm

Fire Resistant & Non-Combustible Cladding

Wall Panel Assembly	Alfrex FR with ACCU-TRAC DS Pressure Equalized Rainscreen System courtesy of Altech Panel Systems	
Testing Protocols	Florida Building Code / Miami-Dade County Requirements TAS 201-94: Large Missile Impact Test, Level D, Wind Zone 4 TAS 202-94: Uniform Static Air Pressure TAS 203-94: Cyclic Pressure Loading	ASTM Standards ASTM E283 ASTM E330 ASTM E331 ASTM E1996 ASTM E1886
Florida Product Approval	FL 15337 (R2, R3, R4, R5)	
Panel Size Referenced	120 in wide x 60 in high	
Engineering Evaluation Report Download	Report No.: 514689	

ASTM E330 - Structural Performance

Panel Deflection

Deflection Criteria	Deflection Inches
L/360	0.33
TAS 202 L/250	0.48
L/240	0.50
L/180	0.67
L/90	1.33
L/60	2.00

		Deflection (in)		Permanent Set (in)	
		Measured	Allowed Per TAS 202 (L/250)	Measured	Allowed Per TAS 202 (L/720)
Design Pressure	+ 75.0 / psf	0.15	0.48	0.01	0.17
	- 75.0 / psf	0.10	0.48	‹ 0.01	0.17
Test Pressure	+ 112.5 / psf	0.23	0.48	0.17	0.17
	- 112.5 / psf	0.17	0.48	0.02	0.17

Perimeter Framing Deflection

Deflection Criteria	Deflection Inches
TAS 202 L/1333	0.09
L/720	0.17
L/360	0.33
L/240	0.50
L/175	0.69

		Deflection (in)		Permanent Set (in)	
		Measured	Allowed Per TAS 202 (L/1333)	Measured	Allowed Per TAS 202 (L/3899)
Design Pressure	+ 75.0 / psf	0.01	0.09	0.01	0.03
	- 75.0 / psf	0.02	0.09	‹ 0.01	0.03
Test Pressure	+ 112.5 / psf	0.01	N/A	‹ 0.01	0.03
	- 112.5 / psf	0.12	N/A	‹ 0.01	0.03

ASTM 283 - Air Infiltration

	Results	Allowed per TAS 202
Air Leakage: 1.57 psf (25 mph)	0.02 cfm / ft^2 (0.10 L/s/m^2)	0.06 cfm / ft^2 (0.30 L/s/m^2)
Air Leakage: 6.27 psf (50 mph)	0.04 cfm / ft^2 (0.20 L/s/m^2)	0.06 cfm / ft^2 (0.30 L/s/m^2)

ASTM E331 - Water Penetration

	Results	Allowed per TAS 202
20 psf: 15% of Positive Design Pressure at 960 Pa	Pass	No Leakage

LEED CERTIFICATION

Alfrex FR Metal Composite Material

Fire Resistant & Non-Combustible Cladding

LEED is a world-renowned green building rating system that serves as an important tool in the building and construction industry. LEED certifications signify that buildings minimize their lifestyle impact on the environment through the compounded benefits of product selection, construction practices, performance, and recycling. The tables that follow summarize the direct and indirect benefits of Alfrex FR Metal Composite Material wall panels. Alfrex FR MCM can contribute to LEED® points under both versions 3 and 4 under the following areas:

MATERIALS & RESOURCES : Recycled Content MR Credit 4

Calculation	100% Post-Consumer Recycled Content + 50% Pre-Consumer Content
LEED v3	Use of recycled content constitutes at least 10% of the total value of materials in the project. 1 Point is awarded for 10%; 2 points are awarded for 20%.
LEED v4	Use of recycled content constitutes at least 25% of the total value of permanently installed materials in the project. 1 Point is awarded.

PRODUCT	THICKNESS	WEIGHT	POST-CONSUMER RECYCLED %	PRE-CONSUMER RECYCLED %	LEED CONTRIBUTION	POINTS
Alfrex FR	4mm	1.51 lbs/SF	26.07%	0%	26.07%	2 Points
Alfrex FR	6mm	2.13 lbs/SF	18.48%	0%	18.48%	1 Point

MATERIALS & RESOURCES : Regional Materials MR Credit 5

Alfrex FR is manufactured from materials supplied from multiple sources and regions. Therefore, it is not possible to identify nor quantify a contribution to the Regional Materials MR Credit 5.

OPTIMIZE ENERGY PERFORMANCE : Energry & Atmosphere

Alfrex FR maybe able to indirectly contribute to LEED certification points for non-residential metal wall panel assemblies.

	U-VALUE	INDIRECT CONTRIBUTION
LEED v3	U-0.113	BD+C; Eac1 (1 to 19 points)
LEED v4	U-0.093	BD+C; EA credit (1 to 18 points)

MATERIAL SAFETY DATA SHEET

Alfrex FR Metal Composite Material

Fire Resistant & Non-Combustible Cladding

SECTION 1: PRODUCT IDENTIFICATION

A.	Product Name	Alfrex FR
B.	Recommended Use	Fire-resistant composite wall cladding material
C.	Restriction on Use	None
D.	Manufacturer/Importer/Distributor	**Alfrex, Inc.** 943 Gainesville Hwy. Bldg. 100-4000 Buford, GA 30518 USA +1.470.589.7449
E.	Emergency Phone Number	Chemtrec 1-800-424-9300
F.	Website	www.alfrexusa.com
G.	Initial Release Date	14-February-2018
H.	Revision Date	01-July-2020
I.	Version Number	2.0

SECTION 2: HAZARD IDENTIFICATION

A.	Classification	Not classified as hazardous per OSHA Hazard Communication Standard, 29 CFR 1910.1200.
B.	Safety Phrase(s)	Not Applicable
	Hazard Statement(s)	Not Applicable
	Signal Word	Not Applicable
	Symbol(s)	Not Applicable
	Precautionary Statement	Not Applicable
	- Prevention	Not Applicable
	- Response	Not Applicable
	- Storage	Not Applicable

Alfrex FR MCM is defined under OSHA Hazard Communications standard 29 CFR 1910.1200 as an “article”. As such, it is a manufactured item other than a fluid or particle, formed to a specific design during manufacture with end functions dependent in whole or in part upon its’ shape or design use during end use, and which under normal conditions of used does not release, or otherwise result in exposure to hazardous chemicals, nor pose a physical hazard or health risk to employees.

SECTION 3: COMPOSITE / INFORMATION ON INGREDIENTS

Components	CAS Number	Percent % by Weight
Aluminum	7429-90-5	38%
Magnesium Hydroxide Mineral Filler	1309-42-8	43%
Polyethylene	9002-88-4	17%
Others (less than 1% each in weight)	-	2%

SECTION 4: FIRST-AID MEASURES

A.	Eye Contact	Dust from processing. Rinse eyes with water or saline solution for at least 15 minutes. Seek medical attention from a physician.
B.	Skin Contact	Dust from processing. Wash skin with soap and water for at least 20 minutes while removing contaminated clothing and shoes. Seek medical attention from a physician.
C.	Inhalation	Dust from processing. Move to fresh air. Seek medical attention from a physician.
D.	Ingestion	Not inspected due to composition and form of product. Seek medical attention from a physician.
E.	Most Important Symptoms & Effects	Prolonged exposure to dust and fumes my aggravate pre-existing chronic conditions of the skin or respiratory system.
F.	Indication if Immediate Medical Attention and Special Treatment Needed	Notify medical personnel of any situation and avoid overexposure to irritants.

SECTION 5: FIRE FIGHTING MEASURES

A.	Suitable Extinguishing Media	Use Class D extinguishing agents on fines or molten metal. Do not use halogenated extinguishing agents on small chips, fines, or dust.
B.	Specific Hazards	Dust from processing. Wash skin with soap and water for at least 20 minutes while removing contaminated clothing and shoes. Seek medical attention from a physician.
C.	Special PPE and Precautions for Firefighters	Protective equipment including self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

A.	Personal & Environmental Precautions	Avoid contact with sharp edges or heated metal. Wear protective gloves. No special environmental precautions are required.
B.	Method and Materials for Containment and Cleaning	Clean releases of dust by sweeping the area and depositing in a closed container. Take measures to block dust from reaching surface water or grassy areas.

SECTION 7: HANDLING AND STORAGE

A.	Precautions for Safe Handling	Avoid generating dust. Avoid contact with sharp edges or heated metal. There is no visual difference between hot and cold aluminum.
B.	Conditions for Safe Storage	No special storage precautions noted.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

A.	OSHA Permissible Exposure Limit	Aluminum	15mg/m^3 (Total), 10mg/m^3 (Respirable)
		Magnesium Hydroxide	10mg/m^3 (Total), 5mg/m^3 (Respirable)
		Polyethylene	10mg/m^3 (Total), 5mg/m^3 (Respirable)
B.	Appropriate Engineering Controls	A system of local and/or general exhaust is recommended to keep employee exposures below the Exposure Limits.	
C.	Individual Protection Measures (PPE)		
	- Eye & Face Protection	Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.	
	- Respiratory Protection	Use an approved respirator designed for the specific hazards where concentrations exceed exposure limits.	
	- Skin & Body Protection	Wear cut resistant gloves and avoid contact with sharp edged objects and materials	
	- Thermal Protection	When handling heated materials, wear gloves and proper clothing to cover exposed areas and protect against thermal burns.	

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

A.	Appearance	Solid, Various Colors	
B.	Odor	Odorless	
C.	Odor Threshold	Not Applicable	
D.	pH	Not Applicable	
E.	Melting Point / Freezing Point	Aluminum	660°C (1221°F)
		Magnesium Hydroxide	105°C (220°F)
		Polyethylene	350°C (662°F)
F.	Flash Point	Not Applicable	
G.	Evaporation Rate	Not Applicable	
H.	Flammability (Solid, Gas)	Not Applicable	
I.	Upper / Lower Flammability or Explosive Limits	Not Applicable	
J.	Solubility	Insoluble	
K.	Vapor Density	Not Applicable	
L.	Specific Gravity	1.7 - 1.9g/cm^3	
M.	Partition Coefficient: n-Octanol/water	Not Applicable	
N.	Auto Ignition Temperature	460°C (860°F)	
O.	Decomposition Temperature	Not Applicable	
P.	Viscosity	Not Applicable	
Q.	Molecular Weight	Not Applicable	

SECTION 10: STABILITY AND REACTIVITY

A.	Chemical Stability	Stable under recommended storage and handling conditions.
B.	Possibility of Hazardous Reactivity	Stable under recommended storage and handling conditions.
C.	Conditions to Avoid	Heating, flames and hot surfaces.
D.	Incompatible Materials	Combustible materials.
E.	Hazardous Decomposition Products	Carbon monoxide, carbon dioxide, nitrogen oxide and smoke. Under certain conditions some aliphatic aldehydes and carboxylic acids may form.

SECTION 11: TOXICOLOGICAL INFORMATION

A.	Toxicity Data	No toxicity data available for finished panel or individual components.
B.	Suspected Cancer Agent	Trace elements used in the paint coatings for this product may be known cancer causing agents.
C.	Irritancy of Product	Airborne particles of aluminum and or product materials may irritate the eyes and respiratory tract.
D.	Sensitization of Product	The product is not known to cause human skin or respiratory sensitization.

SECTION 12: ECOLOGICAL INFORMATION

A.	Ecotoxicity	No toxicity effects.
B.	Persistence and Degradability	Not Applicable
C.	Bio-accumulative Potential	Not Applicable

SECTION 13: DISPOSAL INFORMATION

Disposal must be in accordance with current applicable laws and regulations and material characteristics at time of disposal. Recover and reclaim or recycle, if practical. Aluminum in the form of particle may be reactive. Its hazardous characteristics, including fire and explosion, should be determined prior to disposal.

SECTION 14: TRANSPORTATION

A.	UN Number	Not Applicable
B.	UN Proper Shipping Name	Not Applicable
C.	Transport Hazard Class	Not Applicable
D.	Packing Group	Not Applicable
E.	Environmental Hazards	Not Applicable
F.	Special Precautions for User	Not Applicable

SECTION 15: REGULATORY INFORMATION

OSHA: NOT classified as hazardous under the criteria in 29 CFR 1910.1200, Hazard Communication.

U.S. SARA REPORTING REQUIREMENTS: The product components are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for any component of the product.

U.S. TSCA INVENTORY STATUS: The components of this product are listed in the TSCA Inventory.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): There may be elements present in the dust generated from the processing of this product, trace amounts, that are on the California Proposition 65 list. Warning! This product contains chemicals known to the Sate of California to cause cancer.

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are on the DSL Inventory, or are exempted from listing.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION AND SYMBOLS: Not Applicable

SECTION 16: OTHER INFORMATION

The information contained herein is believed to be accurate. It is not intended to constitute performance information related to this product. ALFREX, INC. MAKES NO WARRANTY OF ANY KIND, EXPRESS OR APPLIED, CONCERNING THE ACCURACY OF COMPLETENESS OF THE INFORMATION AND DATA HEREIN. THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY EXCLUDED. ALFREX, INC. has no responsibility or liability for any damage or injury resulting from abnormal use or from any failure to adhere to recommended procedures. ALFREX, INC. will not be responsible for claims relating to any parties' use of reliance on information and data contained herein regardless of whether it is claimed that the information is inaccurate, incomplete, or otherwise misleading.

Initial Release	14-February-2018
Revision Date	01-July-2020
Revision Number	2.0

PRODUCT FABRICATION QUICK REFERENCE DATA

Alfrex FR Metal Composite Material and Alfrex Plate

alfrex
Fire Resistant & Non-Combustible Cladding

SECTION	SUB-SECTION	DESCRIPTION	ALFREX FR MCM	ALFREX PLATE 3mm
CUTTING	**Circular Saw Vertical Panel Saw**	Blade Type	Carbide tipped blades suitable for aluminum	Carbide tipped blades suitable for aluminum
		Blade Diameter	80″ (200mm) 10″ (250mm) 12″ (300mm) 14″ (350mm)	9″ (229mm) with 1″ arbor
		Blade Teeth	60 tooth or greater, extra fine	68 tooth or greater, extra fine
		Max Cutting Speed	5,500 RPM	3,200 RPM
		Feed Rate	‹ 16″ (405mm) per second	40″ - 80″ (1000-2032mm) / minute
	Shear Press	Clearance	4mm FR : 0.002″ (0.05mm)	1/4″ (6.3mm) Power Shear with Rake Angle of 0.25″ per foot (21mm per meter) and 1° relief angle
			6mm FR : 0.008″ (0.20mm)	
		Rake Angle	4mm FR : 1° 30′	
			6mm FR : 2° 30′	
CUTTING & ROUTING	**Routing Saw Blade**	Blade Type	Carbide tipped blades suitable for aluminum	See Circular Saw / Vertical Panel Saw Information Lubrication May be Required
		Teeth	8 teeth for grooving	
		Estimated Lifespan	-	
		Blade Diameter	12″, (-305mm)	
		Blade Tip Width V-Groove	0.063″ - 0.080″ (1.6mm - 2mm)	
		Blade Tip Width U-Groove	0.551″ (14mm)	
		Blade Tip Angle	95° or 110°	
		Recommended Route Depth	0.122″ (3.1mm)	
		Route Depth from Outer Skin Side	0.035″ (0.9mm)	
		Rotation Speed	3,000 - 5,000 RPM	
		Feed Rate	‹192″ (4876mm) / min	
		Bit Lubrication	Not Required	

PRODUCT FABRICATION QUICK REFERENCE DATA

Alfrex FR Metal Composite Material and Alfrex Plate

Fire Resistant & Non-Combustible Cladding

SECTION	SUB-SECTION	DESCRIPTION	ALFREX FR MCM	ALFREX PLATE 3mm
CUTTING & ROUTING	V-Groove Router Bit	Router Bit Type	Carbide Router Bits	Poly-Crystalline Diamond (PCD) Helical End Mill Bits
				Belin Carbide Router Bit
		Teeth	2 to 4 Teeth	Not Applicable
		Estimated Lifespan	-	54,000 - 64,500sqft (5,000 and 6,000sqm)
		Router Bit Diameter	-	›0.315" ‹0.47" (›8mm ‹12mm)
		Router Bit Tip Diameter	0.063" - 0.080" (1.6mm - 2mm)	0.0480" - 0.0591" (1.22mm - 1.50mm)
		Bit Angle	95° or 110°	95° or 110°
				108°
		Recommended Router Depth	0.122" (3.1mm)	0.090" (2.3mm)
		Route Depth from Outer Skin Side	0.035" (0.9mm)	0.0275" (0.7mm)
		Double Parallel Routes - minimum distance centerpoint to centerpoint	1.0" (25mm)	0.236" (6mm)
		Rotation Speed	20,000 - 30,000 RPM	15,000 - 20,000 RPM
				16,000 RPM
		Feed Rate	120" - 192" (3,100 - 4876mm) / min	40" - 118" (1,000 - 3,000mm) / minute
				40" - 80" (1000 - 2032mm) / minute
		Bit Lubrication	Not Required	Ethanol or cutting oil based applied continuously to the router bit tip.
	U-Groove Router Bit	Router Bit Type	Carbide Router Bits	Please refer to above V-Groove Router Bit Information
		Teeth	2 to 4 Teeth	
		Router Bit Tip Diameter	0.551" (14mm)	
		Bit Angle	95° or 110°	
		Recommended Router Depth	0.098" (2.5mm)	
		Route Depth from Outer Skin Side	0.060" (1.5mm)	
		Rotation Speed	20,000 - 30,000 RPM	
		Feed Rate	120" - 192" (3100 - 4876mm) / min	
		Bit Lubrication	Not Required	
FOLDING		Routed Panel Minimum Bend Radius	0.080" (2mm)	0.080" (2mm)
		Non-Routed Minimum Bend Radius	Not Applicable	3mm Plate: 0.30" (7.5mm)

PRODUCT FABRICATION QUICK REFERENCE DATA

Alfrex FR Metal Composite Material and Alfrex Plate

alfrex
Fire Resistant & Non-Combustible Cladding

SECTION	SUB-SECTION	DESCRIPTION	ALFREX FR MCM	ALFREX PLATE 3mm
CURVING	**Press Break Pyramid Roller**	Minimum Bend Radius (No Routing)	4mm FR : 4.0″ (102mm) 6mm FR : 5.5″ (140mm)	5.5″ (140mm)
DRILLING		Drill Bit Type	High speed steel, twist drill bits	High speed steel, twist drill bits
		Tip Angle	100° to 140° or a counter-bore grind with a centering tip	100° to 140° or a counter-bore grind with a centering tip
		Rotation Speed	165-980 RPM	165-980 RPM
PUNCHING		Punch Die Clearance	4mm FR : 0.008″ (0.2mm) 6mm FR : 0.012″ (0.3mm)	0.012″ (0.3mm)
PERFORATING		General	Only with approved machinery and methods	Only with approved machinery and methods
		Panel Reaction	MCM Panels can bow slightly after perforation	Better solution for perforated panel applications
		Total Perforated Area	Less than or equal to 45% of total panel surface area	Less than or equal to 30% of total panel surface area
		Distance between Perforations (Edge to Edge)	1.5 x Panel Thickness 4mm FR : 0.236″ (6mm) 6mm FR : 0.354″ (9mm)	1.5 x Panel Thickness 0.177″ (4.5mm)
		Minimum Distance from Perimeter Edge	1.25″ (32mm)	1.25″ (32mm)
		Maximum Finish Warranty	Not Available	10 Years maximum with perforated panels
		Recommended Machinery / Process	Turrent punch press only	Turret punch press, punch press, tooled brake press, pre-approved water jet
		Non-Recommended Methods	Operations which can cause heat damage to the top paint layer, leaving exposed aluminum vulnerable to oxidation. Consult Alfrex for more specifics.	Operations which can cause heat damage to the top paint layer, leaving exposed aluminum vulnerable to oxidation. Consult Alfrex for more specifics.
JOINING, FASTENING, RIVETING			Only utilize Aluminum, Stainless Steel or steel materials coated or plated with zinc or aluminum. Do NOT use materials which will result in electrolysis including iron, uncoated steel, copper, brass, or bronze.	Only utilize Aluminum, Stainless Steel, or steel materials coated or plated with zinc or aluminum. Do NOT use materials which will result in electrolysis including iron, uncaoted steel, copper, brass, or bronze. Only utilize aluminum rivets suitable for use with structural loads and high external temperatures.
WELDING			Not recommended as it will damage the panel and void all warranties	Not recommended for coil coated plate as it will damage the paint coating and void the finish warranty

ALFREX FR MCM CERTIFICATIONS & COMPLIANCE REPORTS

ICC-ES Evaluation Report

ESR-4566

Reissued April 2025

Subject to renewal April 2026

This report also contains:

- **City of LA Supplement**
- **CA Supplement**

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 42 43—Composite Wall Panels	REPORT HOLDER: ALFREX, INC.	EVALUATION SUBJECT: ALFREX FR COMPOSITE PANELS	

1.0 EVALUATION SCOPE

1.1 Compliance with the following code:

- 2021 and 2018 *International Building Code®* (IBC)

Properties evaluated:

- Interior Finish
- Structural
- Fire-Resistance

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

- 2022 *California Green Building Standards Code (CALGreen)*, Title 24, Part 11
- 2020, 2015, 2012 and 2008 ICC 700 *National Green Building Standard™* (ICC 700-2020, ICC 700-2015, ICC 700-2012 and ICC 700-2008)

Attributes verified:

See Section 3.1

2.0 USES

Alfrex FR composite panels are the cladding component of the MCM systems (fabricated panels and extrusion attachment systems), used as exterior wall panels in accordance with Chapter 14, and as interior wall finish in accordance with Chapter 8 of the IBC.

When Alfrex FR MCM panels are used on exterior walls of Types I through IV Construction, they must be installed in accordance with Section 4.5 of this report.

3.0 DESCRIPTION

3.1 General:

Alfrex FR panels are metal composite materials (MCM) that comply with the requirements of IBC Section 1406. The panels are fabricated to size and fitted with aluminum profiles used for stiffening the panel against deflection and for anchorage to the building substructure.

The attributes of the composite panels have been verified as conforming to the provisions of (i) CALGreen Sections A4.405.1.3 (prefinished materials) and A5.406.1.2 (reduced maintenance); (ii) ICC 700-2020 Sections 601.7 and 11.601.7 and ICC 700-2015 and ICC 700-2012 Sections 601.7, 11.601.7, and 12.1(A).601.7 (site-applied finishing materials); and (iii) ICC 700-2008 Section 601.7 (site-applied finishing materials). Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. The code may provide supplemental information as guidance.

3.2 Material:

Alfrex FR metal composite material consists of 0.019-inch (0.5 mm) thick aluminum facers bonded to both sides of a 0.118-inch (3 mm) extruded copolymer core material containing polyethylene with inorganic and fire-retardant fillers. The core components are compounded and extruded to form the final core profile and then bonded to the facers in a continuous process involving controlled heat and pressure to make the MCM. The aluminum facers may be painted or anodized as required.

Alfrex FR material is manufactured in a nominal thickness of 0.157 inch (4 mm) and is available in widths up to 62 inches (1575 mm) and lengths up to 25 feet (7620 mm).

The Alfrex FR panels have a Class A interior finish classification with a flame spread index less than 25 and a smoke developed index less than 450 when tested in accordance with ASTM E84.

3.3 Aluminum Extrusions:

The aluminum extrusions used as stiffeners and for perimeter anchorage are typically extruded 6063-T5 alloy aluminum complying with ASTM B317. Stiffener extrusions are adhered to the backside of the panel using a combination of tape and structural adhesive. Perimeter extrusions are mechanically fastened to the fabricated "return leg" of the panel and fastened to the substructure to transfer panel loading.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The maximum allowable design wind load pressure for the Alfrex FR system installed in accordance with this report is +20 psf and -35 psf (+958 N/m^2 and -1677 N/m^2). The MCM panel system as well as the MCM panel support framing, including wall studs and extrusions must be designed in accordance with the IBC to support applicable load combinations.

4.2 Installation:

The MCM fabricators (Fabricator) cut a route into the flat MCM panels a fixed distance from each edge leaving the face sheet uncut at the base of the routed groove. The edges are then folded to a 90-degree angle to create return legs measuring $^3/_4$-inch (19 mm) deep, using the uncut facer to act as a hinge so that the flat MCM panel is formed into a pan shape. The Fabricator then attaches the aluminum perimeter extrusions to each return leg with No. 10 corrosion-resistant self-drilling screws. The Fabricator also installs H-shaped aluminum stiffeners to the back facer of the panels, parallel to the 60 inches (1524 mm) maximum panel span at a maximum spacing of 24 inches (610 mm) on center. The stiffeners are adhered to the back side of the MCM panels using self-adhering foam tape and an approved structural silicone sealant/adhesive complying with ASTM C1184, and attached to the perimeter aluminum extrusions with No. 8 corrosion-resistant self-drilling screws at each end. The maximum panel width, measured in the direction parallel to the stiffeners, must not exceed 5 feet (1.52 m). The perimeter extrusions are anchored with 2-inch (51 mm) aluminum anchor clips that interlock with the perimeter extrusion and are then attached to the supporting structure as determined by a registered design professional.

