





SCOPE OF WORK:

- REMOVAL OF EXISTING PRECAST CONCRETE ROOF PANELS AND REPLACEMENT WITH WOOD
- REPLACEMENT OF EXISTING OVERHEAD DOORS WITH MASONRY WALLS ON BOTH THE EAST AND
- INTERIOR ALTERATIONS, INCLUDING CONSTRUCTION OF A NEW ADA-COMPLIANT BATHROOM, POS AREA, NEW FLOORING, AND A NEW OFFICE.

INTERIOR WALL AND CEILING FINISH MATERIALS SHALL BE CLASSIFIED IN ACCORDANCE WITH ASTM E 84 OR UL 723. THEIR FLAME SPREAD AND SMOKE-DEVELOPED INDEXES SHALL BE: CLASS A: FLAME SPREAD INDEX 0-25: SMOKE-DEVELOPED INDEX 0-450 CLASS B: FLAME SPREAD INDEX 26-75 SMOKE-DEVELOPED INDEX 0-450 CLASS C: FLAME SPREAD INDEX 76-200 SMOKE-DEVELOPED INDEX 0-450 INTERIOR WALL AND CEILING FINISHES SHALL COMPLY WITH TABLE 803.9 WITH A MINIMUM RATING OF CLASS C. INTERIOR FLOOR FINISH AND FLOOR COVERING MATERIALS SHALL COMPLY

WITH THE DOC FF-1 "PILL TEST". CONTRACTOR IS RESPONSIBLE TO CHECK AND VERIFY IN THE FIELD ALL SIZES AND DIMENSIONS INVOLVING THE EXISTING STRUCTURE AND COORDINATE WITH NEW CONSTRUCTION THE CONTRACTOR SHALL PROVIDE ALL PERMITS AND INSPECTION NECESSARY FOR THE PROPER EXECUTION OF THE WORK IN ACCORDANCE WITH APPLICABLE CODES AND GOVERNING

THE WORK SHALL BE CONSTRUCTED IN FULL COMPLIANCE WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS AS WELL AS THE DRAWINGS AND SPECIFICATIONS. ANY CODE DEFICIENCIES IN THE DRAWINGS RECOGNIZED BY THE CONTRACTOR SHOULD BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION. THE CONTRACTOR SHALL VERIFY THE SIZES AND LOCATIONS OF ALL MECHANICAL AND ELECTRICAL EQUIPMENT PADS AND BASES, AS WELL AS POWER, WATER AND DRAIN REQUIREMENTS FOR SUCH EQUIPMENT WITH EQUIPMENT MFG. DEVIATION OF THE AFOREMENTIONED REQUIREMENTS SHOULD BE BROUGHT TO THE ATTENTION OF THE

ARCHITECT FOR CLARIFICATION. ALL WALL WIDTHS ARE SHOWN AND DIMENSIONED WITH NOMINAL DIMENSIONS. (I.E. 8" CMU= 7 5/8"). DIMENSIONS FOR FRAMED WALLS ARE SHOWN TO FACE OF STUDS AND/OR FACE OF

FIRE EXTINGUISHERS WITH A MINIMUM 2-A RATING PER NFPA 10 SHALL BE PROVIDED, INSTALLED AND MAINTAINED AS REQUIRED BY LOCAL GOVERNING CODES. THE NUMBER AND TYPE OF EXTINGUISHER SHALL BE DETERMINED BY THE LOCAL FIRE DEPARTMENT AND THE LANDLORD'S INSURANCE CARRIER. MAXIMUM TRAVEL DISTANCE TO EXTINGUISHERS SHALL BE 75 FEET. FIRE EXTINGUISHERS SHALL BE FURNISHED AND INSTALLED BY THE GENERAL

UNLESS OTHERWISE NOTED OR SHOWN, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE LOCATION AND PLACEMENT OF ANY INSERTS, HANGERS, ANCHOR BOLTS, HOLES OR PIPE SLEEVES THAT ARE REQUIRED BY THE MECHANICAL, ELECTRICAL OR

ALL DIMENSIONS ON STRUCTURAL DRAWINGS ARE TO BE CHECKED BY THE CONTRACTORS AGAINST ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. CONTRACTORS SHALL BE FULLY RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL DIMENSIONS ON THE JOB SITE AND BETWEEN INDIVIDUAL DRAWINGS AND RESPECTIVE TRADES. THIS PROJECT IS BEING DESIGNED AND CONSTRUCTED UTILIZING A DESIGN / BUILD DELIVERY PROCESS FOR THE MAJOR SUBCONTRACTOR TRADES OF

MECHANICAL (HVAC), ELECTRICAL, PLUMBING AND FIRE PROTECTION SYSTEMS. EACH SUBCONTRACTOR IS RESPONSIBLE TO SUBMIT PLANS AND OBTAIN PERMITS FOR THEIR RESPECTIVE SPECIALTY TRADES. GENERAL CONTRACTOR AND SUBCONTRACTORS SHALL COORDINATE ALL WORK WITHIN THE SCOPE OF THIS PROJECT FOR SYSTEMS INSTALLATION, INTERFERENCE CONTROL AND

DRAWINGS ARE NOT TO BE USED FOR SHOP DETAILING OR FOR CONSTRUCTION UNLESS SPECIFICALLY STAMPED BY THE ARCHITECT / ENGINEER ON THE DRAWINGS "FOR DETAILING" OR "FOR CONSTRUCTION". THESE DRAWINGS ARE NOT TO BE REPRODUCED FOR THE PURPOSE OF USING THEM AS SHOP DRAWINGS UNLESS OTHERWISE NOTED OR SHOWN, THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE

FOR COORDINATING THE LOCATION AND PLACEMENT OF ANY INSERTS, HANGERS, ANCHOR BOLTS, HOLES OR PIPE SLEEVES THAT ARE REQUIRED BY THE MECHANICAL, ELECTRICAL OR PLUMBING EQUIPMENT.

ALL WORK TO BE IN ACCORDANCE WITH SPS 361.05., ANSI A117.1 AND CITY OF MILWAUKEE ORDINANCES CH 290 & CH 295

CODE INFORMATION:

REFERENCED CODES ARE: IBC 2015; IEBC 2015; ICC/ANSI A117.1-2003 OCCUPANCY CLASSIFICATION:

PROJECT CONSTRUCTION SCHEDULE.

TYPE OF CONSTRUCTION:

PROVIDED 16 FEET

TYPE IIIB (CHAPTER 6); MASONRY BRICK EXTERIOR WITH PERMITTED INTERIOR WALLS

CLASSIFICATION OF WORK

INTERIOR AND EXTERIOR ALTERATION LEVEL 3 AND 2

ACTUAL BUILDING FLOOR AREA: GRADE LEVEL NEW FLOOR AREA = 1720 SQ.FT. BUILDING IS NOT EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM (NFPA 13) ALLOWABLE HEIGHT AND BUILDING AREA (TABLE 503): 55 FEET OCCUPANCY GROUP M, 1 STORY. FLOOR AREA PER STORY, BUILDING HEIGHT

FIRE-RESISTANCE RATING REQUIREMENTS (TABLE 601 & 602). PRIMARY STRUCTURAL FRAME 0 HOUR RATING BEARING WALLS (EXTERIOR) 2 HOUR RATING BEARING WALLS (INTERIOR) 0 HOUR RATING NONBEARING WALLS & PARTITIONS (EXTERIOR) FIRE SEPARATION DISTANCE 0-5 FT 2 HOUR RATING FIRE SEPARATION DISTANCE 5-10 FT. 1 HOUR RATING FIRE SEPARATION DISTANCE 10-30 FT. NINE FIRE SEPARATION DISTANCE > 30 FT. 0 HOUR RATING NONBEARING WALLS & PARTITIONS (INTERIOR) ~~ 0 HOUR RATING FLOOR CONSTRUCTION & SECONDARY MEMBERS 0 HOUR RATING ROOF CONSTRUCTION & SECONDARY MEMBERS 0 HOUR RATING