MCM systems must be assembled in a fabrication facility with only minor adjustments allowed to account for an accurate system installation. The appropriate installation procedures must follow the manufacturer's published installation instructions and the specific requirements of this report must be strictly adhered to.

4.3 Interior Wall Covering:

Alfrex FR panels may be used as an interior wall finish in compliance with IBC Chapter 8. The panels must be installed on the interior side of the wall in accordance with Section 4.2 of this report. The panels have a class A interior finish classification.

4.4 Two-hour Fire-resistance-rated Nonload-bearing Wall Assembly:

Where exterior nonload-bearing walls are required to be of two-hour fire-resistance-rated, the Alfrex FR panels must be built in accordance with the following:

Two layers of Type X gypsum board must be installed with the long dimension oriented perpendicular to minimum 25-gage thick steel studs spaced 24 inches (610 mm) on center on both the interior and exterior surfaces. The base layer must be fastened to the framing with 1 1/4-inch (31.8 mm) Type S self-drilling drywall screws spaced 16 inches (406 mm) on center. The face layer must be installed with the long dimension oriented horizontally offset 24 inches from the base layer and secured using 1 5/8-inch (41.3 mm) self-tapping Type S drywall screws spaced 16 inches (406 mm) on-center, 8-inch (203 mm) offset from those of the base layer. The opposite side of the wall assembly must receive the gypsum board in the same manner, but with the joints offset 24 inches (610 mm) from the opposite side of the assembly. The joints and fasteners of the face layers must receive a Level 2 finish.

The MCM panels must be installed in accordance with Section 4.2 of this report and this section. The MCM panel must be installed with the long dimension oriented vertically leaving a nominal 1/2-inch (12.7 mm) wide joint between panel edges. The MCM panels must be secured to the perimeter extrusions using No. 12 corrosion-resistant self-drilling screws. The joint must be filled with 0.875-inch-thick (22 mm-thick) open cell polyurethane backer rod (Industrial Thermo Polymers Limited Tundra Foam) and then sealed using Dow Corning 795 silicone sealant/adhesive.

4.5 Exterior Walls of Buildings of Type I, II, III or IV (Noncombustible) Construction of Any Height in Accordance with IBC Section 1406.10:

Where exterior walls are required to be of noncombustible construction, Alfrex FR panels must be built in accordance with the following:

The walls must be framed with minimum 20 gage C-channel steel studs at 24 inches (610 mm) on center. The interior surface of the wall must be faced with one layer of 5/8-inch (16 mm) thick Type X gypsum board in compliance with ASTM C1396. The gypsum board must be fastened to the wall framing with No. 6 by 1 1/4-inch (31.8 mm) long, self-drilling screws with a spacing of 8 inches (203 mm) around the board perimeter and 12 inches (305 mm) in the field. Gypsum board joints and fastener heads must be finished and taped in accordance with ASTM C840 or GA216. The walls must be filled with 4 pcf (64 kg/m3) mineral wool insulation at the intersection of the floor and exterior wall in accordance with IBC Section 715.4.

The exterior surface of the wall assembly must be faced with one layer of horizontally installed 5/8-inch (16 mm) thick gypsum sheathing in compliance with ASTM C1177. The gypsum sheathing must be fastened to the wall framing with No. 6 by 1 1/4-inch (31.8 mm) long, corrosion-resistant self-drilling screws at a spacing of 8 inches (203 mm) around the board perimeter and 12 inches (305 mm) in the field. Openings must be framed with No. 20 gage cold-formed steel framing. 0.040-inch (1.1 mm) thick aluminum flashing must be installed around the opening.

The exterior gypsum sheathing was covered with VaproShield® WrapShield® SA as a water membrane (water-resistive barrier). The self-adhering membrane must be installed with a minimum 6 inches (152 mm) overlap in accordance with the manufacturer's installation instructions.

Horizontally placed 18 gage thick cold-formed steel Z-shaped members are attached to frame wall studs using corrosion-resistant 5/16-inch-diameter (8 mm-diameter) hex head self-drilling screws. 3 inches (76 mm) thick mineral wool insulation with a density of 6.2 pcf (100 kg/m^3) is installed between the Z-shaped members. The MCM panel system is attached through the aluminum perimeter extrusions in accordance with Section 4.2 of this report. The MCM panels were secured to the Z-shaped steel members using 5/16-inch-diameter (8 mm-diameter) hex-head self-drilling screws fastened to aluminum clips spaced 24 inches (610 mm) on center around the perimeter of the MCM panels. The MCM panel joints measured 1/2-inch (12.7 mm) wide. MCM panel splines were installed into vertical and horizontal panel joints to conceal the anchor fasteners.

5.0 CONDITIONS OF USE:

The Alfrex FR composite panels and panel installation system described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the manufacturer's published instructions, the applicable code and the approved plans. If there are any conflicts between this report and the manufacturer's installation instructions, this report governs. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 The design of the structural support system (building framing, attachment accessories, and fasteners) and panel connections provided by the MCM systems fabricator must be submitted to and approved by the code official for each project. The allowable load capacity reported in Section 4.1 of this report must equal or exceed the design loads determined in accordance with Chapter 16 of the IBC.

5.3 The MCM systems fabricator must provide a certificate of compliance to the code official attesting that the MCM system fabrication includes the use of adhesives approved for use, that the adhesive application complies with the adhesive manufacturer's installation guidelines, and that the MCM system fabrication complies with approved construction documents. Additionally, when the attachment methods employ adhesives other than to adhere stiffeners to the backs of the panels, special inspections are required in accordance with IBC Section 1704.2.5, or the fabricator must be approved by the code official in accordance with IBC Section 1704.2.5.1, as such operations are outside the scope of this report.

5.4 Where Alfrex MCM panels are installed on exterior walls of Types I, II, III or IV construction, Alfrex MCM systems must be installed as specified in Section 4.5 of this report.

5.5 Installation of Alfrex MCM systems onto a fire-resistance-rated exterior wall must comply with Section 4.4 of this report. Alternatively, MCM systems may be installed on the outer surface of a fire-resistance-rated exterior wall in a manner such that the attachments do not penetrate through the entire exterior wall assembly.

5.6 Evidence of weather protection of the wall cladding system must be submitted to the code official in accordance with IBC Section 1406.6.

5.7 The Alfrex panels are manufactured under a quality control program with inspections conducted by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Metal Composite Material (MCM) (AC25), dated October 2010 (editorially revised March 2021), Including NFPA 285.

7.0 IDENTIFICATION

7.1 Labeling includes product name, product identification information, thickness, flame-spread and smoke-developed indices, manufacture date and time, and ICC-ES ESR number (ESR-4566).

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

ALFREX, INC.
943 GAINSVILLE HIGHWAY
BUILDING 100, SUITE #4000
BUFORD, GEORGIA 30518
(470) 589-7449
www.alfrexusa.com
john@alfrexusa.com

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 42 43—Composite Wall Panels

REPORT HOLDER:

ALFREX, INC.

EVALUATION SUBJECT:

ALFREX FR COMPOSITE PANELS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Alfrex FR composite panels, described in ICC-ES evaluation report ESR-4566, have also been evaluated for compliance with the code noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code edition:

2020 *City of Los Angeles Building Code (LABC)*

2.0 CONCLUSIONS

The Alfrex FR composite panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-4566, comply with LABC Chapters 7, 8 and 14 and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Alfrex FR composite panels described in this evaluation report supplement must comply with the following conditions:

- All applicable sections in the evaluation report ESR-4566.
- The design, installation, conditions of use and identification of the Alfrex FR composite panels are in accordance with the 2018 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-4566.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 7, 8, 16 and 17, as applicable.

This supplement expires concurrently with the evaluation report, reissued April 2025.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 42 43—Composite Wall Panels

REPORT HOLDER:

ALFREX, INC.

EVALUATION SUBJECT:

ALFREX FR COMPOSITE PANELS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Alfrex FR composite panels, described in ICC-ES evaluation report ESR-4566, have also been evaluated for compliance with the code noted below.

Applicable code edition:

2022 and 2019 *California Building Code®* (CBC)

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

2.0 CONCLUSIONS

2.1 CBC:

The Alfrex FR composite panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-4566, comply with CBC Chapters 7, 8 and 14, provided the design and installation are in accordance with the 2021 and 2018 *International Building Code®* (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 7, 8, 16 and 17, as applicable.

2.1.1 OSHPD:

The Alfrex FR composite panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-4566, comply with CBC Chapters 7, 8 and 14 [OSHPD 1, 1R, 2, 4 and 5], provided the design and installation are in accordance with the 2021 and 2018 *International Building Code®* (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 7, 8, 16 and 17, as applicable.

2.1.2 DSA:

The Alfrex FR composite panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-4566, comply with CBC Chapters 7, 8 and 14 [DSA-SS and DSA-SS/CC], provided the design and installation are in accordance with the 2021 and 2018 *International Building Code®* (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 7, 8, 16 and 17, as applicable.

This supplement expires concurrently with the evaluation report, reissued April 2025.

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LISTING INFORMATION OF

Alfrex - Aluminum Composite Panels

SPEC ID: 36858

Alfrex, Inc
943 GAINESVILLE HWY
BUILDING 100, Suite 4000
Buford, GA 30518
United States

LISTING INFORMATION

ALFREX ACM is an Aluminum Composite Panel that has a surfaced finish on the aluminum skin.

RATINGS

Standard	Rating	Design Number
ASTM E84 (4mm panel exterior side exposed) (4mm ACM)	Flame Spread Index:0 Smoke Developed Index:0	NA
ASTM E84 (Core Exposed) (4mm ACM)	Flame Spread Index:20 Smoke Developed Index:55	NA
NFPA 285 (4mm ACM)	Met Criteria of Standard	UCL/MCMWP 30-01 UCL/MCMWP 30-03 UCL/MCMWP 30-04
NFPA 285 (6mm FR ACM)	Met Criteria of Standard	UCL/MCMWP 30-05
ASTM E119 (4mm ACM)	Fire Resistance Rating: 2hr	UCL/MCMWP 120-01
CAN/ULC S102 (4mm ACM)	Flame Spread Index: 0 Smoke Developed Classification: 5	NA
CAN/ULC S134 (4mm ACM)	Met Criteria of Standard	UCL/MCMWP 25-01 UCL/MCMWP 25-02

Attribute	Value
Certificate Date of Expiry	December 31, 2025
Certificate Date of Initial Registration	January 7, 2022
Certificate Number	WHI22-32958101
Criteria	ASTM E84 (2013a)
Criteria	ASTM E119 (2012a)
Criteria	CAN / ULC S134 (2013) (R2018)
Criteria	CAN / ULC S102 (2018)
Criteria	NFPA 285 (2023)
CSI Code	07 42 13 Metal Wall Panels
Listing Section	BUILDING MATERIALS WITH SURFACE BURNING CHARACTERISTICS
Listing Section	WALL ASSEMBLIES
Spec ID	36858

DRAWING INDEX

UCL/MCMWP 120-01

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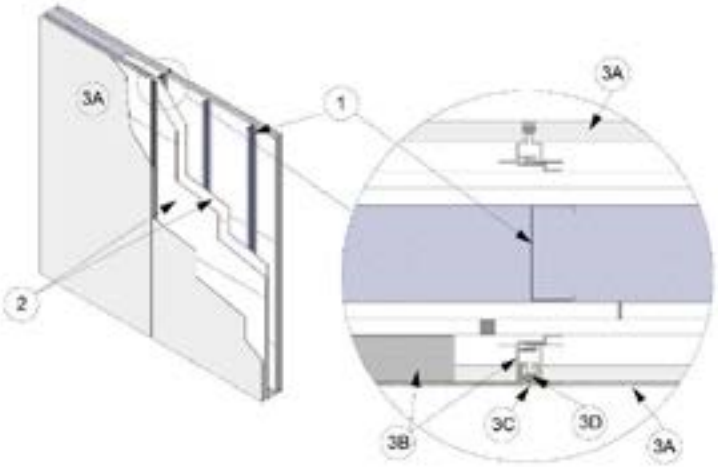
Division 7 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, LLC
Design No. UCL/MCMWP 120-01
Non-Load Bearing Wall Assembly
ALFREX
ASTM E119
Rating: 2 Hour Fire Resistance



1. **STEEL FRAMING:** Install nominal 2-1/2 in. 25 GA steel studs spaced nominally 24 in. on center (oc), friction fit into 25 GA top and bottom steel tracks. Studs cut to be nominal 1/4 in. shorter than wall height.

2. **GYPSUM BOARD:** Apply two layers of 5/8 in. thick, Type X gypsum board to each side of the steel framing (Item 1) with the long dimension perpendicular to the steel studs. Secure base layer using #6 1-1/4 in. long, Type S screws spaced nominally 16 in. oc. Install face layer with joints offset min. 24 in. from the base layer joints. Secure face layer using #6 1-5/8 in. long, Type S screws spaced nominally 16 in. oc and offset 8 in. from the base layer screws.

A. JOINT TAPE AND COMPOUND (Not Shown) – Apply a level 2 finish of vinyl or casein, dry or premixed, joint compound applied in two coats to all exposed fastener heads and gypsum board joints. Embed min. 2 in. wide paper, plastic, or fiberglass tape in first layer of compound over joints in gypsum board (Item 3).

3. **CERTIFIED MANUFACTURER:** Alfrex, LLC

CERTIFIED PRODUCT: Aluminum Composite Panels

MODEL: ALFREX 4mm Panel

Date Revised: January 4, 2022 Page 1 of 2 Spec ID: 36858

UCL/MCMWP 120-01 (2 OF 2)

Division 7 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

EXTERIOR VENEER: Install aluminum composite panels using the following elements:

A. ALUMINUM COMPOSITE PANELS – Secure aluminum composite panels to aluminum extrusions (Item 5B) with #12 x 3/4 in. long self-drilling hex-head steel screws 24 in. oc. Where applicable secure aluminum composite panel to aluminum angles (Item 5A).

B. ALUMINUM EXTRUSIONS – Install aluminum extrusion to aluminum composite panels (Item 5A) prior to installation onto wall. Secure aluminum extrusion through the gypsum board (Item 2) into the steel framing (Item 1) using #12 x 3 in. long self-drilling TEK screws.

C. BACKER ROD – Install nominal 7/8 in. diameter foam backer rod compressed into joints between the aluminum composite panels (Item 5B). Install backer rod imbedded into the joint so that a min. 1/4 in. space is remaining between the backer rod and the exterior face of the aluminum composite panels (Item 5B).

D. SEALANT – Install a min. 1/4 in. thick bead of Dow Corning® 795 Silicone Building Sealant into joints between aluminum composite panels (Item 5B) over the backer rod. Sealant installed to be flush with the exterior surface of the aluminum composite panels (Item 5B).

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.

Compliance of the assembly described in this Design Listing with the referenced standard relies on verification that the assembly constructed in the field is consistent with that described herein. Intertek certified products may be verified by the approved Intertek label; other products must be verified by the Authority Having Jurisdiction as meeting the specifications stated herein.

UCL/MCMWP 25-01

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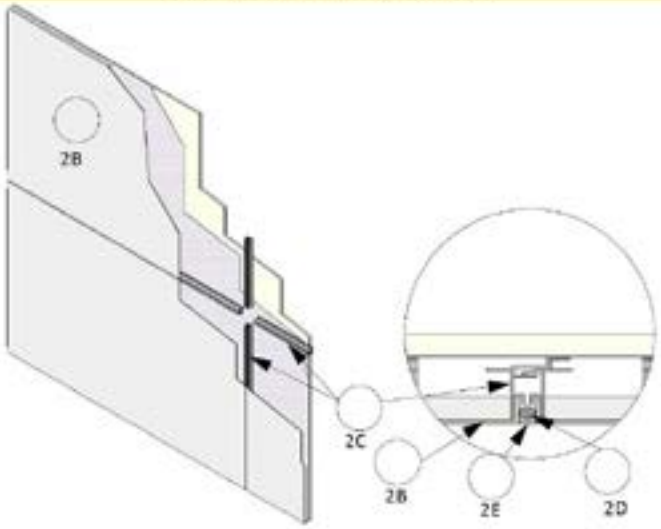
Division 7 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, LLC
Design No. UCL/MCMWP 25-01
Exterior Wall Systems
ALFREX
CAN/ULC S134
Rating: Meets Conditions of Acceptance



1. **NON-COMBUSTIBLE WALL ASSEMBLY** (Not Shown): ALFREX Aluminum Composite (ACM) Panels (Item 2) are to be installed on non-combustible, non-loadbearing wall assemblies as established by the applicable Code and criteria.

2. **CERTIFIED MANUFACTURER:** Alfrex, LLC

   CERTIFIED PRODUCT: Aluminum Composite Panels

   CERTIFIED MODEL: ALFREX 4 mm Panel

   EXTERIOR VENEER: Install aluminum composite panels using the following elements:

A. ALUMINUM ANGLES (Not Shown) – Where applicable (such as opening for windows and wall perimeters) install "L" shaped aluminum angle secured into the supporting construction of Item 1 using approved fasteners and methods.

B. ALUMINUM COMPOSITE PANELS – Secure aluminum composite panels to aluminum extrusions (Item 5C) with #12 × 3/4 in. long self-drilling hex-head steel screws min. 24 in. on center (oc). Where applicable secure aluminum composite panel to aluminum angles (Item 2A).

Date Revised: January 4, 2022 Page 1 of 2 Spec ID: 36858

UCL/MCMWP 25-01 (2 OF 2)

C. ALUMINUM EXTRUSIONS – Install aluminum extrusion to aluminum composite panels (Item 2B) prior to installation onto wall. Secure aluminum extrusion into the supporting construction of Item 1 using approved fasteners and methods.

D. BACKER ROD – Install nominal 7/8 in. diameter foam backer rod compressed into joints between the aluminum composite panels (Item 2B). Install backer rod imbedded into the joint so that a min. 1/4 in. space is remaining between the backer rod and the exterior face of the aluminum composite panels (Item 2B).

E. SEALANT – Install a min. 1/4 in. thick bead of Dow Corning® 795 Silicone Building Sealant into joints between aluminum composite panels (Item 2B) over the backer rod. Sealant installed to be flush with the exterior surface of the aluminum composite panels.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.

Compliance of the assembly described in this Design Listing with the referenced standard relies on verification that the assembly constructed in the field is consistent with that described herein. Intertek certified products may be verified by the approved Intertek label; other products must be verified by the Authority Having Jurisdiction as meeting the specifications stated herein.

UCL/MCMWP 25-02

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Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, Inc.
Design No. UCL/MCMWP 25-02
Exterior Wall Systems
4 mm Alfrex ACM Panels
CAN/ULC S134
Rating: Meets Conditions of Acceptance

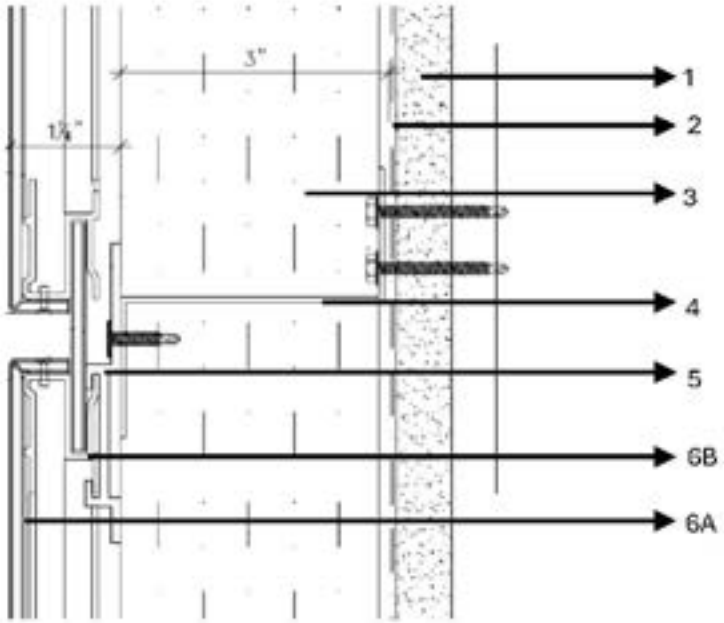

Figure 1 – Wall Assembly

Date Revised: October 9, 2024 Page 1 of 3 Spec ID: 36858

UCL/MCMWP 25-02 (2 OF 3)

Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

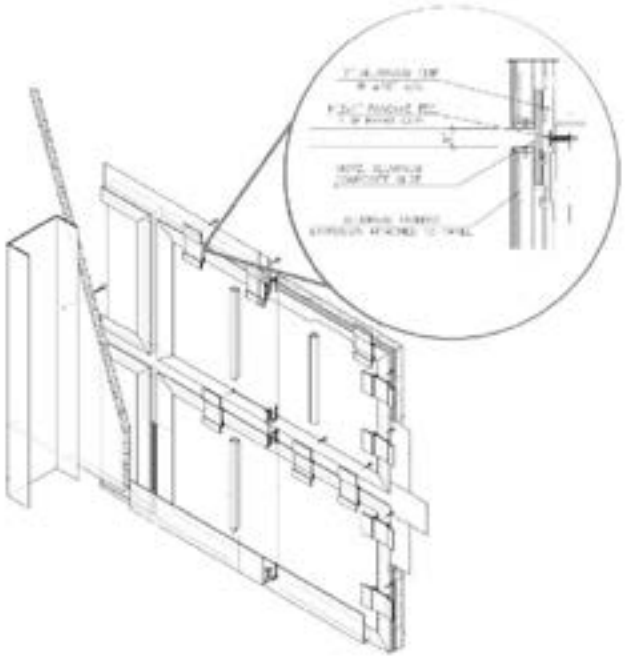

Figure 2 – ACM Attachment Details

1. **SUPPORTING WALL CONSTRUCTION:** Install nominal 2 x 6 in. 20 GA galvanized steel studs spaced 24 in. on center (oc). Attach the steel framing to 20 GA top and bottom steel tracks using #8 x 1/2 in. long pan-head framing screws. Install 4 ft. x 8 ft. x 5/8 in. thick DensGlass® Gold Exterior Sheathing perpendicular to the studs. Sheathing is secured with #6 x 1-1/4 in. long self-drill zinc-plated screws spaced 8 in. at the joints and perimeter and 12 in. in the field.

   INTERIOR SHEATHING (Not Shown): Install one layer of 4 ft. x 10 ft. x 1/2 in. thick, Type X gypsum board with the long dimension perpendicular to the studs. Sheathing is fastened to the framing with #6 x 1/14 in. long self-drill zinc-plated screws spaced 8 in. at the joints and perimeter and 12 in. in the field.

2. **WEATHER BARRIER:** Adhere a layer of VaproShield® WrapShield SA Self-Adhered Vapor Permeable Air Barrier oriented vertically.

3. **INSULATION:** Install nominal 3 in. thick mineral wool insulation between the weather barrier and the ACM panels using 3 in. long insulation pins distributed one at each corner, and one in the middle of each 4 x 8 in. insulation board. The density of the insulation is 6.2 pcf.

UCL/MCMWP 25-02 (3 OF 3)

4. **Z-GIRTS:** 3 x 3 x 3 in. 18 GA galvanized steel Z-girts installed horizontally at every horizontal panel joint and mid-span for panels over 48 in. in height. Z-grits are secured to the studs with #14 x 1-1/2 in. type "A" screws with two screws at each stud.

5. **WALL CLIPS:** Pre-install 2 in. x 3 in. aluminum wall clips to the top and left edge of each panel by clipping the wall clip into the pre-installed aluminum extrusion spacing the clips 24 in. oc.

6. **EXTERIOR CLADDING SYSTEM:**

   CERTIFIED PRODUCT: 4mm Alfrex Aluminum Composite Panels – Installed with CMPS-CP Attachment System

   Install the panels using the following Extrusion System components:

   A. COMPOSITE PANEL – Secure the 4mm Alfrex ACM panels to the Z-girts by fastening the pre-installed clips to the Z-girts using #12 x 1 in. pancake tec fasteners with one fastener per clip. Install the next layer of panels by attaching the bottom profile of the pre-installed aluminum extrusion to the top mating edge of the wall clips. The panels are installed in a manner to leave a 1/2 in. reveal between panel edges, vertically and horizontally. An ACM spline is friction fitted into the gap.

   B. PRE-INSTALLED ALUMINUM EXTRUSIONS – Aluminum extrusions are secured into the panel edge using countersink aluminum rivets along the perimeter of the panels.

7. **WINDOW OPENING (Not Shown):** Install 18 GA aluminum L-flashing spanning the wall thickness of 11 in. with a 2 in. vertical leg containing a 1/2 in. drip edge. Flashing is installed around the window opening sill, jambs, and header.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.

Compliance of the assembly described in this Design Listing with the referenced standard relies on verification that the assembly constructed in the field is consistent with that described herein. Intertek certified products may be verified by the approved Intertek label; other products must be verified by the Authority Having Jurisdiction as meeting the specifications stated herein.

UCL/MCMWP 30-01

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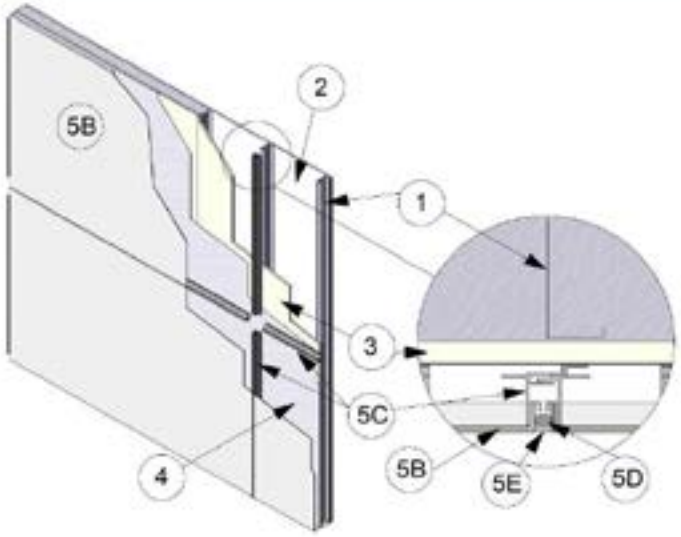
Division 7 – Thermal and Moisture Protection
07 42 00 Wall panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, LLC
Design No. UCL/MCMWP 30-01
Exterior Wall Systems
ALFREX
NFPA 285
Rating: Meets Conditions of Acceptance



1. **STEEL FRAMING:** Install nominal 3-5/8 in. 20 GA steel studs spaced nominally 24 in. on center (oc). Attach steel studs to 20 GA top and bottom steel tracks using nominal 7/16 in. long pan-head framing screws attached to front and back of each steel stud. Nominal 1-1/2 in. x 1/2 in., 16 GA lateral bracing installed in the knockouts of the steel studs spaced 48 in. oc vertically up the wall. Nominal 4 in. thick, 4 pound per cubic foot (pcf) density mineral fiber insulation installed at the floor line for firestopping.

2. **INTERIOR GYPSUM:** Apply one layer of 5/8 in. thick, Type X gypsum board to the interior side of the steel framing (Item 2) with the long dimension parallel to the steel studs. Secure using #6 1-1/4 in. long, Type S screws spaced nominally 8 in. oc around the perimeter and 12 in. oc in the field.

A. JOINT TAPE AND COMPOUND (Not Shown) – Apply a level 2 finish of vinyl or casein, dry or premixed, joint compound applied in two coats to all exposed fastener heads and gypsum board joints. Embed min. 2 in. wide paper, plastic, or fiberglass tape in first layer of compound over joints in gypsum board (Item 3).

Date Revised: January 4, 2022 Page 1 of 2 Spec ID: 36858

UCL/MCMWP 30-01 (2 OF 2)

3. **EXTERIOR SHEATHING:** Install 5/8 in. thick DensGlass® Gold exterior sheathing to the exterior side of the steel framing (Item 2) with the long dimension perpendicular to the steel studs. Secure using #6 1-1/4 in. long, Type S screws spaced nominally 8 in. oc around the perimeter and 12 in. oc in the field.

4. **WEATHER BARRIER:** Install a single layer of DuPont™ Tyvek® vapor barrier to the exterior side of the exterior sheathing (Item 3) with min. 6 in. overlaps at the seams and attached with staples spaced 24 in. oc.

5. **CERTIFIED MANUFACTURER:** Alfrex, LLC

   CERTIFIED PRODUCT: Aluminum Composite Panels

   MODEL: ALFREX 4mm Panel

   EXTERIOR VENEER: Install aluminum composite panels using the following elements:

   A. ALUMINUM ANGLES (Not Shown) – Where applicable (such as opening for windows and wall perimeters) install "L" shaped aluminum angles secured through the exterior sheathing (Item 3) into the steel framing (Item 1). Secure aluminum composite panels (Item 5B) to aluminum angles using #12 x 3/4 in. long self-drilling screws spaced max. 24 in. oc.

   B. ALUMINUM COMPOSITE PANELS – Secure aluminum composite panels to aluminum extrusions (Item 5C) with #12 x 3/4 in. long self-drilling hex-head steel screws 24 in. oc. Where applicable secure aluminum composite panel to aluminum angles (Item 5A).

   C. ALUMINUM EXTRUSIONS – Install aluminum extrusion to aluminum composite panels (Item 5B) prior to installation onto wall. Secure aluminum extrusion through the exterior sheathing (Item 3) into the steel framing (Item 1) using #12 x 1-1/2 in. long self-drilling TEK screws.

   D. BACKER ROD – Install nominal 7/8 in. diameter foam backer rod compressed into joints between the aluminum composite panels (Item 5B). Install backer rod imbedded into the joint so that a min. 1/4 in. space is remaining between the backer rod and the exterior face of the aluminum composite panels (Item 5B).

   E. SEALANT – Install a min. 1/4 in. thick bead of Dow Corning® 795 Silicone Building Sealant into joints between aluminum composite panels (Item 5B) over the backer rod. Sealant installed to be flush with the exterior surface of the aluminum composite panels (Item 5B).

6. **FLASHING** (Not Shown): Where applicable, min. 0.04 in. thick aluminum flashing shall be installed in openings spanning from the interior to the exterior side of the window opening.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.

Compliance of the assembly described in this Design Listing with the referenced standard relies on verification that the assembly constructed in the field is consistent with that described herein. Intertek certified products may be verified by the approved Intertek label; other products must be verified by the Authority Having Jurisdiction as meeting the specifications stated herein.

UCL/MCMWP 30-03

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Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, Inc.
Design No. UCL/MCMWP 30-03
Exterior Wall Systems
4 mm Alfrex ACM Panels
NFPA 285
Rating: Meets Conditions of Acceptance

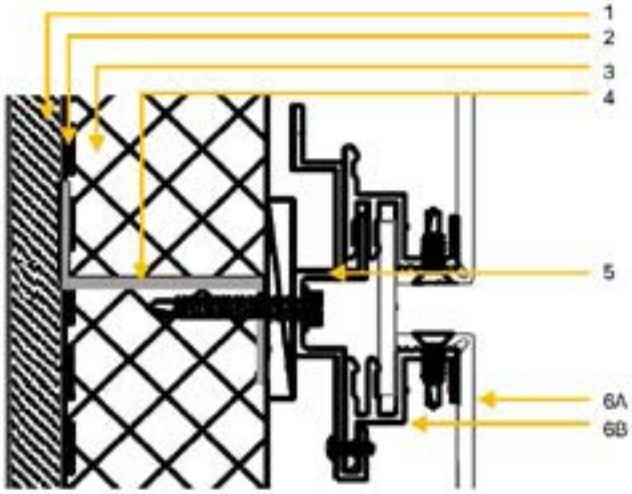

Figure 1 – Wall Assembly

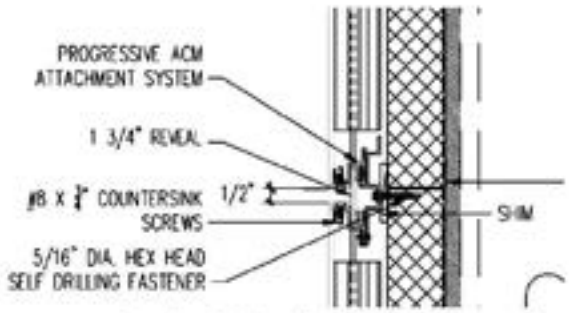

Figure 2 – ACM Attachment Details

Date Revised: October 9, 2024 Page 1 of 2 Spec ID: 36858

UCL/MCMWP 30-03 (2 OF 2)

Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

1. **SUPPORTING WALL CONSTRUCTION:** Install nominal 2 x 6 in. 20 GA galvanized steel studs spaced 24 in. on center (oc). Attach the steel framing to 20 GA top and bottom steel tracks using #8 x 1/2 in. long pan-head framing screws. Install 4 ft. x 8 ft. x 5/8 in. thick DensGlass® Gold Exterior Sheathing perpendicular to the studs. Sheathing is secured with #6 x 1-1/4 in. long self-drill zinc-plated screws spaced 8 in. at the joints and perimeter and 12 in. in the field.

   INTERIOR SHEATHING (Not Shown): Install one layer of 4 ft. x 10 ft. x 5/8 in. thick, Type X gypsum board with the long dimension perpendicular to the studs. Sheathing is fastened to the framing with #6 x 1/14 in. long self-drill zinc-plated screws spaced 8 in. at the joints and perimeter and 12 in. in the field.

2. **WEATHER BARRIER:** Apply a layer of VaproShield® WrapShield SA Self-Adhered Vapor Permeable Air Barrier oriented horizontally. Staple the seams at 24 in. oc spacing.

3. **INSULATION:** Install nominal 3 in. thick mineral wool insulation between the weather barrier and the ACM panels. The insulation is friction fitted between the Z-girts. The density of the insulation is 6.2 pcf.

4. **Z-GIRTS:** 3 in. wide 18 GA galvanized steel Z-girts installed horizontally. Z-girts are spaced nominal 24 in. oc. Z-grits are secured to the studs with 2-1/4 in. long, 5/16 in. diameter hex-head self-drilling screws spaced 24 in. oc.

5. **WALL CLIPS:** Pre-install 2 in. x 3 in. aluminum wall clips to the perimeter of the top edge of each panel using 2-1/4 in. long, 5/16 in. diameter, hex drilling fasteners per clip. Clips are spaced at 24 in. oc around the perimeter of the panel. Clips are provided by the manufacturer with the ACM system.

6. **EXTERIOR CLADDING SYSTEM:**

   CERTIFIED PRODUCT: 4mm Alfrex Aluminum Composite Panels – Installed with Progressive ACM Attachment System

   Install the panels using the following Extrusion System components:

   A. COMPOSITE PANEL – Secure the 4mm Alfrex ACM panels to the z-girts by fastening the pre-installed clips to the Z-girts using 2-1/4 in. long, 5/16 in. diameter, hex drilling fasteners. Install the next layer of panels by attaching the bottom profile of the pre-installed aluminum extrusion to the top mating edge of the wall clips. The panels are installed in a manner to leave a 1-3/4 in. reveal between panel edges, vertically and horizontally. An ACM spline is friction fitted into the gap.

   B. PRE-INSTALLED ALUMINUM EXTRUSIONS – Aluminum extrusions are secured into the panel edge using #8 x 3/4 in. countersink screws along the perimeter of the panels.

7. **WINDOW OPENING (Not Shown):** Install 18 GA aluminum L-flashing spanning the wall thickness of 11-1/4 in. with a 2 in. return on the interior side of the wall. Flashing is installed around the window opening sill, jambs, and header.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.

Compliance of the assembly described in this Design Listing with the referenced standard relies on verification that the assembly constructed in the field is consistent with that described herein. Intertek certified products may be verified by the approved Intertek label; other products must be verified by the Authority Having Jurisdiction as meeting the specifications stated herein.

UCL/MCMWP 30-04

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Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, Inc.
Design No. UCL/MCMWP 30-04
Exterior Wall Systems
4 mm Alfrex ACM Panels
NFPA 285
Rating: Meets Conditions of Acceptance

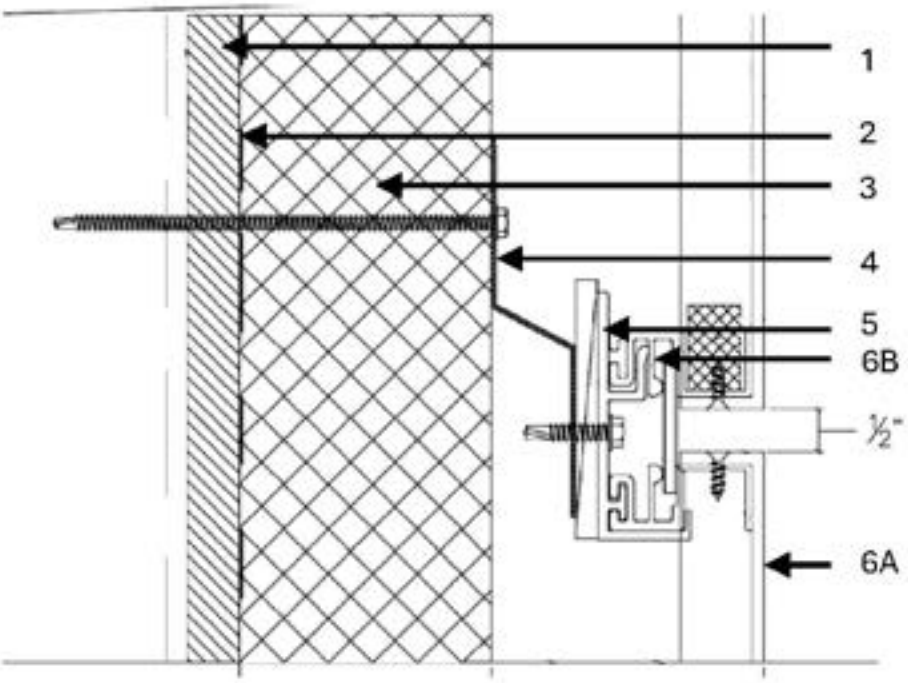

Figure 1 – Wall Assembly

Date Revised: October 9, 2024 Page 1 of 3 Spec ID: 36858

UCL/MCMWP 30-04 (2 OF 3)

Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

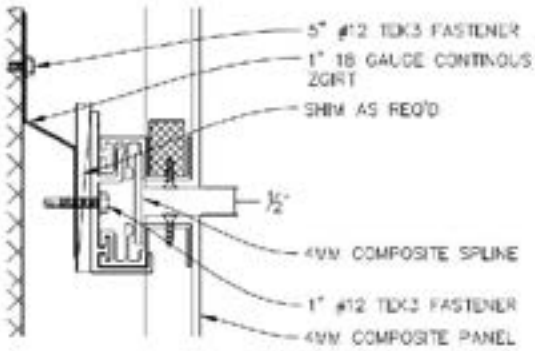

Figure 2 – ACM Attachment Details

1. **SUPPORTING WALL CONSTRUCTION:** Install nominal 6 in. 18 GA steel studs spaced 24 in. on center (oc). Attach the steel framing to 18 GA top and bottom steel tracks using #6 x 1/2 in. long self-drilling screws. Install 4 ft. x 8 ft. x 5/8 in. thick DensGlass® Gold Exterior Sheathing perpendicular to the studs. Sheathing is secured with 1-5/8 in. long bugle-head self-tapping screws spaced 8 in. at the joints and perimeter and 12 in. in the field.

   INTERIOR SHEATHING (Not Shown): Install one layer of 4 ft. x 10 ft. x 5/8 in. thick, Type X gypsum board with the long dimension perpendicular to the studs. Sheathing is fastened to the framing with 1-5/8 in. long bugle-head self-tapping screws spaced 8 in. at the joints and perimeter and 12 in. in the field.

2. **WEATHER BARRIER:** Apply a layer of VaproShield® Reveal Shield SA™ Self-Adhered Vapor Permeable Air Barrier oriented horizontally.

3. **INSULATION:** Install nominal 3 in. thick Dupont Thermax™ Sheathing Polyiso Insulation panels between the weather barrier and the ACM panels. Secure the insulation using 5 in. long #12 Tek 3 fasteners and plastic washers spaced at 24 in. oc in the field.

4. **Z-GIRTS:** 1 in. tall 18 GA galvanized steel Z-girts installed horizontally. Z-girts are spaced nominal 24 in. oc. Z-grits are secured with 5 in. long #12 Tek 3 fasteners.

5. **WALL CLIPS:** Install 2 in. x 3 in. aluminum wall clips to the Z-girts using #12 x 1-1/4 in. self-drilling fasteners. Clips are installed to align with the top corners of each panel. Clips are installed using optional shims to level the exterior surface. Max. panel width is 83-1/4 in. Clips are provided by the manufacturer with the ACM system.

UCL/MCMWP 30-04 (3 OF 3)

Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

6. **EXTERIOR CLADDING SYSTEM:**

   CERTIFIED PRODUCT: 4mm Alfrex Aluminum Composite Panels – Installed with Accu-Trac DS Rainscreen System

   Install the panels using the following Extrusion System components:

   A. COMPOSITE PANEL – Secure the 4mm Alfrex ACM panels to the wall clips spaced through the pre-installed aluminum extrusion at the corner of each panel.

      The panels are installed in a manner to leave a 1/2 in. gap between panel edges, vertically and horizontally.

   B. PRE-INSTALLED ALUMINUM EXTRUSIONS – Aluminum extrusions are riveted into the panel on each corner using #8 x 3/4 in. countersunk screws along the perimeter of the panels.

7. **WINDOW OPENING (Not Shown):** Install 18 GA aluminum closure trim around the perimeter of the window opening.

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UCL/MCMWP 30-05

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Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

Alfrex, Inc.
Design No. UCL/MCMWP 30-05
Exterior Wall Systems
6 mm Alfrex FR ACM Panels
NFPA 285
Rating: Meets Conditions of Acceptance

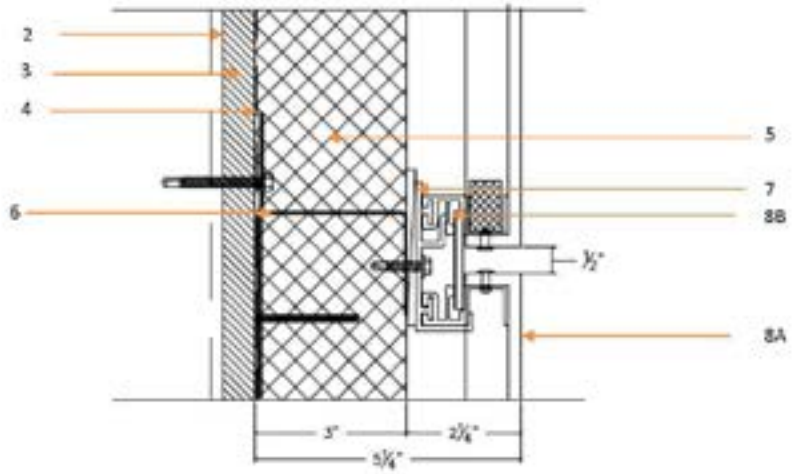

Figure 1 – Wall Assembly

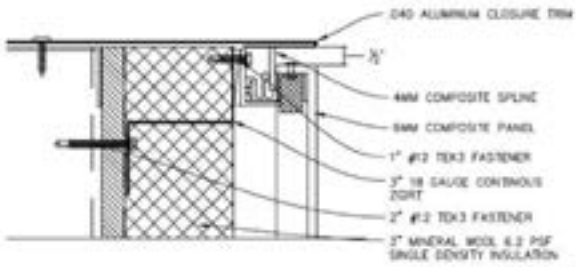

Figure 2 – ACM Attachment Details

Date Issued: March 25, 2025 Page 1 of 3 Spec ID: 36858

UCL/MCMWP 30-05 (2 OF 3)

Division 07 – Thermal and Moisture Protection
07 42 00 Wall Panels
07 42 13.23 Metal Composite Material Wall Panels

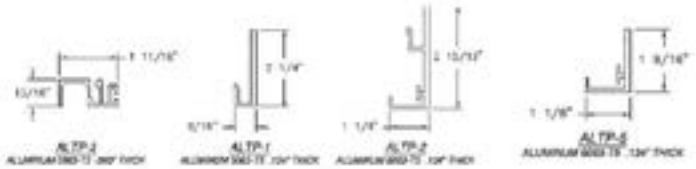

Figure 3- Wall Clip Details

1. **INTERIOR SHEATHING (Not Shown):** Install one layer of 4 ft. x 8 ft., 5/8 in. thick, Type X gypsum board with long dimension perpendicular to the studs. Secure the sheathing to the framing with #6 x 1-1/4 in. self-drilling, zinc-plated, bugle-head screws, spaced 8 in. on center (oc) around the perimeter and 12 in. oc in the field.

2. **FRAMING:** Install 3-5/8 in. x 18 ft., 18 GA steel studs spaced max. 24 in. oc. Attach the steel framing to 14 ft. x 3-5/8 in., 18 GA top and bottom steel tracks using #6 x 1/2 in. long self-drilling screws.

3. **EXTERIOR SHEATHING:** Install 4 ft. x 8 ft., 5/8 in. thick DensGlass® Gold Exterior Sheathing with long edges oriented perpendicular to the studs. Secure the exterior sheathing with #6, 1-1/4 in. self-drilling screws spaced 8 in. at the joints and around the perimeter with a 12 in. spacing in the field.

4. **WEATHER BARRIER:** Apply a single layer of VaproShield® PanelShield™ Self-Adhered Vapor Permeable Air Barrier over the exterior sheathing, oriented horizontally, and self-adhered into position.

5. **INSULATION:** Install 3 in. thick ROCKWOOL CavityRock® Semi-rigid Stone Wool Insulation Board, featuring a dual-density layer of 6.2 psf for outer layer and 3.8 psf for inner layer, between the weather vapor barrier and the ACM panels. Secure the insulation using 3 in. long self-adhering pins distributed evenly along the perimeter.

6. **Z-GIRTS:** Install 3 in. tall 18 GA continuous steel Z-girts horizontally placed to align with the upper joints of the panels and on an average spacing of 16 in. vertically. Secure Z-girts with 2 in. long #12 Tek 3 fasteners to each framing member.

7. **WALL CLIPS:** The 2 in. x 3 in. 6063 T5 aluminum wall clips (Figure 3) are installed progressively as the ACM panels are installed. The wall clips are attached to the Z-girts using two #12 x 1-1/4 in. self-drilling fasteners per clip. Wall clips may use optional shims to level the exterior surface. The clips are provided by the ACM system Fabricator.

8. **EXTERIOR CLADDING:**

   CERTIFIED PRODUCT: 6mm Alfrex FR Aluminum Composite Panels – Installed with a Progressive ACM Attachment System

   A. COMPOSITE PANEL – The 6mm Alfrex FR ACM panels are fabricated with a rout-and-return edge on four sides.

   B. ALTP-5 Aluminum Extrusion – The extrusion is fixed to the panel edge with 1/8 in. 5052 alloy aluminum pop rivets located max. 3 in. from each end and spaced max. 16 in. oc.

UCL/MCMWP 30-05 (3 OF 3)

PANEL ATTACHMENT – Secure the first row of 6mm Alfrex FR ACM panels by inserting the bottom edge of the aluminum extrusions to the top mating edge of the starter wall clips (ALTP-1). Clips (ALTP-2) are located on vertical edges at each Z-girt and two clips are used on the top edge. Subsequent rows are installed progressively, leaving a 1/2 in. gap between vertical and horizontal panel edges.

Fill the vertical and horizontal joints with friction-fitted 4mm composite splines.

9. **WINDOW OPENING (Not Shown):** Install 0.040 in. thick (18 GA) aluminum closure trim, 10-1/2 in. wide with a 5/8 in. drip edge.

10. **FLOORLINE FIRETOPPING:** Nominal 4 in. thick, 4 pcf mineral fiber insulation must be installed at floorlines.

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Certificate of Compliance

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This is a certificate of compliance to certify that the bearer has successfully completed the requirements of the above scheme which include the testing of products, the initial assessment, and are subject to continuing annual assessments of their compliance and testing of samples of products taken from production (as applicable to the scheme) and has been registered within the scheme for the products detailed.

You have been awarded:

Intertek ETL C + US Mark for Building Materials With Surface Burning Characteristics, Wall Assemblies

Standards: NFPA 285 (2012), ASTM E84 (2013a), ASTM E119 (2012a), CAN / ULC S134 (2013) (R2018), NFPA 285 (2019), CAN / ULC S102 (2018), NFPA 285 (2022) Ed.2023

Certificate number: WHI22-32958101

Organization: Alfrex, Inc
943 GAINESVILLE HWY
BUILDING 100, Suite 4000
Buford, GA 30518
United States

Product: Alfrex - Aluminum Composite Panels
Spec ID: 36858
Listing Information: See following page(s)

Certification body: Intertek Testing Services NA, Inc.
Initial registration: January 7, 2022
Date of expiry: December 31, 2025
Issue status: 5

Authorized By: ______________________
Jean-Philippe Kayl, Director of Certification

Intertek Testing Services NA, Inc.
545 E. Algonquin Road, Ste H., Arlington Heights, IL 60005 USA
Phone: 847-439-5667 Fax: 847-439-7320

www.intertek.com

LISTING INFORMATION

ALFREX ACM is an Aluminum Composite Panel that has a surfaced finish on the aluminum skin.