OCCUPANT LOAD (PROPOSED TENANT AREA OF 1720 SQ.FT): MERCANTILE AREA 1720 SQ.FT @ 60 SQ. FT PER OCCUPANCY = 29 OCCUPANTS (IBC 1004.3)

SPRINKLER SYSTEM IS NOT REQUIRED

MEANS OF EGRESS: OCCUPANCY LOAD: TABLE 1004.1.2 EXIT WIDTH REQUIRED: 29 @ 0.2 INCHES = 6") EXIT WIDTH PROVIDED: 36" + 36" = 72" INCHES

PLUMBING FIXTURE REQUIREMENTS: 51 OCCUPANTS

WATER CLOSETS REQUIRED: 1 PER 500, THEREFORE 1 REQUIRED WATER CLOSETS PROVIDED: 1 WATER CLOSET LAVATORIES: LAVATORIES REQUIRED: 1 PER 750, THEREFORE 1 REQUIRED

LAVATORIES PROVIDED: 1 LAVATORY SERVICE SINKS: SERVICE SINKS REQUIRED: 1 SINK

SERVICE SINKS PROVIDED: 1 SINK

FIRE PROTECTION CONSTRUCTION: 903.2.1.3 GROUP M OCCUPANCY. SPRINKLER SYSTEM IS NOT PROVIDED



Proposed Front Elevation 1/8" = 1'-0" Falken ACM Sign Panel Red - 1/4 inch thick 3' - 0" Falken ACM Sign Panel -Blue - 1/4 inch thick

1 3/4" SOLID CORE WOOD DOOR FLUSH PANEL 5 - PLY FACE VENEER HM FRAME

COMMERCIAL HOLLOW METAL DOORS & FRAMES 1-3/4" THICK 18 GAUGE COLD ROLLED STEEL INSULATED POLYSTYRENE CORE FIRE RATING: 1HR INSULATION U FACTOR: 0.26

4) DOORS STANDARS

EXISTING DOOR

NEW DOOR

NEW INTERIOR WALL

EXISTING INTERIOR WALL

===== DEMOLISHED INTERIOR WALL

1/2" = 1'-0"

EXIT SIGN

3 KEY 3/16" = 1'-0"

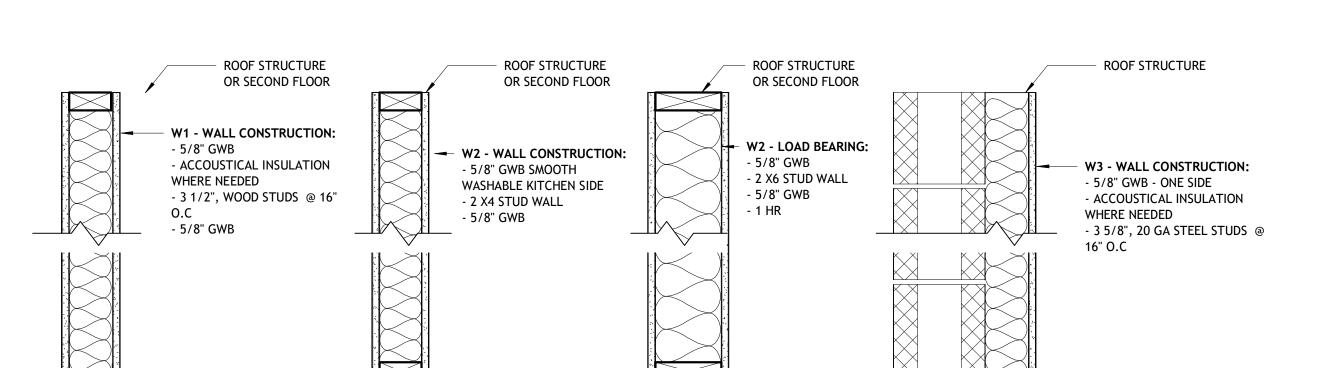
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SITE DATA: PARKING AREA: 19300 SQ.FT (APPROX.) BUILDING: 1900 SQ.FT (65' x 30') **BUILDING HEIGHT: 13'** FUEL CANOPY: 1260 SQ.FT **TOTAL PARKING SPACES: 7** 2 Site Plan TN 1" = 30'-0"

5 WALLS SECTION TYPES
1 1/2" = 1'-0"



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Revision Schedule Date Revision

VARIES

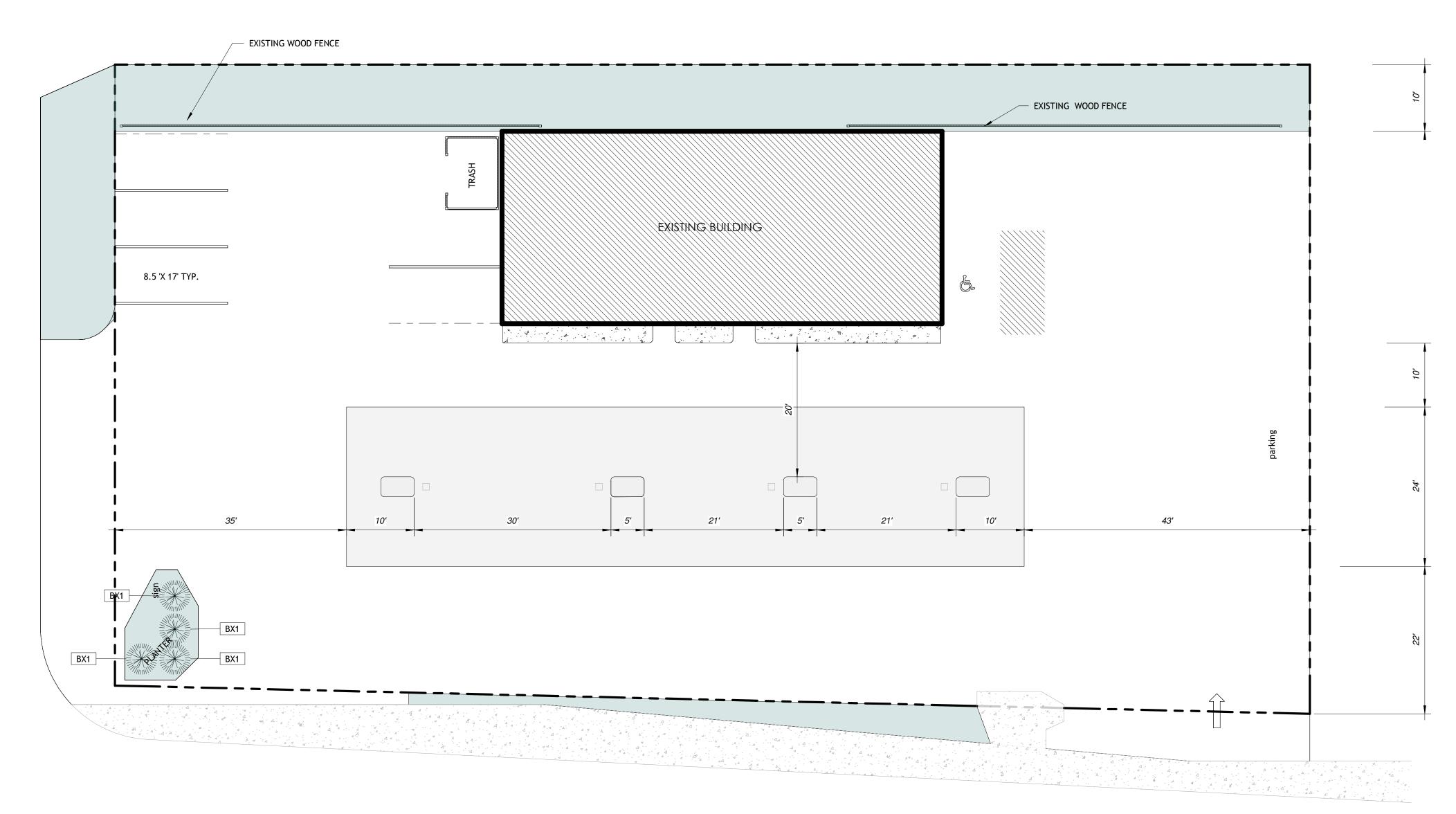


TITLE SHEET

ARD

W HIBB

ALLEY



W BLUEMOUND RD



Mobil Mart erior and Exterior /

SCALE VARIES

WI

SCONS

EMAD

NADI

E-38593

MILWAUKEE.

WI

SITE PLAN

DEMO NOTES

label	
number	label text
1	EIFS CROWN ON WOOD FRAMING
2	THERMALLY Y-BROCKEN ANODIZED ALUMINUM WINDOW. 1" LOW-E INSULATING GLAZING.
2A	THERMALLY Y-BROCKEN ANODIZED ALUMINUM DOOR. 1" LOW-E INSULATING GLAZING.
3	PAINT EXISTING WHITE CMU WITH DARK GRAY COLOR
4	ALUMINUM CLADDING PANELS 18" X 60" - BLU E
5	ALUMINUM CLADDING PANELS 18" X 60" - BLU E
6	ALUMINUM CLADDING PANELS 18" X 48" - RED
9	Prefinished aluminum coping
10	ALUM. AWNING PER MANUFACTURE -
D1	REMOVE EXISTING MASONRY COLUMN
D2	REMOVE EXISTING INTERIOR PARTITION WALLS
D3	CLEAN UP EXISTING OVERHEAD OPENING - REMOVE ANY REMAINING PART - PREPARE FOR MASONRY INFILL