RATINGS

Standard	Rating	Design Number
ASTM E84 (4mm panel exterior side exposed)	Flame Spread Index:0 Smoke Developed Index:0	NA
ASTM E84 (Core Exposed)	Flame Spread Index:20 Smoke Developed Index:55	NA
NFPA 285 (4mm ACM)	Met Criteria of Standard	UCL/MCMWP 30-01 UCL/MCMWP 30-03 UCL/MCMWP 30-04
ASTM E119	Fire Resistance Rating: 2hr	UCL/MCMWP 120-01
CAN/ULC S102	Flame Spread Index: 0 Smoke Developed Classification: 5	NA
CAN/ULC S134 (4mm ACM)	Met Criteria of Standard	UCL/MCMWP 25-01 UCL/MCMWP 25-02

FLORIDA PRODUCT APPROVAL COMPLIANCE SUMMARY

Alfrex FR Metal Composite Material - 4mm

Fire Resistant & Non-Combustible Cladding

Florida Product Approval No.		FL I5337	FL I5337	FL 15337
System		Accu-Trac DS Pressure Equalized Rainscreen	R-Trac HVHZ Pressure Equalized Rainscreen	Accu-Trac ES Exposed Sealant
Joint Condition		Rainscreen Spline	Rainscreen Spline	Caulk Joint
HVHZ High Velocity Hurricane Zone		Approved	Approved	Approved
Design Pressure Rating		+ 75 / - 75 psf*	+ I20 / - I20 psf*	+ 50 / - 50 psf**
Max Panel Size		60" x 120"	59.25" x 143"	60" x 120"
ASTM E283 *Air Infiltration*	**1.57 psf (25 mph)**	Pass	Pass	Pass
	6.27 psf (50 mph)	Pass	Pass	Pass
ASTM E330 *Structural Performance*		± 75 psf, 20.0 psf Water penetration	± 75 psf, 20.0 psf Water penetration	± 50 psf, 15.0 psf Water penetration
ASTM E331 *Water Penetration*		20 psf	I8 psf	15 psf
TAS 201 - ASTM E1996 & E 1886 *Impact Testing*		Large Missile Impact Test, Level D, Wind Zone 4. No signs of penetration, rupture, or opening. Meets requirements of section 1626 of the Florida Building Code, Building.		
TAS 202 *Uniform Static Pressure*		No signs of penetration, rupture, or opening. Meets requirements of section 1620 of the Florida Building Code, Building.		
TAS 203 *Cyclic Wind Pressure Loading*		No signs of penetration, rupture, or opening. Meets requirements of section 1625 of the Florida Building Code, Building.		
Testing Protocols		Florida Building Code Miami - Dade County ASTM Standards		
Testing Documents		FLI5337_R5_08-03594A	FL I5337_II_08-0I998D	FLI5337_II_08_02268C
Evaluation Report		Report No.: 514689A	Report No.: 5I27IID	Report No.: 513012C

ALFREX FR MCM WARRANTIES

GENERAL PAINT FINISH WARRANTY (SAMPLE)

Alfrex FR Aluminum Composite Material and Alfrex Plate

Fire Resistant & Non-Combustible Cladding

This Sample Limited Warranty ("Limited Warranty") is a facsimile of the Limited Warranty to be provided by Alfrex® Inc. ("Company") to the property owner ("Owner") which will relate to the ("Products") installed at the ("Property") at the ("Property Address") identified therein. The sample version of a Limited Warranty for a specific product and finish combination may be provided upon request.

Property Name		**Property Owner**			
Property Address					
City		**State or Province**		**Zip Code**	
Date of Substantial Completion		**Warranty Commencement Date**			
Issuance Date					
Customer Name					
Customer Address					
City		**State or Province**		**Zip Code**	

Product(s)	☐ **Alfrex FR ACM**		☐ **Alfrex Plate**	
Finish(es)	☐ **2 Coat Solid**	☐ **2 Coat Mica**	☐ **3 Coat Solid**	☐ **3 Coat Metallic**
	Other			
Additional Descriptions				

Warranty Number _____

The "Company" will provide warranty coverage subject to the definitions, terms, conditions, limitations, and remedies stated therein. All of the following conditions and additional conditions constitute material terms of the limited warranty and failure to satisfy any one or more are of the conditions and additional conditions by owner or their agents or representatives shall render the limited warranty null and void and release Alfrex, Inc. from its obligations thereunder.

I. Company will warrant that the painted finish on the Product(s) listed therein will retain their Film integrity, Color and Chalk, as defined in a number of years after the installation of the coil coated ACM or PLATE consistent with the tables attached to the specific warranty and per the location and environmental conditions detailed therein.

2. The Warranty period starts on the Warranty Commencement Date as written in the issued Warranty and will be determined as either the date of substantial completion (default), or 6 months from the date of shipment as defined by the commercial invoice date.

3. Film Integrity shall be defined as the absence of peeling, checking, chipping or cracking, except for such crazing or slight cracking as may occur on tightly roll formed edges or brake bends at the time of forming the pre-painted sheet.

4. Color Change shall be defined as freedom from fade or change as warranted in ΔE units calculated in accordance with ASTM D2244-02, paragraph 6.2.2 CIE L*a*b*, I00 Observer, specular included. Color Change is measured on an exposed painted surface that has been cleaned of surface soils and chalk and then compared to corresponding values measured on the original or unexposed coated surface.

5. Chalk or Oxidation shall be defined as a numerical rating as warranted when measured in accordance with the standard procedures specified in ASTM D42I4-98.

6. Non-uniform color changes that result from unequal exposure to sunlight and/or the elements are not covered by the Limited Warranty.

GENERAL PAINT FINISH WARRANTY (SAMPLE)

Alfrex FR Aluminum Composite Material and Alfrex Plate

Fire Resistant & Non-Combustible Cladding

7. Applications exposed to salt spray, or located within paint finish warranty specific distances of salt-water or industrial atmospheres, must be maintained by washing with fresh tap water (in accordance with AAMA 6I0.I-I979) at least annually and documentation of the maintenance provided upon request (Copy of 610.1 provided on request). It is acknowledged that fading or color changes may not be uniform if the surfaces are not equally exposed to the sun and elements.
8. The Limited Warranty will not extend to, or cover: (a) damage to the Product occasioned by improper storage of the coated metal prior to installation or moisture or other contamination detrimental to the Product because of improper packaging, handling, shipping, processing and/ or installation; or (b) damage to the Product which suffers from improper forming, fabrication, cut edge exposure, corrosion of the substrate or any other condition between the substrate and coating which causes coating degradation or delamination; or (c) Forming Product at temperatures below an ambient temperature of 60°F (I6°C) which may adversely affect the appearance and performance of the finish coating; (d) any external contaminant or condition which causes coating degradation or delamination; (f) other exclusions included in the Limited Warranty for a specific paint finish – provided upon request.
9. The Limited Warranty will not extend to, or cover any failure caused by perforation processes which (a) may cause potential heat damage to the top paint layer, (b) leave exposed aluminum vulnerable to oxidation, paint degradation, or delamination, (c) are not specifically approved by Alfrex prior to issuance of the warranty.
10. The Limited Warranty will not cover damage or failure of Product which damage or failure is attributable to acts of God, falling objects, external forces, explosions, fire, terrorism, or other such similar or dissimilar occurrences.
11. Owner's sole and exclusive remedy, and Alfrex, Inc.'s liability under the Limited Warranty will be limited, at Alfrex, Inc.'s option, to recoating or replacing the coil coated Product claimed to be defective. Under no circumstances will Alfrex, Inc. be held liable for any incidental, special, punitive or consequential damages.
12. Alfrex, Inc. shall be given a reasonable opportunity to inspect the Product claimed to be defective. If after inspection of the product, Alfrex, Inc. determines that the claimed defect is covered by the warranty, Alfrex, Inc. as its sole option, shall refinish, repair, or replace, the defective Product without charge to the owner.
13. Alfrex, Inc. must approve any recoating of the metal substrate through submission of three (3) estimates that each includes the name of the coating products to be used, labor and material costs as well as any other costs associated with the work for refinishing or replacing the metal substrate. Alfrex, Inc. reserves the right to approve or negotiate the contract for such recoating or replacement work if the initial estimate is unacceptable to Alfrex, Inc.
14. All warranty work will be performed by Alfrex, Inc. or by a company, customer, contractor, applicator, or distributor selected by Alfrex, Inc. At no time does this warranty confer upon the claiming party or any other party the right to proceed with repair, replacement or restoration without written notice and agreement by a duly authorized officer of Alfrex, Inc. Any such work undertaken by the claiming party or any other party shall be for the claiming party's own account and shall result in this warranty becoming null and void. As color variances may occur between replacement or refinished product in comparison with the originally installed product due to normal weathering and aging of the originally installed product, this condition will not be indicative of a defect in either the replacement product or the originally installed product.
15. The warranty for any refinished or replaced metal substrate shall be only for the remainder of the original warranty period applicable to the original coated metal substrate.
16. In no event will the original applicable warranty period set forth in the warranty table be extended by a warranty claim.
17. In the event of any subsequent failure of any recoated or replaced coil coated Product, the Owner shall first make any claims against the supplier of those replacement materials.
18. The applicable warranty period shall be limited to, and shall in no event extend beyond, the warranty period as set forth in the warranty table for the specific finish and product.
19. The Limited Warranty is given solely to the Owner and is non-transferable and non-assignable.
20. All claims must be submitted in writing to Alfrex, Inc. in 943 Gainesville Hwy. Bldg. I00-4000, Buford, GA 305I8. All claims must be accompanied by this certificate, fully completed and signed by the customer that furnished the product to the owner. In order to qualify for warranty coverage, all claims must be submitted within thirty days from the date the damage is first discovered or could have been discovered. No claims can be submitted 30 days after expiration of the warranty period.
21. In no event does Alfrex, Inc. cover the cost of labor or sundry materials required to remove and/or replace any defective product.
22. Alfrex, Inc. reserves the right to discontinue or modify its products lines and coating colors. If the original product or coating color is no longer available, Alfrex, Inc. agrees to use commercially reasonable efforts to substitute a comparable product.
23. The warranty is subject to, enforced by, and construed according to the laws of the State of Georgia. Any legal action to enforce or construe any

portion of this warranty shall be brought in a Court of Company's choice in Georgia.

24. Any attempt to construe the warranty, be it by law or other legal means, that ultimately leads to any court of competent jurisdiction stating any provision herein as invalid or unenforceable the remainder of the provisions following shall come into effect. These provisions shall come into effect as though the prior provisions had not been contained herein.
25. The United Nations Convention on Contracts for the International Sale of Goods is expressly disclaimed and does not apply to the sale of Seller products. Any and all disputes between the parties that may arise pursuant to the order will be heard and determined before an appropriate arbitrator, federal or state court located in Atlanta, Georgia. The owner hereto acknowledges such court has the jurisdiction to interpret and enforce the provisions herein and/ or an arbitrator's judgment, and the owner and the Customer waives any and all objections that they may have as to personal jurisdiction or venue in any of the above courts.
26. Company has the right to termination of the warranty at any time if a (30) day notice is given to the Customer prior to Rights accruing to Customer are not lost prior to termination.
27. All information hereto shall be adhered to by both parties and shall not extend beyond the directives made therein. No modification shall be made without the understanding, consent, and signing by both Customer and Company of a contract explicitly stating this or any warranty's subsequent modification.
28. EXCEPT AS SET FORTH HEREIN, ALFREX, INC. MAKES NO OTHER EXPRESS WARRANTIES AND DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, WITH RESPECT TO ANY OF THE PRODUCTS.
29. IT IS UNDERSTOOD AND AGREED THAT THE REMEDIES PROVIDED FOR HEREIN FOR THE FINISH OF THE PRODUCT DESCRIBED ARE EXCLUSIVE WHETHER FOR BREACH OF EXPRESS WARRANTIES OR OTHERWISE AND SHALL CONSTITUTE THE OWNER'S EXCLUSIVE REMEDY AND ALFREX, INC.'S EXCLUSIVE LIABILITY. IN NO EVENT SHALL ALFREX, INC. BE LIABLE FOR LABOR COSTS, DIRECT, INDIRECT, INCIDENTAL, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTIES IN CONNECTION WITH THE PRODUCT.
30. THE WARRANTY IS THE ONLY EXPRESS WARRANTY EXTENDED BY ALFREX, INC. IN CONNECTION WITH THE PRODUCT, OTHER THAN ALFREX, INC.'S STANDARD COATING WARRANTY, IF ANY, AND THE LIMITED WARRANTY SET OUT IN ALFREX, INC.'S SALES TERMS AND CONDITIONS, FOR THE PRODUCT, AND IT EXCLUDES ALL OTHER WARRANTIES, REPRESENTATIONS OR GUARANTEES, EXPRESS OR IMPLIED, WRITTEN OR ORAL, BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ALFREX, INC.'S AGGREGATE TOTAL CUMULATIVE LIABLITY UNDER THE WARRANTY IS LIMITED TO THE DOLLAR AMOUNT OF THE PURCHASE PRICE.
31. Owner is solely responsible for proper selection and installation of Alfrex, Inc.'s products. Owner agrees that it will use Alfrex, Inc. products only for their intended uses and according to the specifications and limitations established by Alfrex, Inc. from time to time. Owner shall indemnify, defend and hold Alfrex, Inc. harmless from and against any and all damages arising out of or relating to improper product selection, application, use, misuse, neglect, abuse of products or improper installation or incorporation of products.

Accepted By:

Alfrex, Inc.
943 Gainesville Hwy.
Building 100-4000
Buford, GA 30518
Phone: 470.589.7449

Authorized By _____

Authorized Signature _____

Date _____

GENERAL PAINT FINISH WARRANTY (SAMPLE)

Alfrex FR Aluminum Composite Material and Alfrex Plate

Fire Resistant & Non-Combustible Cladding

WARRANTY TABLES

WARRANTY	ALFREX FR MCM	ALFREX PLATE	TYPE
2 Coat Solid/ 2 Coat Mica	30 Years	20 Years	Finish
3 Coat Metallic	30 Years	20 Years	Finish
3 Coat Vivid Solid	20 Years	20 Years	Finish
Design Series - Wood & Metal	20 Years	20 Years	Finish
Hairline Aluminum	10 Years	N/A	Finish
Mirror	10 Years	N/A	Finish
Highly Durable Polyester 3-Coat	20 Years	N/A	Finish
Highly Durable Polyester	10 Years	N/A	Finish
Perforation	N/A	10 Years	Finish
Bond Integrity	10 Years	N/A	Product

10 YEAR LIMITED WARRANTY AND REMEDY BOND INTEGRITY

Alfrex FR Metal Composite Material

Fire Resistant & Non-Combustible Cladding

This limited warranty ("Limited Warranty") is provided by Alfrex® Inc. ("Company") to the property owner ("Owner") and relates to the ("Products") installed at the ("Property") at the ("Property Address") as identified below.

Property Name	**Property Owner**	
Property Address		
City	**State or Province**	**Zip Code**
Date of Substantial Completion	**Warranty Commencement Date**	
Issuance Date		
Customer Name		
Customer Address		
City	**State or Province**	**Zip Code**
Product(s)	☐ **Alfrex FR Aluminum Composite Material**	
	☐ **Alfrex FR Zinc Composite Material**	
Finish(es)		
Additional Descriptions		
Warranty Number		

The "Company" provides warranty coverage subject to the definitions, terms, conditions, limitations, and remedies stated herein. All of the following conditions and additional conditions constitute material terms of this limited warranty and failure to satisfy any one or more are of the conditions and additional conditions by owner or their agents or representatives shall render this limited warranty null and void and release Alfrex, Inc. from its obligations hereunder.

1. Company warrants that the Product(s) listed above will not exhibit any visually observable deformation as a result of delamination of the aluminum skin or natural metal skin from the core material due to manufacturing defects.
2. The Warranty period starts on the Warranty Commencement Date as written in the issued Warranty and will be determined as either the date of substantial completion (default), or 6 months from the date of shipment as defined by the commercial invoice date.
3. Should any panels show signs of delamination during the term of the warranty, at the sole discretion of Company, the portion of panels not conforming to this warranty shall be refunded at the purchase price or replaced at no cost to the Customer.
4. The applicable warranty period shall be limited to, and shall in no event extend beyond, the warranty period as set forth herein.
5. In no event will the original applicable warranty period set forth in the warranty table be extended by a warranty claim.
6. This Limited Warranty only pertains to delamination during normal use and service and in no way will cover any other forms of delamination including, but not limited to, mechanical abrasion or mechanical damages, faulty or improper fabrication or installation of the product, exposure to corrosive atmospheres such as, exposure to such as those containing salt spray, acid rain, harmful chemicals or vapors, improper storage, improper installation or mishandling during installation, improper cleaning, unreasonable use, misuse, physical abuse, accidental damage, vandalism, use of incompatible accessories, fire, flood, earthquake, lightning, ice, windstorms, other acts of God, wind borne objects, building settlement, structural failures, wall or foundation failure, use of harmful cleaning compounds, intermittent or continual submersion in water or any other liquid or solid material, deliberate damage, acts of terrorism, or any other physical damage.
7. This warranty does not cover weathering of any exposed core material due to UV radiation exposure.

8. Under no circumstances will Alfrex, Inc. be held liable for any incidental, special, punitive, or consequential damages and shall not be responsible for the installation or maintenance of the Customer's panels.
9. In no event does Alfrex Inc. cover the cost of labor or sundry materials required to remove and/or replace any defective product.
10. All claims must be submitted in writing to Alfrex Inc. in 943 Gainesville Hwy. Bldg. 100-4000 Buford, GA 30518. All claims must be accompanied by this certificate, fully completed and signed by the customer that furnished the product to the owner. In order to qualify for warranty coverage, all claims must be submitted within (30) days from the date the damage is first discovered or could have been discovered. No claims can be submitted (30) days after expiration of the warranty period.
11. Alfrex, Inc. shall be given a reasonable opportunity to inspect the product claimed to be defective. All warranty work will be performed by Alfrex, Inc. or by a company, customer, contractor, applicator, or distributor selected by Alfrex, Inc. At no time does this warranty confer upon the claiming party or any other party the right to proceed with repair, replacement or restoration without written notice and agreement by a duly authorized officer of Alfrex, Inc. following the rules and regulations set herein, and the abiding of all maintenance of such panels of the industry standards to which the Customer belongs with respect to handling, delivering, storing, processing, treating, installing and maintaining. Any failure to satisfy the conditions contained herein or proceeding with such work undertaken by the claiming party or any other party shall be for the claiming party's own account, and shall be construed as a waiver by the Customer or Owner of any right they may have for enforcement of this warranty, and shall result in this warranty becoming null and void.
12. As color variances may occur between replacement or refinished product in comparison with the originally installed product due to normal weathering and aging of the originally installed product, this condition will not be indicative of a defect in either the replacement product or the originally installed product.
13. The warranty for any replaced Product(s) shall be only for the remainder of the original warranty period applicable to the Product(s).
14. This Limited Warranty is given solely to the Owner and is non-transferable and non-assignable.
15. Alfrex Inc. reserves the right to discontinue or modify its products lines. If the original product is no longer available, Alfrex Inc. agrees to use commercially reasonable efforts to substitute a comparable product.
16. This warranty is subject to, enforced by, and construed according to the laws of the State of Georgia. Any legal action to enforce or construe any portion of this warranty shall be brought in a Court of Company's choice in Georgia.
17. Any attempt to construe this warranty, be it by law or other legal means, that ultimately leads to any court of competent jurisdiction stating any provision herein as invalid or unenforceable the remainder of the provisions following shall come into effect. These provisions shall come into effect as though the prior provisions had not been contained herein.
18. The United Nations Convention on Contracts for the International Sale of Goods is expressly disclaimed and does not apply to the sale of Seller products. Any and all disputes between the parties that may arise pursuant to this order will be heard and determined before an appropriate arbitrator, federal or state court located in Atlanta, Georgia. The owner hereto acknowledges such court has the jurisdiction to interpret and enforce the provisions herein and/ or an arbitrator's judgment, and the owner and the Customer waives any and all objections that they may have as to personal jurisdiction or venue in any of the above courts.
19. Company has the right to termination of the warranty at any time if a (30) day notice is given to the Customer prior to Rights accruing to Customer are not lost prior to termination.
20. All information hereto shall be adhered to by both parties and shall not extend beyond the directives made herein. No modification shall be made without the understanding, consent, and signing by both Customer and Company of a contract explicitly stating this warranty's subsequent modification.
21. EXCEPT AS SET FORTH HEREIN, ALFREX, INC. MAKES NO OTHER EXPRESS WARRANTIES AND DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, WITH RESPECT TO ANY OF THE PRODUCTS.
22. IT IS UNDERSTOOD AND AGREED THAT THE REMEDIES PROVIDED FOR HEREIN FOR THE FINISH OF THE PRODUCT DESCRIBED ABOVE ARE EXCLUSIVE WHETHER FOR BREACH OF EXPRESS WARRANTIES OR OTHERWISE AND SHALL CONSTITUTE THE OWNER'S EXCLUSIVE REMEDY AND ALFREX, INC.'S EXCLUSIVE LIABILITY. IN NO EVENT SHALL ALFREX, INC. BE LIABLE FOR LABOR COSTS, DIRECT, INDIRECT, INCIDENTAL, PUNITIVE, SPECIAL OR CONSEQUENTIAL DAMAGES FOR ANY BREACH OF ANY EXPRESS OR IMPLIED WARRANTIES IN CONNECTION WITH THE PRODUCT.
23. THIS WARRANTY IS THE ONLY EXPRESS WARRANTY EXTENDED BY ALFREX, INC. IN CONNECTION WITH THE PRODUCT, OTHER THAN ALFREX, INC.'S STANDARD COATING WARRANTY, IF ANY, AND THE LIMITED WARRANTY SET OUT IN ALFREX, INC.'S SALES TERMS AND CONDITIONS, FOR THE PRODUCT, AND IT EXCLUDES ALL OTHER WARRANTIES, REPRESENTATIONS OR GUARANTEES, EXPRESS OR IMPLIED, WRITTEN OR ORAL, BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ALFREX, INC.'S AGGREGATE TOTAL CUMULATIVE LIABLITY UNDER THIS WARRANTY IS LIMITED TO THE DOLLAR AMOUNT OF THE PURCHASE PRICE.

24. Owner is solely responsible for proper selection and installation of Alfrex, Inc.'s products. Owner agrees that it will use Alfrex, Inc. products only for their intended uses and according to the specifications and limitations established by Alfrex, Inc. from time to time. Owner shall indemnify, defend and hold Alfrex, Inc. harmless from and against any and all damages arising out of or relating to improper product selection, application, use, misuse, neglect, abuse of products or improper installation or incorporation of products.

Accepted By:

Alfrex, Inc.
943 Gainesville Hwy.
Building 100-4000
Buford, GA 30518
Phone: 470.589.7449

Authorized By _____

Authorized Signature _____

Date _____

ALFREX FR MCM PROJECT REFERENCES

GATEWAY MEADOWVALE

Location	Ontario, Canada
Finish(es)	Bone White
Architect / Specifier	Quadrangle Architects
Installer / Contractor	Carttera Private Equities
Size	16,041 sqft

HUTCHINSON METRO CENTER
(TOWER II AND ATRIUM)

Location	New York, USA
Finish(es)	Bone White
Architect / Specifier	Newman Design
Installer / Contractor	McGowan
Size	I40,485 sqft

SHOTWELL STADIUM

Location	Texas, USA
Finish(es)	Anodic Clear Mica
Architect / Specifier	Huckabee & Associates
Installer / Contractor	AIS Architectural Image Systems, LLC
Size	II,000 sqft

NORTH HILLS CREATIVE OFFICE

Location	North Carolina, USA
Finish(es)	Castle Gray, Graphite Metallic and Medium Bronze Mica
Architect / Specifier	CI Design, Inc.
Installer / Contractor	Advanced Exterior Systems
Size	50,000 sqft

RUTGERS UNIVERSITY
(ATHLETIC PERFORMANCE CENTER)

Location	New Jersey, USA
Finish(es)	Bone White
Architect / Specifier	Perkins Eastman
Installer / Contractor	Epic Management
Size	17,018 sqft

NORTH STATE BANK

Location	North Carolina, USA
Finish(es)	Exotic Silver Mica, Medium Bronze Mica
Architect / Specifier	New City Design
Installer / Contractor	Advanced Exterior Systems
Size	-

OVERLAND ONE B3

Location	Kansas, USA
Finish(es)	Pewter Mica
Architect / Specifier	Burns & McDonnell
Fabricator	Standard Sheet Metal
Size	I6,000 sqft

PANERA BREAD

Location	Florida, USA
Finish(es)	Bronze
Architect / Specifier	-
Installer / Contractor	Sundance Architectural Products
Size	800 sqft

FENWICK TOWER / THE VUZE

Location	Nova Scotia, Canada
Finish(es)	Black, Gray Silver
Architect / Specifier	Stantec Architecture
Installer / Contractor	Templeton Construction
Size	231,974 sqft

HAT @ WEST VILLAGE

Location	Alberta, Canada
Finish(es)	Custom
Architect / Specifier	NORR Architects
Installer / Contractor	Cidex Group
Size	140,485 sqft

RED DEER JUSTICE CENTRE

Location	Alberta, Canada
Finish(es)	West Pewter Mica II (custom) and JLR Gray Metallic
Architect / Specifier	Group 2
Installer / Contractor	Modern Cladding Finishes / Clark Builders
Size	56,000 sqft

PNP

Location	British Columbia, Canada
Finish(es)	Silver (custom)
Architect / Specifier	-
Installer / Contractor	Altium Building Corporation
Size	253.17 sqft

CASADONA PLACE

Location	Alberta, Canada
Finish(es)	Bone White
Architect / Specifier	Gibbs Gage
Installer / Contractor	EllisDon Design-Build
Size	59,077 sqft

SNC LAVALIN OFFICE

Location	Ontario, Canada
Finish(es)	Pure White, Ascot White
Architect / Specifier	De Silva Architect
Installer / Contractor	Arguson Projects, Inc.
Size	44,833 sqft

THE WINDSOR

Location	Alberta, Canada
Finish(es)	Black, Dark Gray, White
Architect / Specifier	NORR Architects
Installer / Contractor	Westpointe Building Services, Inc.
Size	59,077 sqft

HAT @ EAST VILLAGE

Location	Alberta, Canada
Finish(es)	Custom Wood, Bone White, Dark Gray, Dove Gray
Architect / Specifier	NORR Architects
Installer / Contractor	Cidex Group
Size	34,395 sqft

NCS MULTI-STAGE

Location	Alberta, Canada
Finish(es)	Cherry Wood, Pure White, Silver
Architect / Specifier	Genesis Building Corp.
Installer / Contractor	ARTE Group
Size	9,302 sqft

DESA GLASS

Location	Alberta, Canada
Finish(es)	Black
Architect / Specifier	-
Installer / Contractor	ARTE Group
Size	7,427 sqft

CANADIAN BLOOD SERVICES

Location	Alberta, Canada
Finish(es)	Dark Gray
Architect / Specifier	NORR Architects
Installer / Contractor	Bird Construction
Size	5,908 sqft

MNP TOWER

Location	Alberta, Canada
Finish(es)	Dove Gray, Black, Cherry Wood
Architect / Specifier	Kohn Pedersen Fox
Installer / Contractor	ARTE Group
Size	5,655 sqft

TEMPO AMENITY BUILDING

Location	British Columbia, Canada
Finish(es)	Gold
Architect / Specifier	Ciccozzi Architecture
Installer / Contractor	Cressey Development
Size	2,115 sqft

ALFIE DENTAL OFFICE

Location	Ontario, Canada
Finish(es)	Black, Pure White
Architect / Specifier	Vanessa Fong Architect
Installer / Contractor	Lincoln Stevens Construction & Design Ltd
Size	2,026 sqft

1400 BALTIMORE

Location	Missouri, USA
Finish(es)	Custom Gray White
Architect / Specifier	Burns & McDonnell
Installer / Contractor	Flynn Midwest LP
Size	l23,377 sqft

AMAZON COUGAR FULFILLMENT CENTER

Location	Detroit, USA
Finish(es)	Amazon Prime Blue
Architect / Specifier	Stantec Architecture
Fabricator	Riverside Group (Fabricator)
Size	3,198 sqft

DAVENPORT

Location	Oklahoma, USA
Finish(es)	Bronze
Architect / Specifier	Lilly Architects
Installer / Contractor	Ventaire LLC
Size	I6,878 sqft

PROVO CITY HALL

Location	Utah, USA
Finish(es)	Gray Metallic, Serpentine Metallic, Anodic Satin Metallic, Oyster, Beige
Architect / Specifier	VCBO Architecture
Installer / Contractor	LCG Facades
Size	82,084 sqft

THE SMYTH

Location	Connecticut, USA
Finish(es)	Dark Gray, Bronze
Architect / Specifier	Lessard Design
Installer / Contractor	Alufab / Katerra / EC Contracting
Size	97,200 sqft

COLORADO CONVENTION CENTER

Location	Colorado, USA
Finish(es)	Exotic Silver Mica and Classic White
Architect / Specifier	TVS Design
Installer / Contractor	EWS Texas / Bosco Constructors & Hensel Phelps
Size	51,000 sqft

1122 W CHICAGO

Location	Illinois, USA
Finish(es)	Ascot White, Black, Dark Gray, Classic White
Architect / Specifier	Pappageorge Haymes
Installer / Contractor	Edon / Pappageorge Haymes
Size	I9,500 sqft

ADVANCED ORTHO AND SPINE

Location	Tennessee, USA
Finish(es)	Bright Silver Metallic
Architect / Specifier	Hayden Architecture & Interiors LLC
Installer / Contractor	Mathias Metal Systems, LLC / Fortis
Size	12,000 sqft

AEQUITAS COMMUNITY JUSTICE CAMPUS

Location	Indiana, USA
Finish(es)	Dark Walnut
Architect / Specifier	CSO Architects, Inc.
Installer / Contractor	Division 7 Mtls
Size	31,800 sqft

BOSTON SCIENTIFIC

Location	Minnesota, USA
Finish(es)	Exotic Silver Mica, Pewter Mica
Architect / Specifier	HGA
Installer / Contractor	Division V Sheet Metal
Size	66,000 sqft

DFW EXPANSION

Location	Texas, USA
Finish(es)	Pewter Mica
Architect / Specifier	Corgan
Installer / Contractor	CTA Panel Systems / EWS Texas
Size	25,000 sqft

FOUNDERS SCHOOL

Location	Arkansas, USA
Finish(es)	Gray Silver Mica, Teak, Golden Oak
Architect / Specifier	WDD Architects
Installer / Contractor	Ralph Jones Sheet Metal
Size	II,000 sqft

HOTEL INDIGO

Location	Minnesota, USA
Finish(es)	Black
Architect / Specifier	RSP Architects
Installer / Contractor	Division V Sheet Metal Inc.
Size	2,200 sqft

ITAWAMBA COMMUNITY COLLEGE

Location	Mississippi, USA
Finish(es)	Anodic Clear Mica
Architect / Specifier	Pryor Morrow Architects
Fabricator	E Cornell Malone Coporation
Size	I5,000 sqft

PARTNERS ANIMAL HOSPITAL WEST LOOP

Location	Chicago, IL
Finish(es)	FR ACM Gray Silver Mica and Anodic Clear Mica
Architect / Specifier	Linden Group Architects
Fabricator	NSS Exteriors
Size	80,00 sqft

JIM BUTLER KIA

Location	Chesterfield, MO
Finish(es)	FR ACM Midnight Black and Bright Silver Metallic
Architect / Specifier	Michael E Bower Architecture
Installer / Contractor	Architectural Sheet Metal, Inc
Size	5,000sqft and 3,500sqft

THE POST

Location	Wisconsin, USA
Finish(es)	Teak, Classic White
Architect / Specifier	Knothe & Bruce Architects, LLC
Installer / Contractor	CMG / Krupp General Contractors
Size	I3,000 sqft

TIMPTE

Location	Iowa, USA
Finish(es)	Dove Gray, Black
Architect / Specifier	Aspect Architecture
Installer / Contractor	CR Glass / Metal Design Systems, Inc.
Size	I4,000 sqft

HUNTINGTON UNIVERSITY MERILLAT

Location	Indiana, USA
Finish(es)	Pewter Mica and Huntington Pine Green (custom)
Architect / Specifier	Design Collaborative
Installer / Contractor	SPS Corporation
Size	-

HUMBER RIVER LTC

Location	Ontario, Canada
Finish(es)	Bone White, Dark Gray, Sea Wolf
Architect / Specifier	Montgomery Sisam Architects
Installer / Contractor	Triumph Aluminum & Sheet Metal inc
Size	-

PARKWOD

Location	Indiana, USA
Finish(es)	Dark Gray
Architect / Specifier	DKGR Architects
Installer / Contractor	Division 7 Mtls
Size	2,300 sqft

BALLY'S CASINO

Location	Missouri, USA
Finish(es)	Ascot White, Bronze, Copper Penny Mica, Pewter Mica
Architect / Specifier	JCJ Architecture
Installer / Contractor	Flynn Midwest LP
Size	50,000 sqft

UCONN STEM RESERCH CENTER

Location	Connecticut, USA
Finish(es)	Custom LITHIC 332 on natural zinc
Architect / Specifier	Payette Architects
Installer / Contractor	Greenwood Industries Inc.
Size	8,950 sqft

ORLANDO HEALTH JEWITT ORTHOPEDIC HOSPITAL

Location	Orlando, FL
Finish(es)	Custom Alabaster
Architect / Specifier	EYP Architecture & Engineering
Installer / Contractor	NRG Cladding
Size	80,000 sqft

MICHIGAN STADIUM SCOREBOARDS

Location	Ann Arbor, MI
Finish(es)	Custom MIchigan Blue and Maize
Architect / Specifier	Smith Group JJR
Installer / Contractor	-
Size	37,000 sqft

CARIAD

Location	Middleton, WI
Finish(es)	FR ACM Teak and Exotic Silver Mica
Architect / Specifier	Knothe & Bruce Architects
Installer / Contractor	-
Size	16,000sqft

TLA'AMIN WELLNESS CENTRE

Location	Tla'amin Nation - British Columbia, Canada
Finish(es)	Bronze (JY-6I80)
Architect / Specifier	Urban Arts Architecture Inc.
Installer / Contractor	Converge Construction
Size	II,898.33 sqft

THE SALLY

Location	Chicago, IL
Finish(es)	FR ACM Charcoal
Architect / Specifier	Booth Hansen
Installer / Contractor	-
Size	22,000sqft

TOYOTA OF MANHATTAN

Location	New York, NY
Finish(es)	FR ACM Fashion Gray
Architect / Specifier	SLCE Architects, LLP
Installer / Contractor	DK Metals
Size	-

IZZO FAMILY MEDICAL CENTER

Location	Lansing, MI
Finish(es)	ACM & Flat Sheet - Gray Silver Mica
Architect / Specifier	Gresham Smith
Installer / Contractor	Architectural Metals, Inc
Size	-

SPARE TIME ENTERTAINMENT

Location	Madison, WI
Finish(es)	ACM & Flat sheet - Bronze
Architect / Specifier	-
Installer / Contractor	Coated Metals Group
Size	2,000sf

ONE COMMUNITY BANK

Location	Cottage Grove, WI
Finish(es)	Anodic Clear Mica, Bone White
Architect / Specifier	OPN Architects
Installer / Contractor	Coated Metals Group
Size	3,000sf

CONVERGENT SCIENCE HEADQUARTERS

Location	Madison, WI
Finish(es)	Alfrex FR - Charcoal
Architect / Specifier	-
Installer / Contractor	Coated Metals Group
Size	5,000sf

WINDROSE HEALTH NETWORK

Location	Franklin, IN
Finish(es)	Alfrex FR & Flat Sheet Bone White, Sea Wolf
Architect / Specifier	DELV Design
Installer / Contractor	Division 7 Mtls
Size	-

FRED 310

Location	Frederickson, WA
Finish(es)	ACM, Flat Sheet Dark Gray
Architect / Specifier	NELSON
Installer / Contractor	Exterior Metals, Inc
Size	-

TOWNER COUNTY MEDICAL CENTER

Location	Cando, ND
Finish(es)	ACM, Flat Sheet Dark Gray
Architect / Specifier	Infusion Architects
Installer / Contractor	MG McGrath
Size	-

NORTH AMERICAN PROJECT REFERENCES

Alfrex FR Metal Composite Material

PROJECT NAME	LOCATION	ARCHITECT
1400 Baltimore	Missouri, USA	Burns & McDonnell
1601 Sherman	Illinois, USA	Eckenhoff Saunders
360 Oakville Place Drive	Ontario, Canada	B+H Architects
8 Court Square	New York, USA	Hill West Architects
801 Church	Tennessee, USA	Goettsch Partners
A.O.S. Orthopedic Group	Tennessee, USA	Hayden Architecture
Amazon Cougar - Fulfillment Center	Michigan, USA	Stantec Architects & Engineering
Arhaus Tysons Galleria	Virginia, USA	RDL Architects
Armour and Troost	Missouri, USA	Helix Architecture & Design
Ascension St. Thomas Mid-State Medical Office Building	Tennessee, USA	Catalyst Design Group
ATT Building Façade Renovation	Tennessee, USA	EXP
Axis at Legends Crossing Shopping Center	Texas, USA	Sterling Architects, LLC
Bally's Kansas City Welcome Center	Missouri, USA	JCJ Architecture
Black Hawk Medical Center	Oklahoma, USA	Studio 45 Architects
Boston Scientific Weaver Lake 4	Minnesota, USA	HGA - Hammel Green and Abrahamson
Cambria Hotel	South Carolina, USA	Sand Architects
Canadian Blood Services - Calgary	Alberta, Canada	Norr Architecture
Casadona Place	Alberta, Canada	Gibbs Gage
CBHS Heffernan Field House	Tennessee, USA	Fleming Architects
City of Las Vegas Courthouse	Nevada, USA	PGAL LLC, Las Vegas /LVMC Development, LLC
Clemson University Memorial Stadium Renovations	South Carolina, USA	LS3P
Clifton Court Hall - University of Cincinnati	Ohio, USA	LMN Architects
Coaldale Civic Square	Alberta, Canada	FWBA Architects
Cochrane Station-Cochrane Transit Hub	Alberta, Canada	GEC Architecture
Colorado Convention Center	Colorado, USA	TVS
Colquitt Regional Medical Center	Georgia, USA	Thomas Miller & Partners
Connors	Oklahoma, USA	Oklahoma Roofing and Sheet Metal LLC / AMP
CRG - The Cubes @ River	Georgia, USA	Lamar Johnson Collaborative

NORTH AMERICAN PROJECT REFERENCES

Alfrex FR Metal Composite Material

PROJECT NAME	LOCATION	ARCHITECT
CRG Inland Woods Chapel	South Carolina, USA	Lamar Johnson Collaborative
Davenport Condominiums	Oklahoma, USA	Ventaire
Desire Florida Center	Louisiana, USA	Mathes Brierre Architects
Douglas MacArthur Junior High School	Arkansas, USA	Cooper Mixon Architects
Fairbourne Station Office Tower	Utah, USA	EDA Architects
Fenwick Tower / The Vuze	Nova Scotia, Canada	Stantec Architecture
Florida Desire Multi Service Center	Louisiana, USA	Mathes Brierre Architects
Founders Classical Academy	Arkansas, USA	WDD Architects
Gateway Meadowvale	Ontario, Canada	Quadrangle Architects
Glendale Medical Office Building	California, USA	SWA Architects
Glenlake III	North Carolina, USA	Piedmont Land Design, LLP
Gordon Flesch Company	Wisconsin, USA	McMahon Associates Inc
Greenfield 27 - 4101 Bldg	North Carolina, USA	Hagersmith Design
Grove @ Whitestation Change Order	Tennessee, USA	LRK Architects
GSU Convocation Center	Georgia, USA	SLAM Collaborative
Harmony Addition	Texas, USA	Gignac Associates
Hawthorne Condominiums	Texas, USA	Kirksey Architecture
Hillwood HS	Tennessee, USA	Hastings Architecture Associates
Hotel Indigo	Minnesota, USA	RSP Architects
Hudson Alpha	Alabama, USA	Fuqua Partners
Humber River LTC	Ontario, Canada	Montgomery Sisam Architects
Hutchinson Metro Center Tower II and Atrium	New York, USA	Newman Design
Ingham County Justics Facility	Michigan, USA	Kramer Management Group
Itawamba Community College - Vo-Tech	Mississippi, USA	Pryor Morrow Architects
Jackson Heart	Mississippi, USA	Holloman Architecture
Jasper Hosue	Alberta, Canada	architects—Alliance
Jonesboro High School	Arkansas, USA	Cahoon Steiling
Keith Summey Library	South Carolina, USA	McMillan Pazdan Smith Architecture

NORTH AMERICAN PROJECT REFERENCES

Alfrex FR Metal Composite Material

PROJECT NAME	LOCATION	ARCHITECT
Kipling Go Bus Station	Ontario, Canada	Strasman Architects
Lafayette Economic Development Authority (LEDA)	Louisiana, USA	Domingue, Szabo & Associates, Inc.
Lexus Dealership	New York, USA	SLCE Architects, LLP
Macon Pond Medical Office Building	North Carolina, USA	HagerSmith Design PA
Magnolia Trace Elementary School	Louisiana, USA	Greenleaf Lawson Architects
Methodist Olive Branch Hospital	Mississippi, USA	Gresham Smith
Moore County NC Courthouse	North Carolina, USA	Moseley Architects
Morrison Yard	South Carolina, USA	ASD SKY
Mountain Tech South	Utah, USA	FFKR Architects
Nashville Airport Parking Garage	Tennessee, USA	Moody Nolan
Neuhoff District	Tennessee, USA	HKS Architects
New Southside Elementary and Junior High School	Louisiana, USA	Alvin Fairburn & Associates
One Sullivan Place	New York, USA	RKTB Architects
OnLogic Global Headquarters	Vermont, Canada	Wiemann Lamphere Architects
Orchard Farms	Missouri, USA	Hoener Associates, Inc
Orem VA Clinic	Utah, USA	GSBS Architects
Orlando Health Jewitt Orthopedic Hospital	Florida, USA	EYP Architecture & Engineering
Overland One B3	Kansas, USA	Burns & McDonnell
Overland Park Arboretum Visitors Center	Kansas, USA	Confluence
Parkwood Canopies	Indiana, USA	DKGR Architecture
Planet Fitness	Wisconsin, USA	RMA Architects
Red Deer Justice Centre (RDJC)	Alberta, Canada	Group 2
Riverfront Landing 2	Pennsylvania, USA	JDavis Architects
RWJ Barnabas Health Athletic Performance Center (APC)	New Jersey, USA	Perkins Eastman
Seacoast Medical Park Two	South Carolina, USA	Design Strategies,LLC
Sequoyah	Oklahoma, USA	Michael McCoy Architecture
Shannon Oncology Center	Texas, USA	O'Connell Robertson
Skyview Ranch K9 School	Alberta, Canada	FWBA Architects

NORTH AMERICAN PROJECT REFERENCES

Alfrex FR Metal Composite Material

PROJECT NAME	LOCATION	ARCHITECT
Smith Residence Lot 58- 4th	BC, Canada	Openspace Architecture
SNC Lavalin Office	Ontario, Canada	De Silva Architect
Southern First Bank Headquarters	South Carolina, USA	Craig Gaulden & Davis Stubbs Muldrow Herin
Southern Indiana Orthopedics MOB	Indiana, USA	BSA Lifestructure
St. Elizabeth's Shelter	Maryland, USA	Wiencek + Associates
Stateline Auto Ranch Subaru	Idaho, USA	BRS Architects
Summit Medical Lab Building	Tennessee, USA	BarberMcMurry Architects
Summit Park Church	Missouri, USA	Method Group
Syngenta Product Metabolism and Analytic Sciences (PMAS)	North Carolina, USA	Hanbury
Tempo Amenity Building	BC, Canada	Robert Ciccozzi Architecture
The Arc	BC, Canada	Francl Architecture
The Atreaux Apartments	North Carolina, USA	Axiom Architecture
The Bridge	Alberta, Canada	Zeidler Architecture
The Conservatory	BC, Canada	Francl Architecture
The George	Nova Scotia, Canada	Fathom Studio
The Hat @ West Village Towers	Alberta, Canada	NORR Architects Engineers Planners
The Lights at Sheyenne 32	North Dakota, USA	ICON Architectural Group
The Oaks	Manitoba, Canada	ft3 Architects
The Post	Wisconsin, USA	Knothe & Bruce Architects
The Renaissance Center	Tennessee, USA	Anderson Buehler Architects pllc
The Shore at Sierra Point (Buildings A,B,C)	California, USA	DES Architects + Engineeers
The Smyth	Connecticut, USA	Lessard Design
The Theodore	Alberta, Canada	IBI Group
The Venue at Kee Town	Iowa, USA	OPN Architects
The Villages EEC	-	Wallman Architects
The Windsor	Alberta, Canada	NORR Architects Engineers Planners
TIMPTE, INC.	Iowa, USA	Aspect Architecture
Toyota of Manhattan	New York, USA	SLCE Architects, LLP

NORTH AMERICAN PROJECT REFERENCES

Alfrex FR Metal Composite Material

PROJECT NAME	LOCATION	ARCHITECT
Triomphe Tower	BC, Canada	Chris Dikeakos Architects
UCA Windgate Center for Fine and Performing Arts	Arkansas, USA	WER / Witsell-Evans-Rasco
Uconn Science One Stem Research Center	Connecticut, USA	Payette Architects
Unitah Basin Medical Center	Utah, USA	e4harchitecture
Unity Health Jacksonville	Arkansas, USA	TAGGART Architects
Univeristy ofCalgary - Block E	Alberta, Canada	TBA
University of South Carolina Campus Village	South Carolina, USA	WDG
UTHSC	Tennessee, USA	brg3s architects
Victoria Theater	New York, USA	Aufgang Architects
Villas & Waterside	Kansas, USA	NSPJ
VMC - The Millway Towe	Ontario, Canada	Gensler Architects
Voorhees	Tennessee, USA	Manuel Zeitlin Architects
Wake Tech Community College	North Carolina, USA	Williard Stewart Architects
YMCA Wilson NC	North Carolina, USA	Little Diversified Architectural Consulting
Pine Grove Outpatient Services Building	Mississippi, USA	Perkins and Williamson Architecture, PLLC
The National World War II Liberation Pavilion	Louisiana, USA	Voorsanger Architects

GLOBAL PROJECT REFERENCES

Alfrex FR Metal Composite Material

COUNTRY	PROJECT NAME	ARCHITECTURAL FIRM	SIZE (SQFT)
Korea	The Hillstate	KMD Architects & Samoo Architects	753,480
Korea	Doosan We've The Zenith	De Stefano + Partners	317,538
Korea	Sangam Kaiser Palace	HAEAHN Architecture	269,100
Korea	Kolon-Parkpolis	Morphosis Architects	258,336
Korea	Seongnam City Hall	KMD Architects & Samoo Architects	129,168
Korea	OCI Central R&D center	HAEAHN Architecture + H Architecture	129,168
Korea	Dangin Power Plant of TAIHAN	Obra Architects	118,404
Korea	Lions Valley	Mass Studies	107,640
Korea	National Police Agency	H Architecture	96,876
Korea	KEPCO Research Institute	KEPCO Research Institute	75,348
Korea	Korea Land & Housing Corp	DRDS, Moo Young & Tomoon	16,146
Thailand	Honda Big Wing	VaSLab Architecture	53,820
Vietnam	Landmark 81 Tower	Atkins	484,380







ALFREX FR CUSTOM TEXTURED COLORS BLEND FACADE WITH NATURAL SURROUNDINGS

Case Study

Fire Resistant & Non-Combustible Cladding

Project Name	West Village Towers - The Hat @ West Village
Location	Alberta, Canada
Architect	NORR Architecture & Planning
Owner	Cidex Group of Companies & Wexford Developments LP
Fabricator	Custom Metal Contracting Ltd.
Alfrex Product	Alfrex FR 4mm Metal Composite Material
Product Finish	Rough 1 (Custom)
	Rough 2 (Custom)
	Concrete White (JY-5140)
	Silver (AL-1220)

The West Village Towers project in downtown Calgary is a rising complex of three interconnected high-rise towers designed to reflect the natural beauty of the nearby Rocky Mountains and Bow River. Also known as "The Hat @ West Village", when completed, it will be the tallest multi-residential mixed-use project in downtown Calgary – occupying an entire city block and commanding spectacular views of the surroundings.

Each tower features a slanted translucent roofline and multi-colored spandrel panels to exude a combination of shining reflectivity and warm earth tones. The wall cladding design challenge centered around choosing materials that would blend well with the specified clear and blue glazing, project a look and feel reminiscent of the surrounding landscape, and not require highly specialized installation systems.

Custom Metal Contracting Ltd. of Calgary, Alberta Canada and Alfrex, Inc. of Buford, Georgia USA partnered to develop a comprehensive solution that would achieve the design intent while providing economic benefits versus other alternatives. A key component of the solution was the development of three rough textured finishes to mimic the look and feel of concrete. After color and texture approval, a specially formulated protective film was employed to adhere to the textured finish surface and provide for maximum protection during the fabrication and installation phases of the project. Utilizing Custom Metal Contracting's Composite Panels System Series 20 rainscreen system, at project completion approximately 130,350 square feet of Alfrex FR 4mm MCM in four colors will clad the exterior of the three towers and integrate beautifully as a new addition to the Calgary skyline.

Alfrex, Inc. is the newest North American domestic MCM manufacturer and is pleased to be a member of the Metal Construction Association and MCM Alliance. Alfrex specializes in fire-resistant and non-combustible architectural metal wall cladding with a portfolio including Alfrex FR Metal Composite Material, matching 0.040" flat sheet, and coil coated aluminum Alfrex Plate in 0.080" and 3mm thick panels up to 62" wide. Its parent company, Unience, Co Ltd., began operation in 2000 as a manufacturer of specialty fire-resistant coatings, bonding materials, and pelletized mineral filled FR core compound for globally recognized MCM manufacturers. In 2008, Unience launched Alfrex in South Korea with a multi-line MCM production facility dedicated to the exclusive production of FR core MCM utilizing in-house, fire-resistant core technology. Today, both Unience and Alfrex are headquartered in Buford, Georgia USA, with a new state of the art FR core MCM production plant complimented by a commercial branch in Toronto, Ontario Canada.

ALFREX FR MCM INSTALLATION DETAILS

THE ARCHITECTURAL DETAILS CONTAINED ARE PROVIDED FOR CONCEPTUAL PURPOSES ONLY. ALFREX ONLY MANUFACTURES MCM PANELS. PANEL SYSTEMS AND ASSEMBLY DESIGN, FABRICATION, AND INSTALLATION ARE PROVIDED BY QUALIFIED FABRICATORS AND INSTALLERS. ALFREX, LLC DOES NOT MAKE ANY WARRANTIES, EXPRESS OR IMPLIED INCLUDING MERCHANTABILITY AND FITNESS FOR PURPOSE. PLEASE CONSULT ALFREX, LLC FOR RECOMMENDATIONS OF TESTED SYSTEMS AVAILABLE IN THE MARKET.

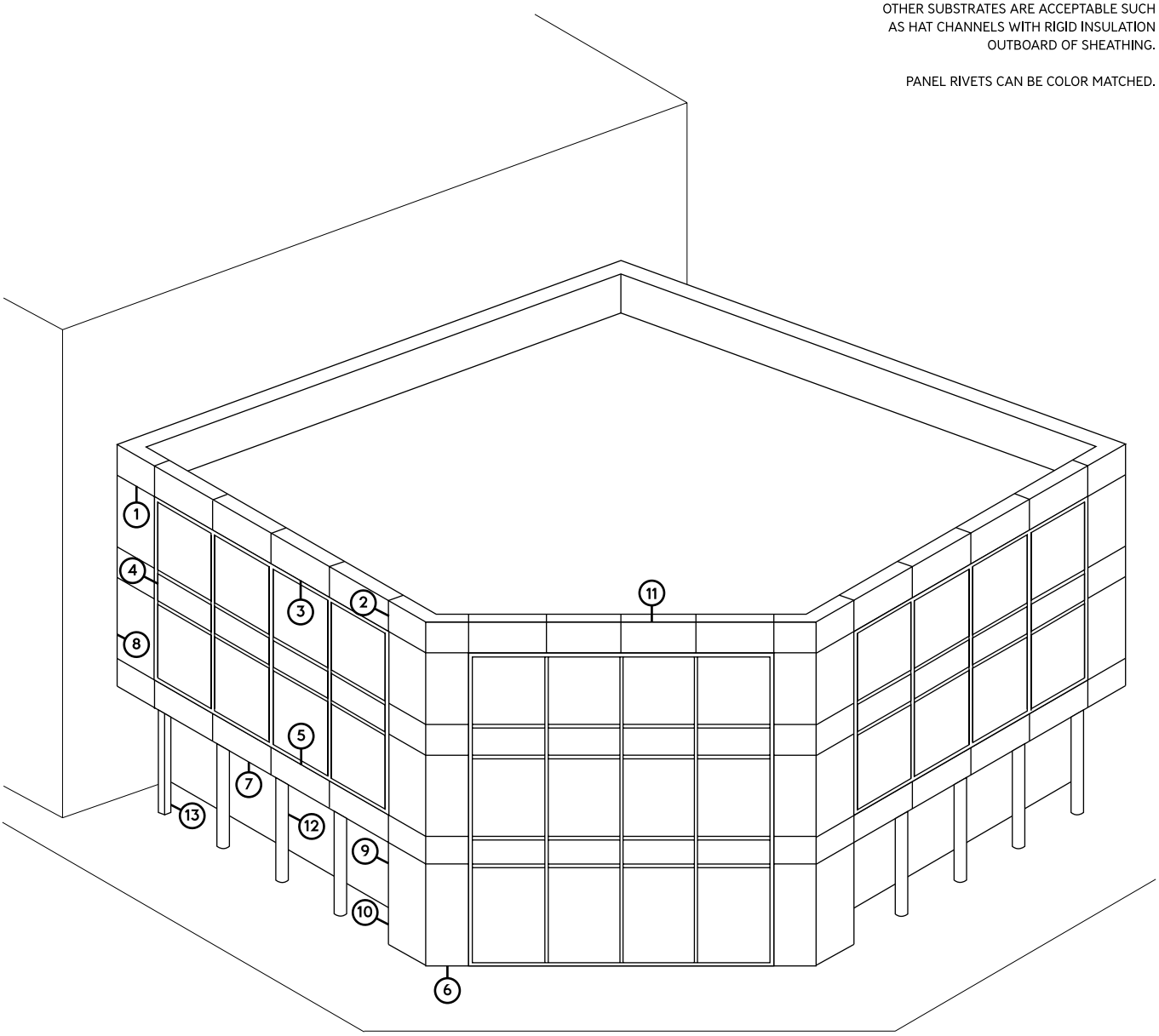
ARCH / FABRICATOR NOTES:

MAX PANEL SIZE IS 60" IN EITHER DIRECTION.

MICA / METALLIC FINISHES ARE DIRECTIONAL FINISHES AND MUST BE INSTALLED IN THE SAME DIRECTION FOR CONSISTENT COLOR.

DETAILS SHOWN ARE IN A RAINSCREEN APPLICATION ON EXTERIOR GWB SHEATHING WITH COMMERCIAL TYVEK (OR SIMILAR). OTHER SUBSTRATES ARE ACCEPTABLE SUCH AS HAT CHANNELS WITH RIGID INSULATION OUTBOARD OF SHEATHING.

PANEL RIVETS CAN BE COLOR MATCHED.



alfrex

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GENERIC RAINSCREEN SYSTEM APPLICATION

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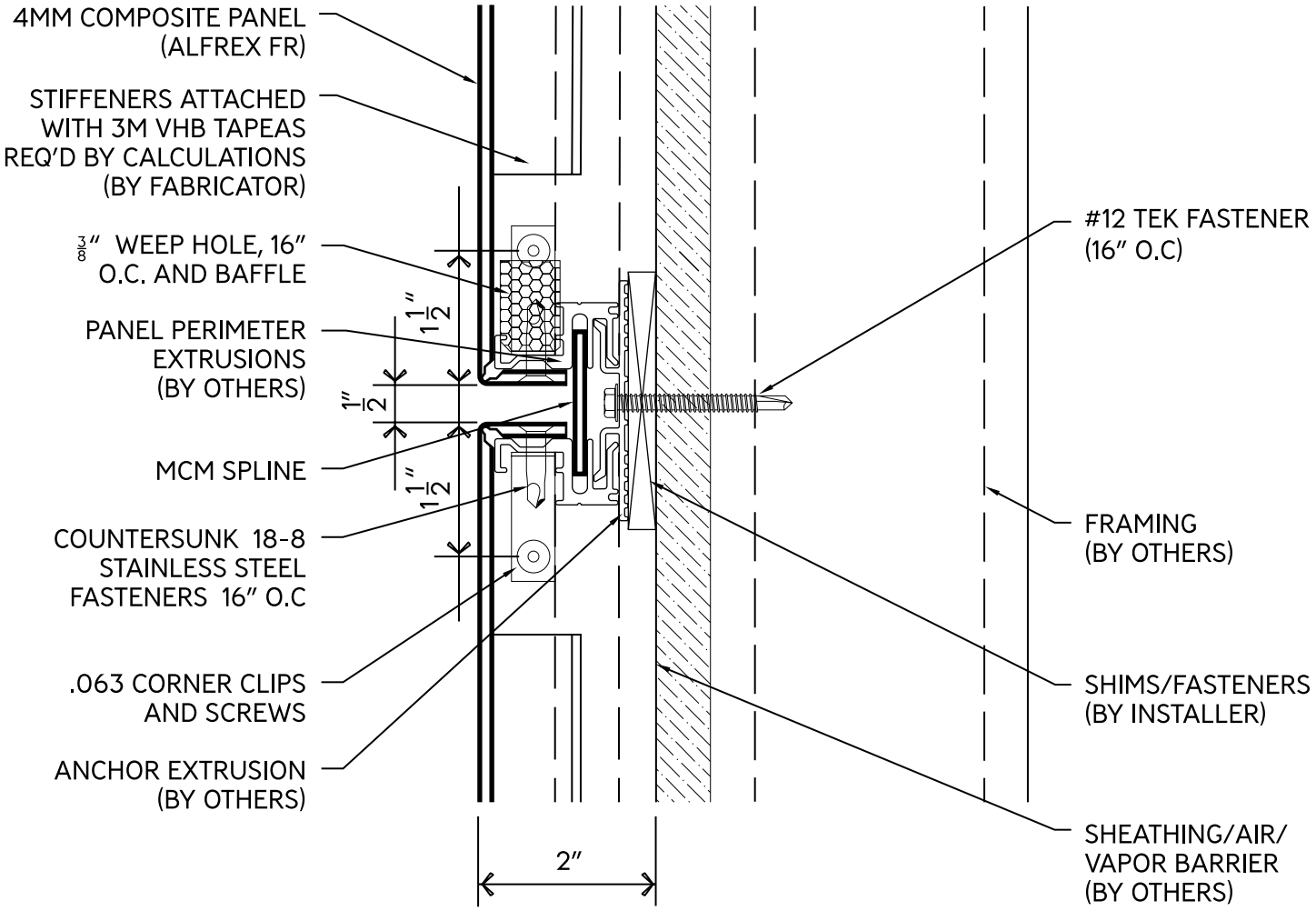

1/AL HORIZONTAL JOINT

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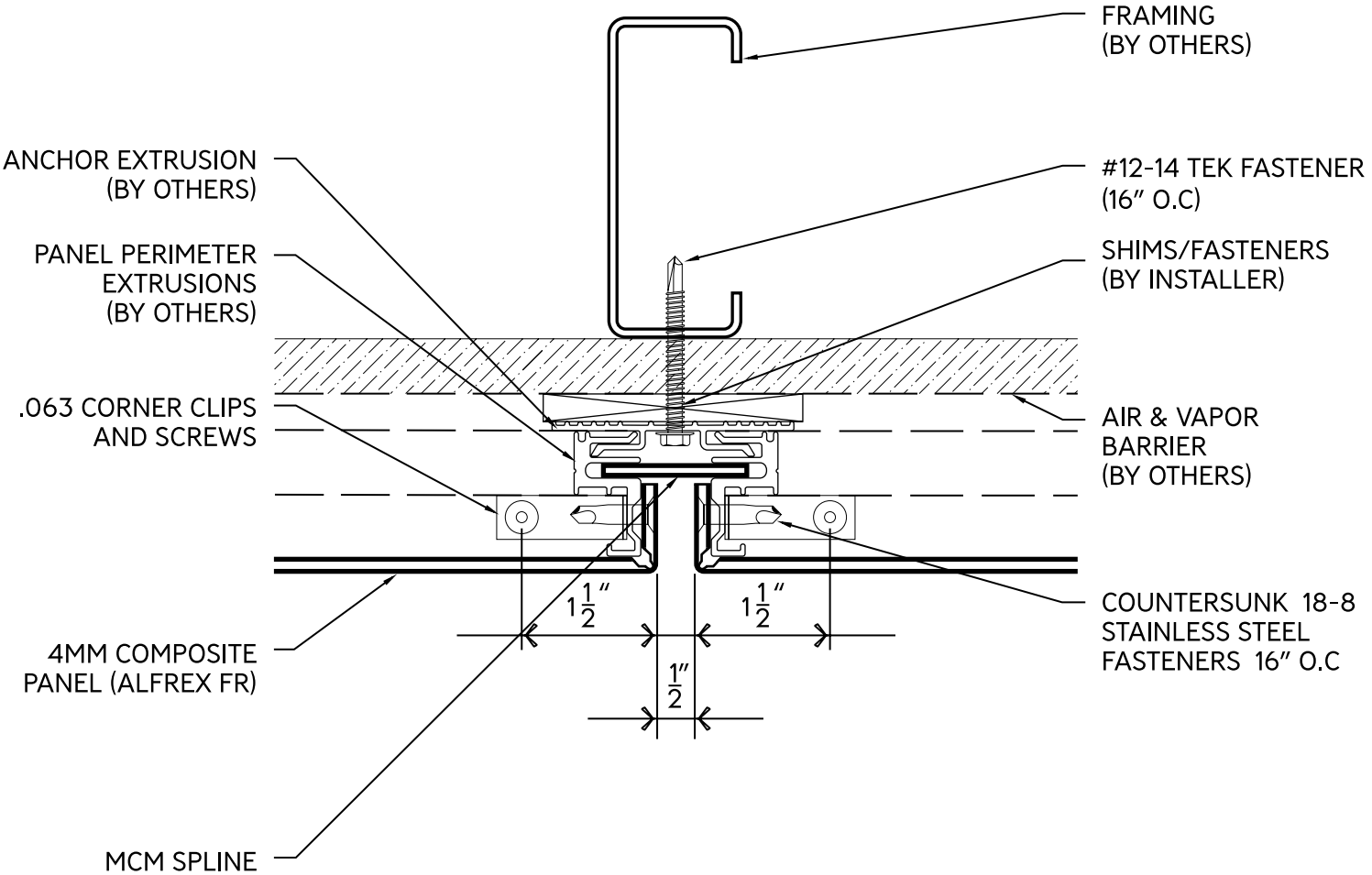

2/AL VERTICAL JOINT

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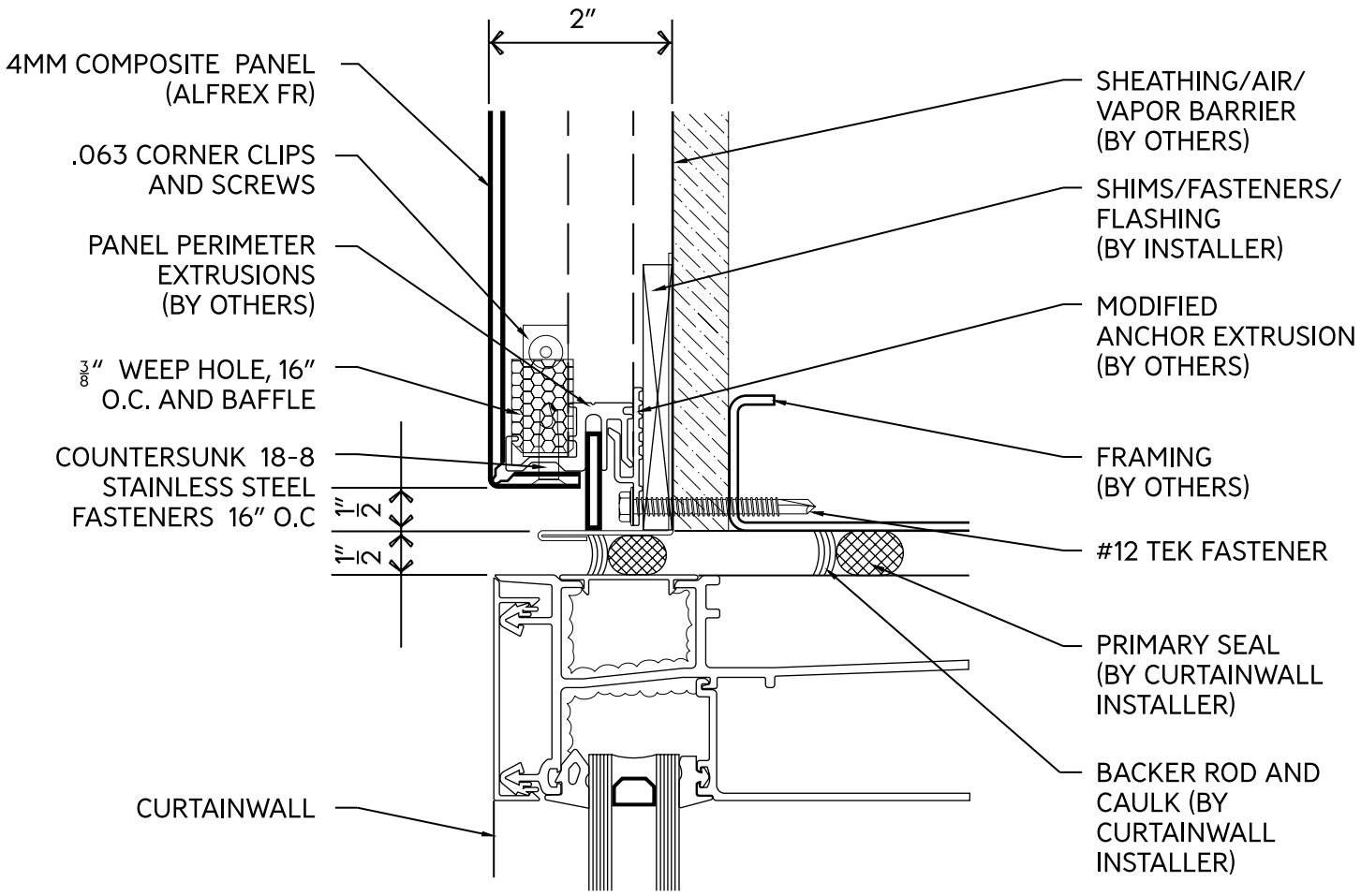

3/AL HEAD

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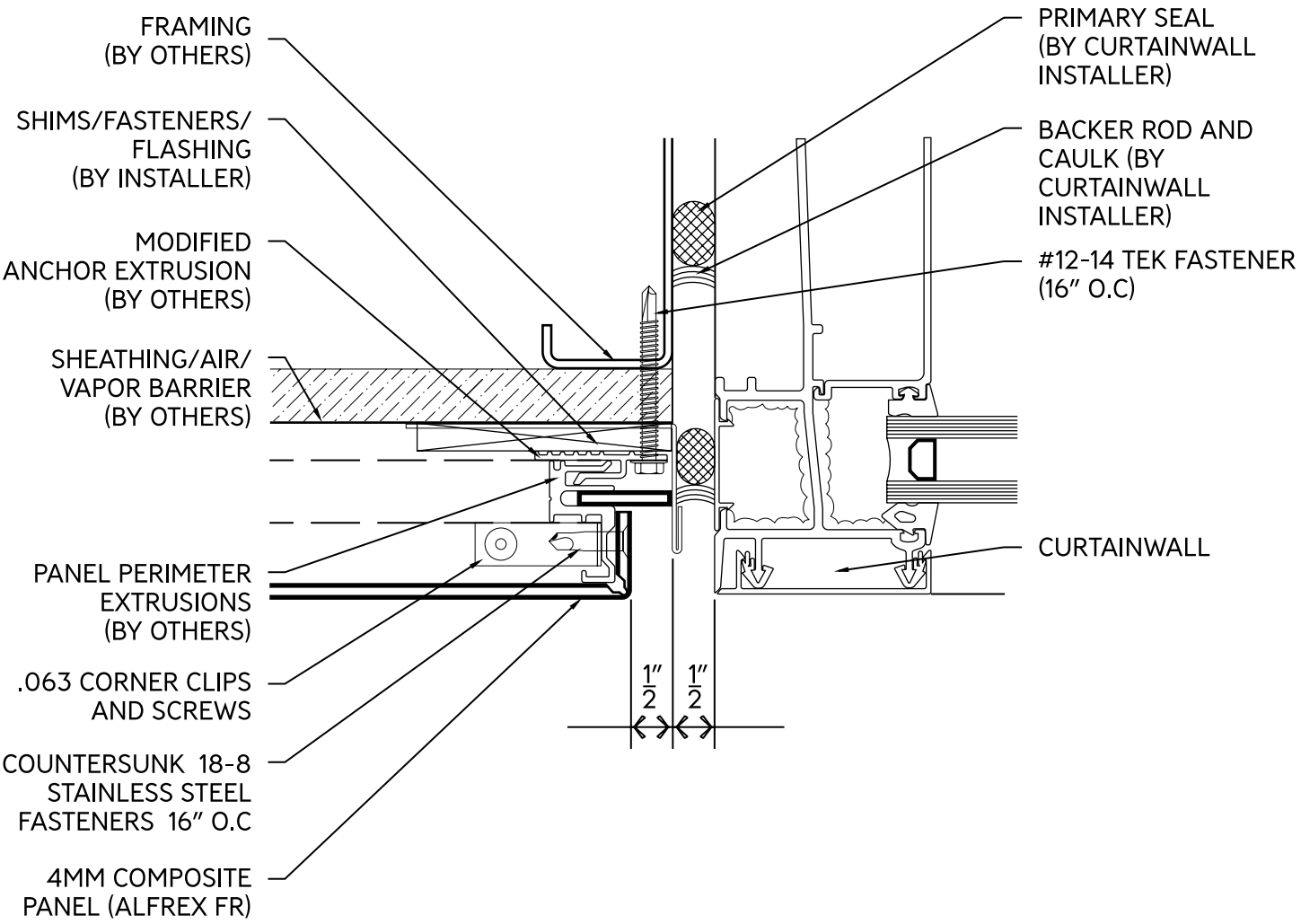

4/AL JAMB

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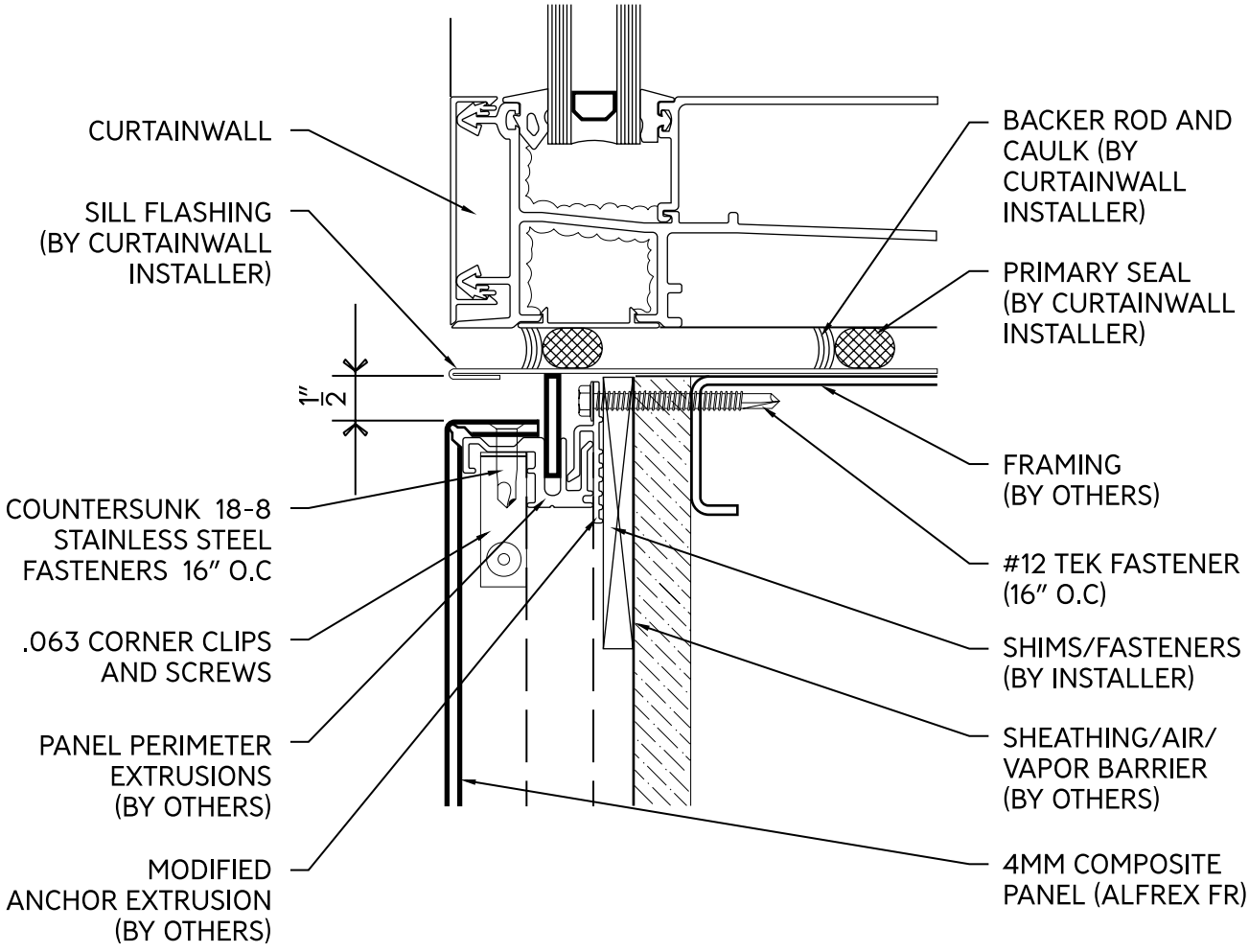

5/AL SILL

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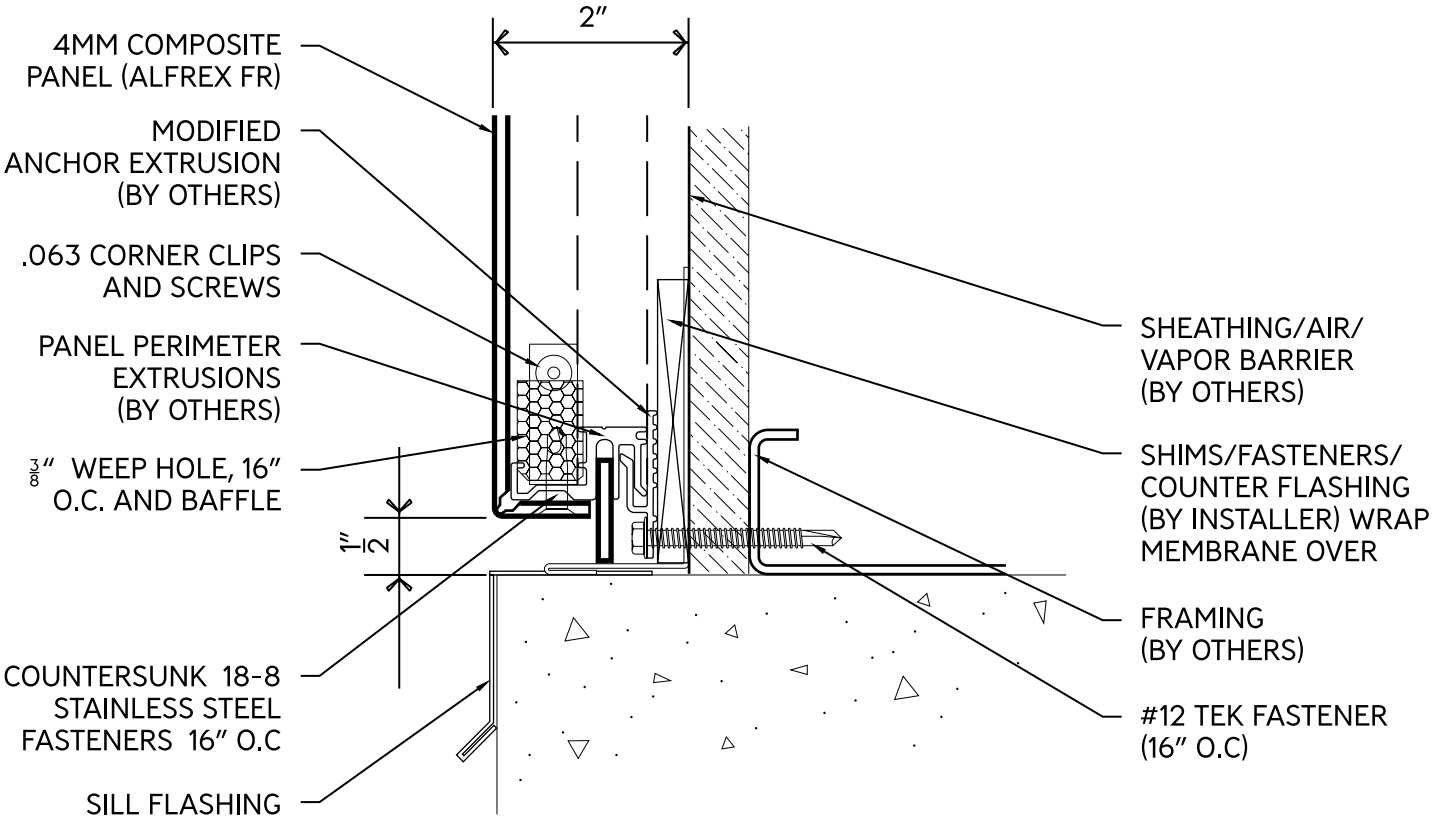

6/AL BASE CONDITION

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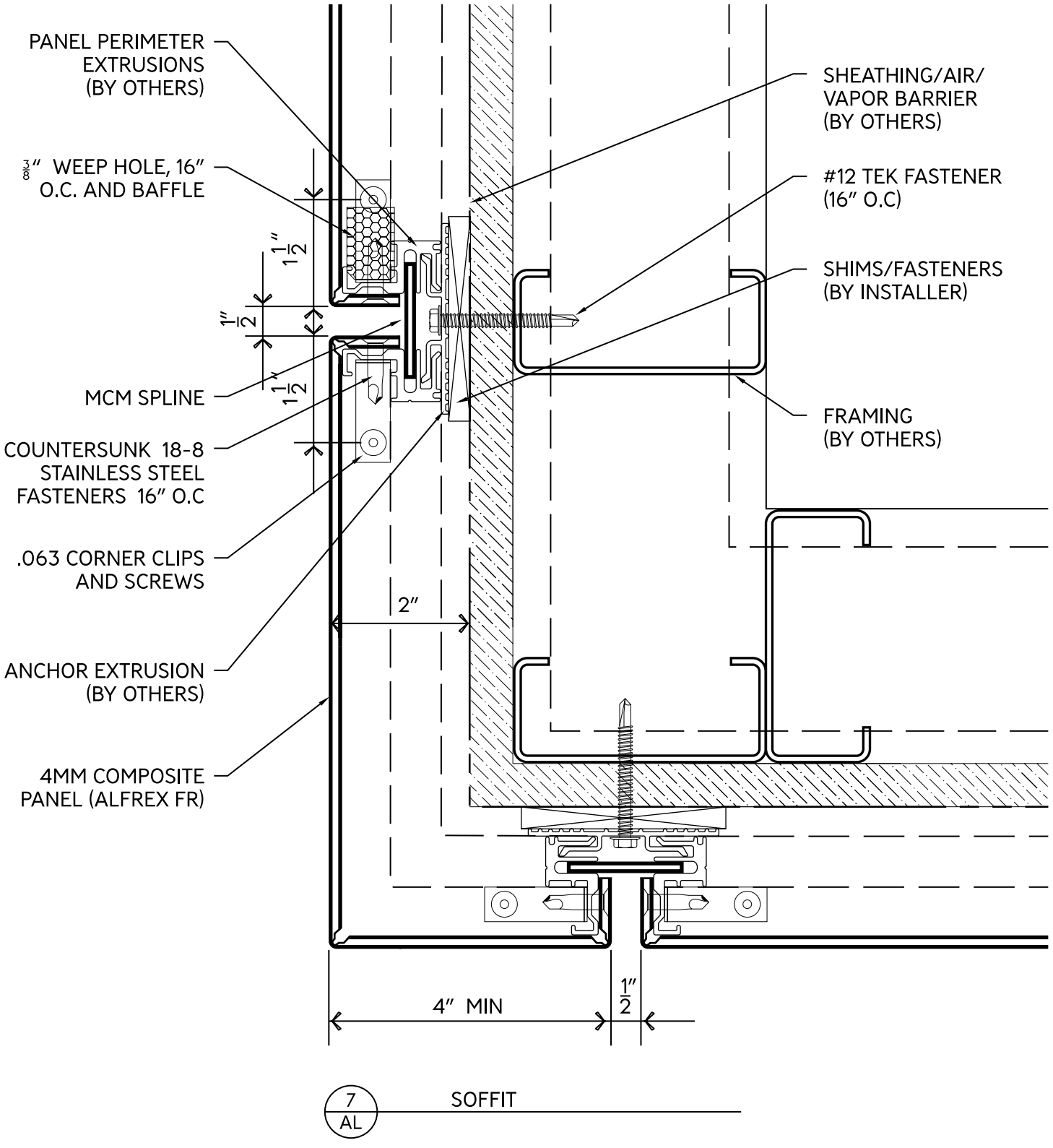

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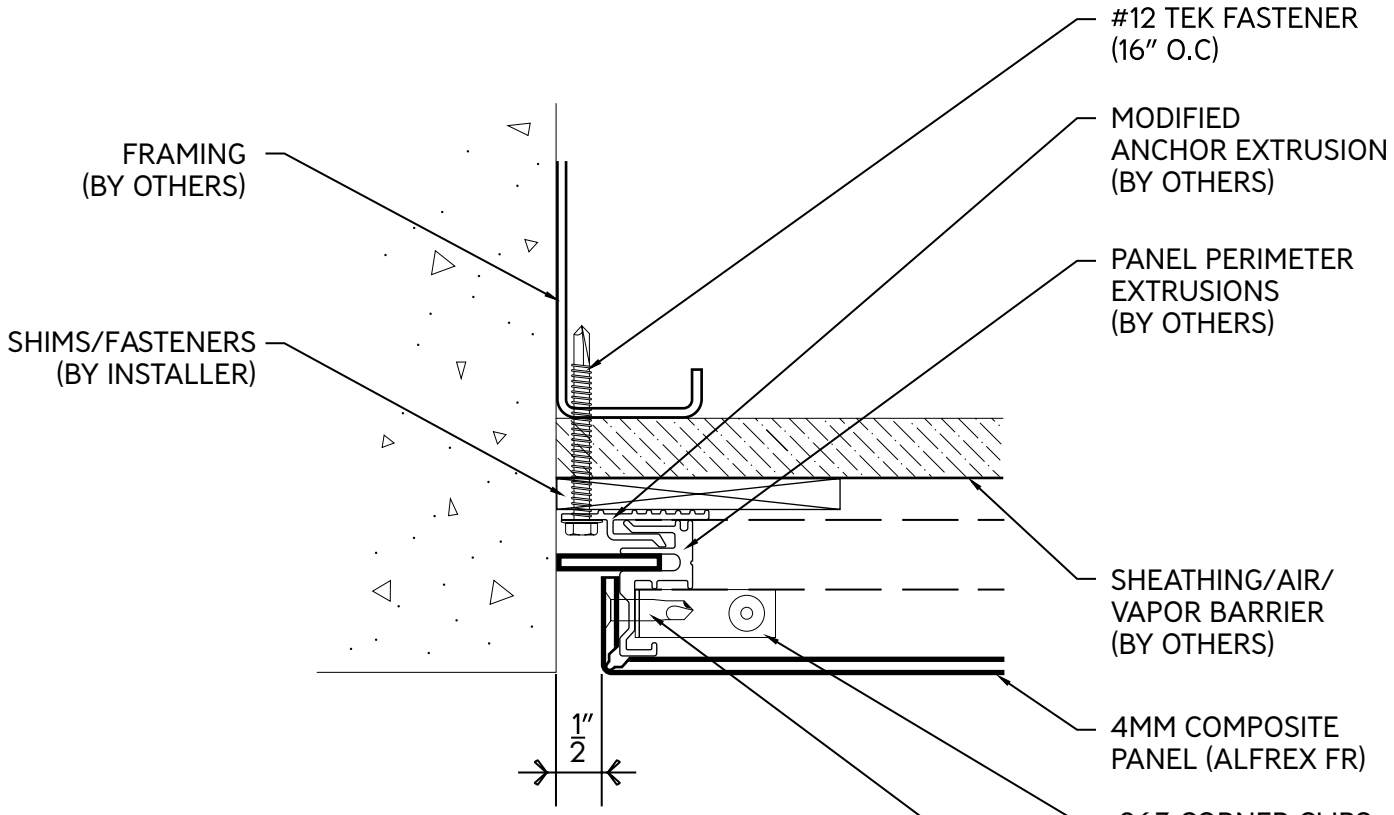

8/AL TERMINATION

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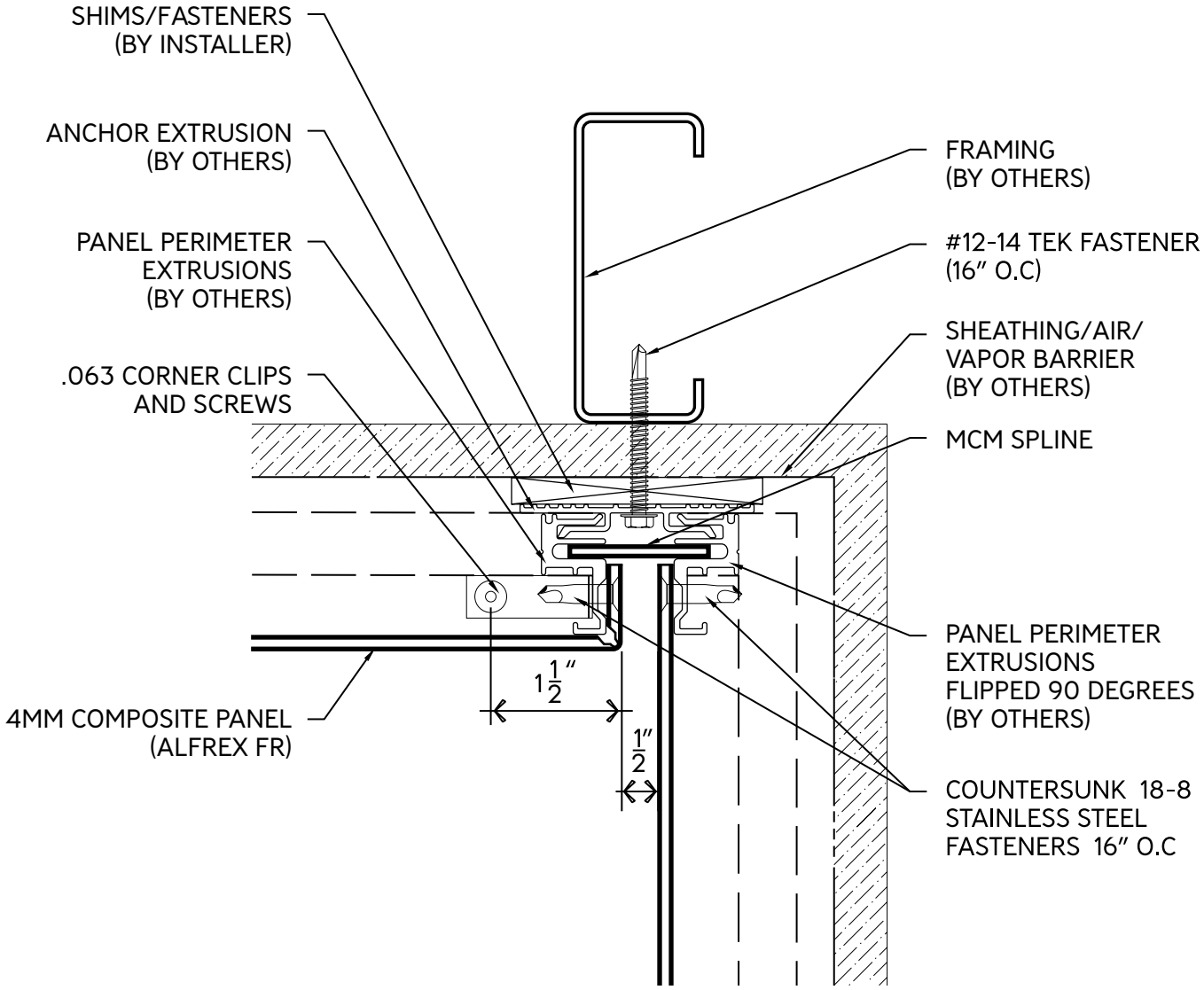

9/AL INSIDE CORNER

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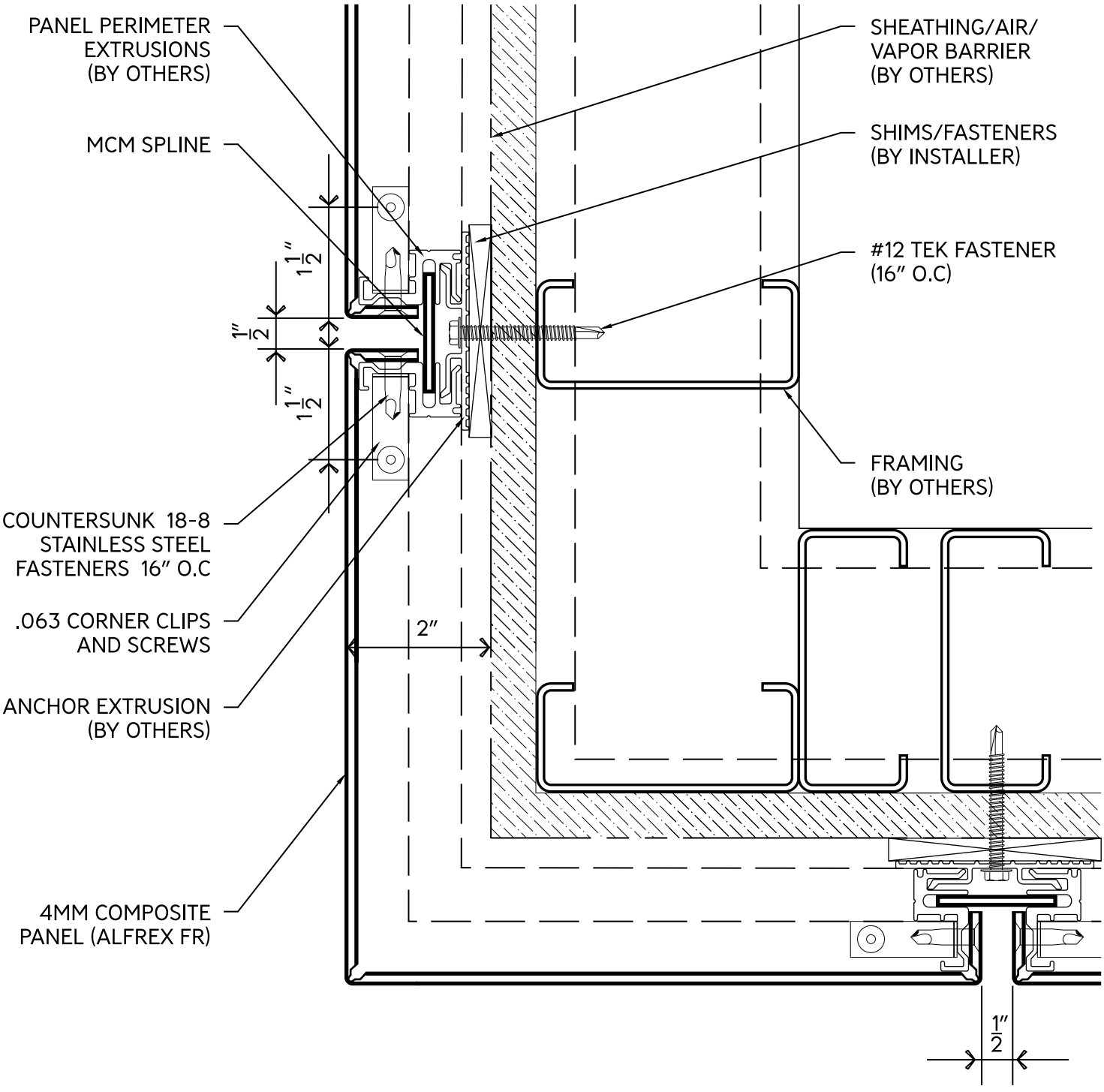

10/AL OUTSIDE CORNER

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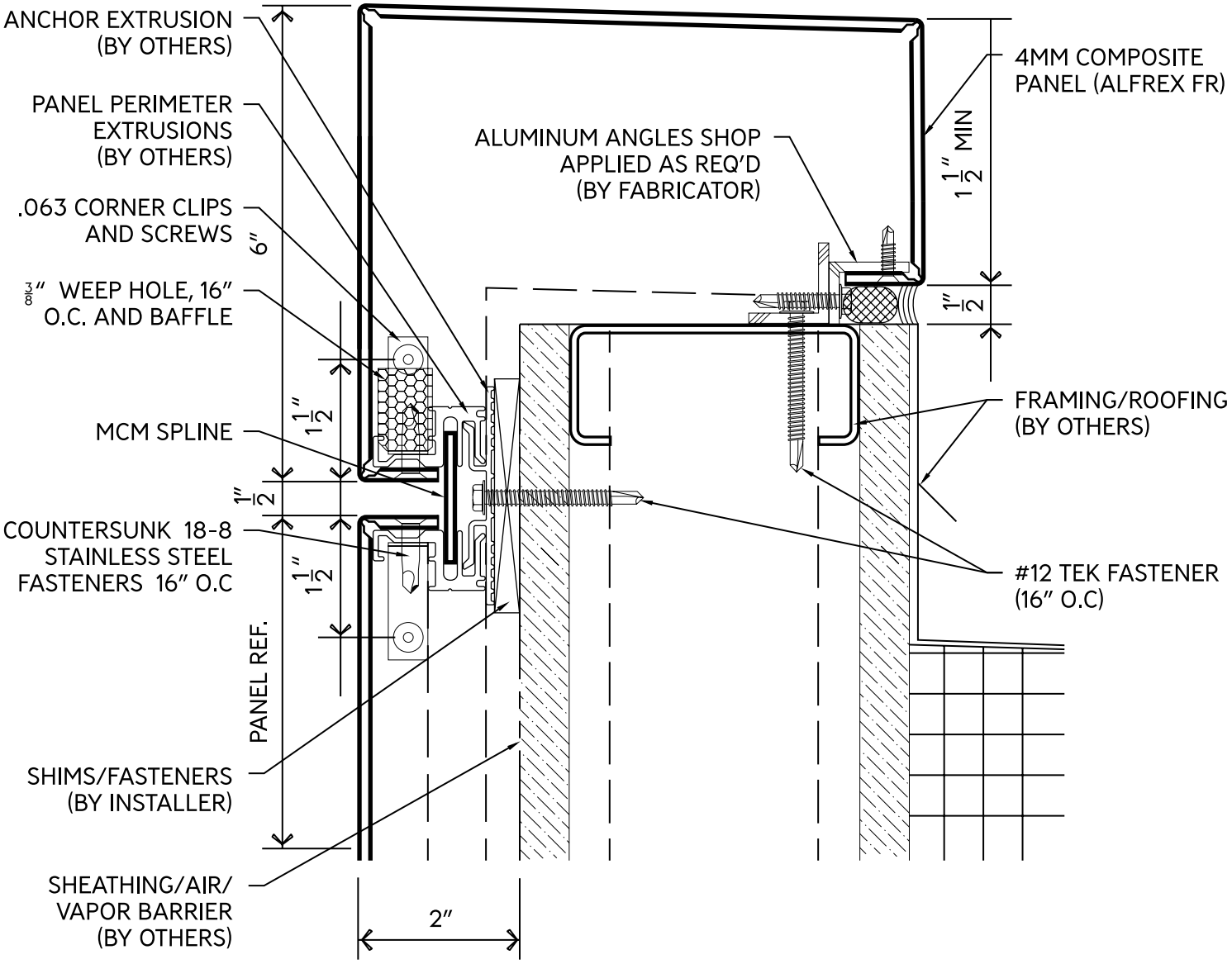

11/AL PARAPET OPTION 2

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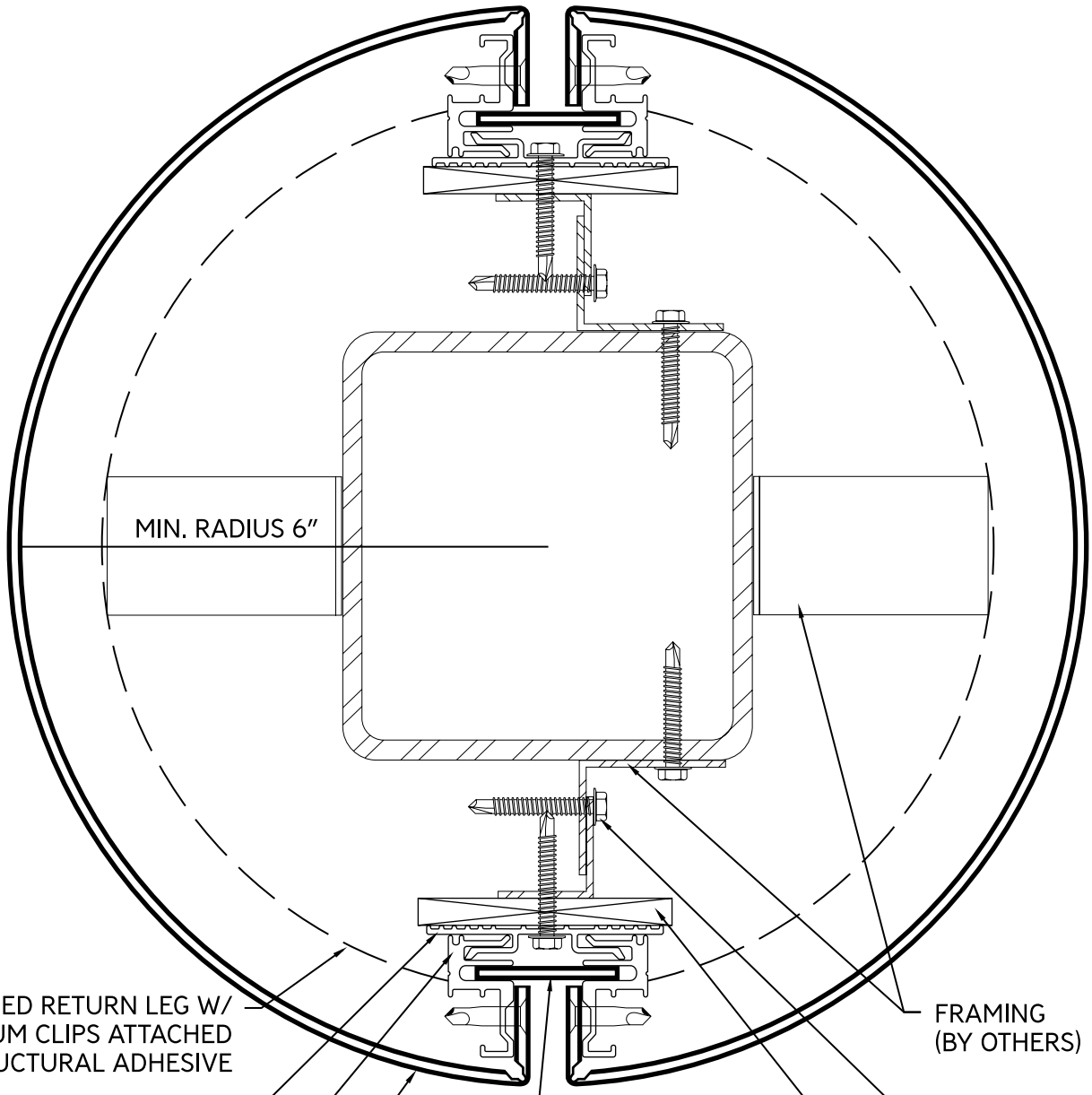

12/AL ROUND COLUMN COVER

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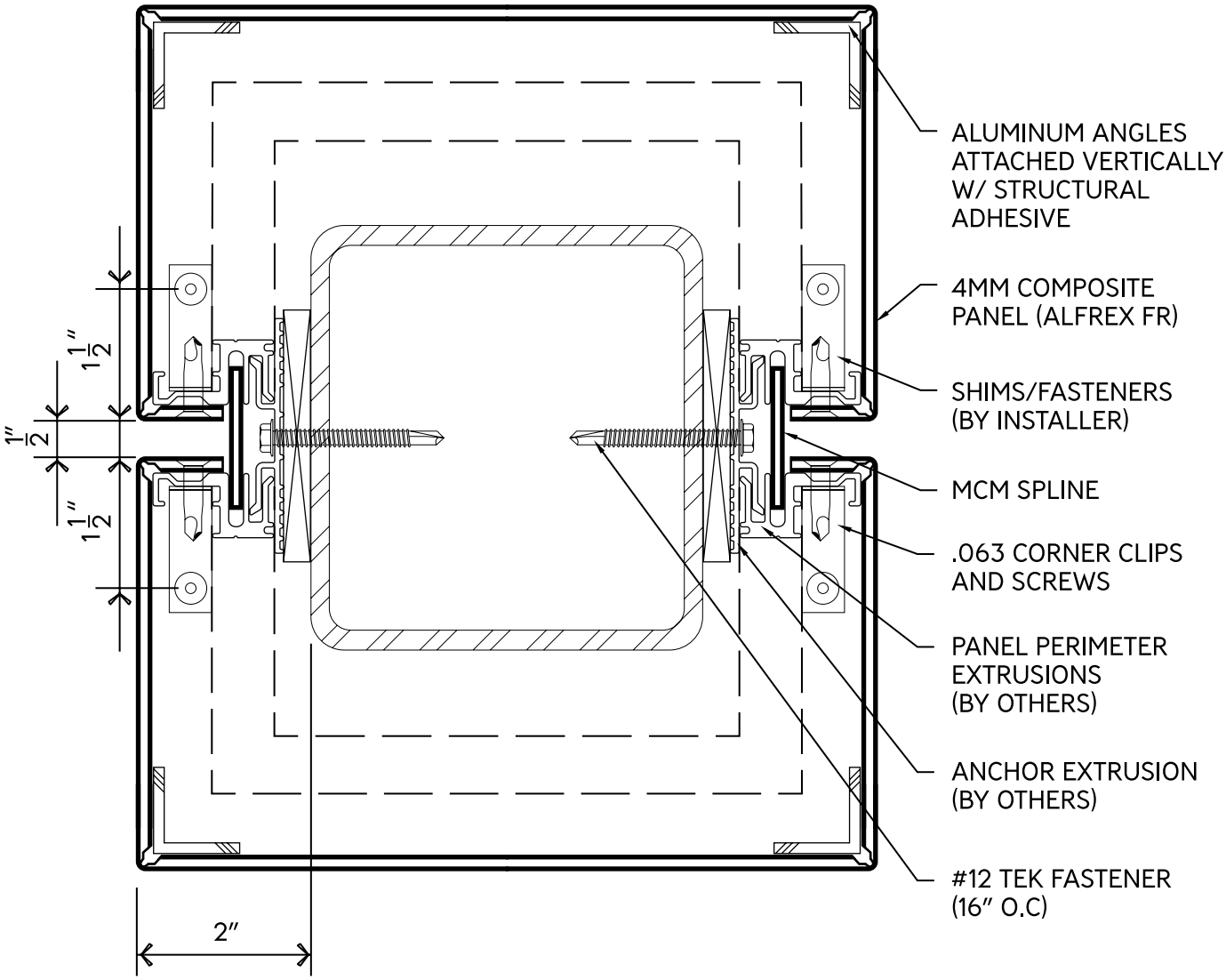
GENERIC RAINSCREEN SYSTEM APPLICATION



13 AL — SQUARE COLUMN COVER

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GENERIC RAINSCREEN SYSTEM APPLICATION

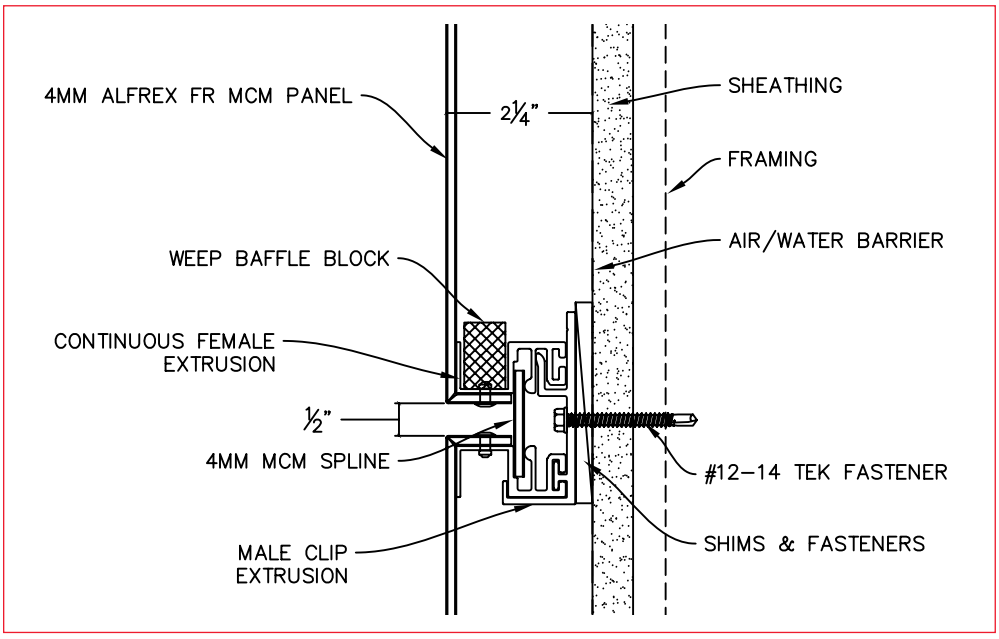
ACCU-TRAC® ATTACHMENT SYSTEMS TYPICAL DETAILS

DS Rainscreen

Fire Resistant & Non-Combustible Cladding

ACCU-TRAC® DS

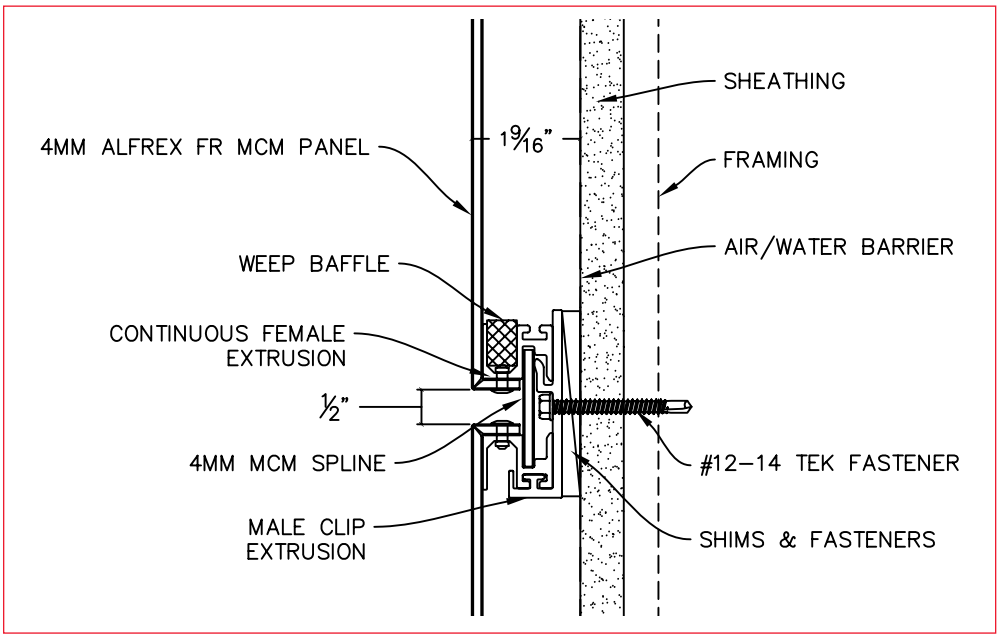
Pressure Equalized Rainscreen System



FULL DETAILS

ACCU-TRAC® LOW PROFILE DS

Back Ventilated Rainscreen System



FULL DETAILS

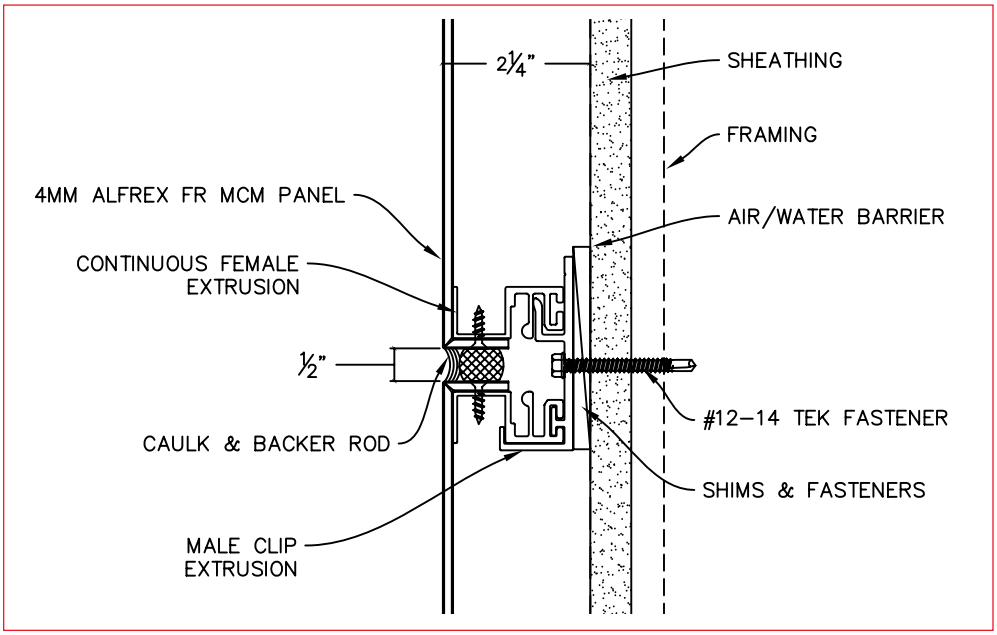
ACCU-TRAC® ATTACHMENT SYSTEMS TYPICAL DETAILS

ES Wet Seal System

Fire Resistant & Non-Combustible Cladding

ACCU-TRAC® ES

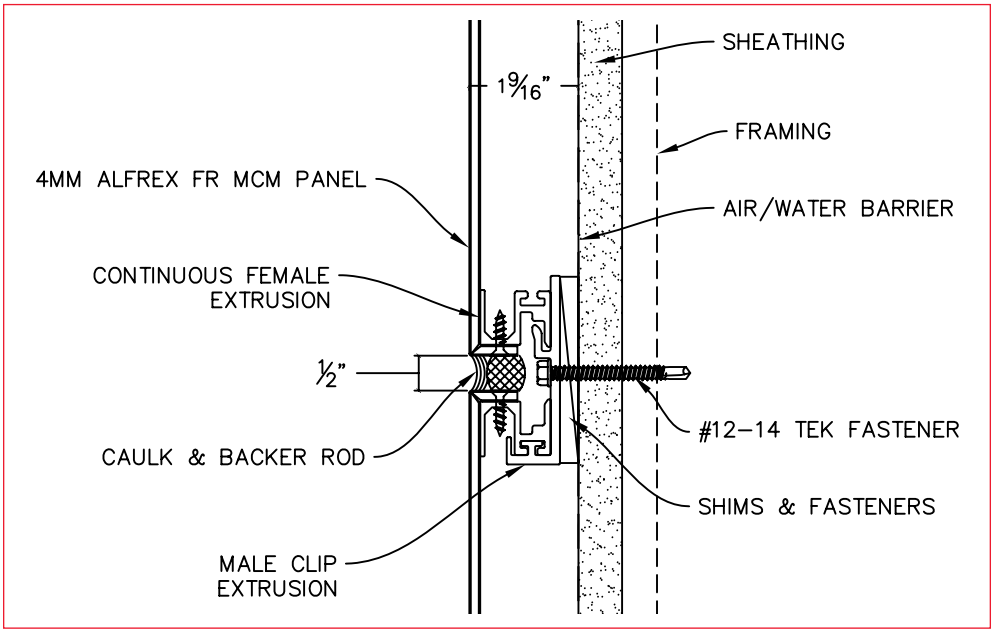
Route & Return Exposed Sealant System



FULL DETAILS

ACCU-TRAC® LOW PROFILE ES

Low Profile Route & Return Exposed Sealant System



FULL DETAILS

ALFREX FR MCM SUPPORT DOCUMENTATION

CLEANING AND MAINTENANCE RECOMMENDATIONS

Alfrex Products

Fire Resistant & Non-Combustible Cladding

Alfrex, Inc. (Alfrex) Alfrex FR aluminum composite and Alfrex Plate panels are manufactured utilizing aluminum coils painted on continuous process coil coating lines. The high-quality architectural coatings used contain combinations of UV resistant resins, organic pigments, inorganic pigments, and protective clear coats engineered for long term exterior exposure in the elements and minimal maintenance.

Alfrex recommends that panels be cleaned on a regular basis in order to maintain their aesthetic appearance and to prevent the accumulation of dirt and particulate present in the local environment. The frequency and degree of cleaning is dependent upon several factor including the building location, proximity to bodies of fresh water or the ocean, local climate, pollution levels, proximity to heavy industry, and overall air quality. A general practice is to clean panels at the same time a building's windows are cleaned.

General Recommendations

- Always avoid the use of abrasive materials that pose a potential to scratch or degrade the painted surface of panels including, but not limited to, steel wool, wire brushes, metal scrapers, abrasive sponges, powder abrasives, and chemical abrasives.
- Commence cleaning at the bottom of building walls and progress upwards, working in the opposite direction of window cleaning, which traditionally progresses from top to bottom.
- To avoid streaking, cleaning should be done either on a cloudy day, or when areas of the building to be cleaned are shaded from direct sunlight.
- Regardless of the cleaning method used, the methods and materials should be first tested on either a product sample, or on a small, inconspicuous section of the building.
- Always start with a freshwater rinse and progress to the other cleaning methods from mildest to strongest as needed.
- It is recommended that more frequent cleaning intervals utilizing freshwater and mild detergents be employed as opposed to less frequent intervals which may require the use of harsher chemicals, solvents, and mild abrasive methods.
- NEVER use Acetone or Paint Removers on any painted product surface.
- Utilize personal protection equipment and proper safety precautions when handling solvents and other chemical agents to prevent chemical irritation or burns to the eyes, skin, or lungs.
- Follow closely cleaning product or chemical manufacturer recommendations regarding the mixing of certain chemicals in order to avoid the production of toxic gases or explosive chemical reactions.
- Only apply cleaning solutions, chemicals, or solvent solutions in conditions where panels can be rinsed with freshwater before the cleaning solution can dry. NEVER allow cleaning solutions to dry on the panels.

Freshwater Rinse

- Frequent freshwater rinsing of panel surfaces is ideal for the removal of water-soluble dirt, residues, and other organic material deposits. Mechanical pressure washers should not be used as this may damage panels, coated surfaces, or components critical for the function of the panel assembly.
- Annual freshwater rinses may be mandatory as stipulated in finish warranties under certain environmental conditions, such as proximity to salt-water and ocean mist. Please consult warranties for specific details.
- If surface contaminants or stains persist after freshwater rinsing, then the utilization of mild detergents is recommended.

Mild Detergent Cleaning

- For more persistent areas requiring deeper cleaning, Alfrex recommends that a 5% mild detergent solution diluted with freshwater be used and applied directly to the area using non-abrasive cloth, sponges, or soft bristle brushes.
- Mild detergents may be classified as those used in residential applications, commonly under popular brand names, which do not pose risks of irritation when coming in direct contact with exposed skin.

Intense Cleaning

- More intense cleaning methods may be required when mild detergent solutions are not successful in the removal of stubborn stains, or areas where non water-soluble contaminants such as paint, oils, tar, dirt, graffiti, silicone, or other sealing compounds are present.
- Alfrex recommends that a solution of Mirachem® 500 diluted to a 10% to 30% concentration be used before other common solvents or chemicals. Follow the manufacturer guidelines as well as the same processes detailed above in the general recommendations, always followed by a freshwater rinse.
- Solvents that may be used include alcohol solvents (ethanol, isopropyl alcohol, methanol), petroleum solvents (Turpentine, mineral spirits), aromatic solvents (xylene, toluene), ketones (MEK, MIBK), and esters (ethyl acetate, lacquer thinner). NEVER use acetones or paint removers.

STORAGE AND HANDLING RECOMMENDATIONS

Alfrex FR MCM - Alfrex Plate - Alfrex 0.040" Matching Flat Sheet

Fire Resistant & Non-Combustible Cladding

- Alfrex FR MCM, Alfrex Plate, and Alfrex 0.040" Matching Flat Sheet are cut to length and packaged in cushioned, reinforced pallets (skids) to prevent excessive sagging of the skid when lifting and moving via fork trucks.

- Pallets of Alfrex product should always be stored horizontally on flat surfaces that prevent sagging or shifting. Do not stack skids of MCM or Plate product higher than six skids high. Care should be taken not to stack multiple skids of heavier material on top of pallets containing only 0.040" flat sheet.

- Storage should be in a cool, dry area with stable temperatures to prevent formation of condensation. Sheets should not be stored where they can be exposed to moisture which may cause permanent surface damage. Situations where sheets may be subjected to standing water conditions should be avoided.

- Care should be taken when handling individual sheets during sheet fabrication. When lifted from each end, individual sheets will sag in the center as they are moved. Sagging should be minimized by having additional support in the center. Care must be taken to lift sheets high enough so that the sagging center sheet edge does not damage the surface of the sheet directly underneath as it is moved.

- Sheets of Alfrex product may be temporarily staged in "A-frame" racks commonly used with MCM and Plate sheets. It is not recommended that Alfrex product be transferred to other pallets not-supplied by Alfrex as they may sag excessively - inducing permanent set in the solid aluminum plate sheets which will manifest in sheet bowing when placed on CNC tables.

POST-PAINTING RECOMMENDATIONS

Alfrex FR Metal Composite Material

Fire Resistant & Non-Combustible Cladding

Alfrex FR MCM is a coil coated metal wall cladding panel top side coated with a 70% pvdf / kynar resin finish. For situations requiring smaller quantities of a custom color, post-painting may be the only economically viable option. Post-painting should only be done by experience applicators with experience in proper preparation of architectural wall panels and application of coating systems for exterior applications

General Recommendations

- It is important to confirm with Alfrex in advance if panels are to be post-painted and properly identify the type of coatings present. The backside of Alfrex FR is typically coated with an epoxy finish suitable for post-painting. However, some finished goods may have a kynar resin finish present on each side out of design, or they may have been manufactured using remnant coils of various colors - a common practice.
- Before painting, it is highly recommended that spot testing be done on small sample panel, or in a small inconspicuous area to confirm if the preparation procedures and paint application achieve the desired color and adhesion levels required for long term exterior exposure.
- Surfaces must be properly prepared before post-painting and should be degreased, clean, dry, and free of dust, dirt, oils, or any other surface contaminants.
- Surfaces must be lightly abraded utilizing fine grade sandpaper or similar products. Special care must be taken to abrade the surface uniformly across the entire panel substrate without significantly decreasing its dry film thickness. Sanding should never expose aluminum.
- After abrasion, the panel surface should be thoroughly wiped clean to remove dust and other surface contaminants. Utilize soft cloth and epoxy resin compatible, solven based cleaners.
- Though the abraded epoxy primer can serve as a post-paint primer, it is recommended that the panel surface be primer coated again. For sanded kynar resin finishes, compatible primers must be used to ensure proper prime coat finish adhesion. This is especially important for exterior applications where longer term UV performance, film integrity, and coating warranties extended by the post-painter are required.
- Both air-dry and baked on finishes should be spray applied by a professional finish applicator.
- It is recommended that the finish applicator be informed in advance of material, process, and compatibility concerns.
- Alfrex FR MCM may be coated with air-dry finishes. Heat may be used to assist in the curing process but should not exceed temperatures of 140 °F (60 °C).

Exclusions

1. For any post-painted Alfrex MCM product, all finish warranties for the top side coating are null and void. All other warranties, representations or guarantees, express or implied, written or oral, by operation of law or otherwise, including without limitation, the implied warranties of merchantability and fitness for a particular purpose are excluded.
2. Alfrex does not offer finish warranties for post-painted finishes. All warranties must be provided by the finish applicator directly to the warantee.
3. All sales of Alfrex products are subject to its General Terms and Conditions which may be found at www.alfrexusa.com in the downloads section.

EPOXY COATING PROPERTIES	
PROPERTY	RESULT
Color	Light Gray
Particle Size	Max 25µm
Gloss at 60 °	30 ± 5
Viscosity (sec)	100 ± 20 (F.C#4/25°C)
Density	1.3 ± 0.05
NVM (%)	62 ± 3
MEK Rubbing	Min 50
Flexibility	2T
Pencil Hardness	2H
Acid Resistance	No Blisters
Alkali Resistance	No Blisters
Boiling Water Resistance	No Blisters
S.S.T 200hrs	Plain Surface : No Blisters
	Cross Hatch Surface : Max 2mm

TOUCH UP PAINT RECOMMENDATIONS

Alfrex Products

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For minor applications of touch up paint to coil coated Alfrex metal wall cladding products, it is recommended that one use a high-quality, air-dry pvdf / kynar resin product. Crosslink Paints in Dallas, Texas is a quality manufacturer of touch up paint well known in the metal wall panel and roofing industry. Their touch up paint products, color matching capabilities, and contact information may be found below. Crosslink Paints should be contacted directly for purchase of their products.

TOUCH UP PAINT PRODUCTS

- Touch Up Pens
- Liquid Bottle & Brush
- Aerosol Spray Can
- Paint Cans

COLOR MATCH CAPABILITIES

- RAL Standard Colors
- PPG Duranar (kynar, PvDF)
- PPG Coraflon (FEVE)
- Sherwin Williams Fluropon®
- Akzo Nobel
- Custom Matches

Company Contact Information

Crosslink Paints
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