D4	REMOVE EXISTING STORE FRONT
D5	REMOVE ALL REMAINING PRECAST CONCRETE)ROOF) BEAMS
D6	REMOVE STEEL BEAM
D7	REMOVE ALL WIRING, PIPING DUCTWORK PRIOR TO REMOVING THE ROOF BEAMS
D9	REMOVE EXISTING SOFFIT- REMOVE UNDERNEATH FRAMING CLEAN AND PREPARE FOR ALUM. PANEL CLADDING

DEMO NOTES:

REMOVE ALL PLUMBING FIXTURES INDICATED TO BE REMOVED AND CAP BELOW SLAB, IN WALL OR ABOVE CEILING. U.N.O. REMOVE ALL ELECTRICAL OUTLETS AND WIRING IN WALLS AND EXPOSED WIRING ON

SURFACES WHICH ARE INDICATED TO BE REMOVED. EITHER REMOVE WIRE BACK TO PANEL BOX OR PROVIDE NEW ACCESSIBLE JUNCTION BOX AT THE TERMINATION OF WIRES. CAP ALL CONDUITS BELOW SLAB, IN WALL OR ABOVE CEILING

2. DEMOLITION WORK SHALL BE EXECUTED IN CONFORMANCE WITH ALL CODES AND ORDINANCES AS SET FORTH BY ALL GOVERNING AUTHORITIES. ALL LIFE SAFETY SYSTEMS SHALL REMAIN FUNCTIONAL I.E. FIRE ALARM, GENERAL LIGHTING, EMERGENCY LIGHTING, IN ALL OCCUPIED AREAS DURING CONSTRUCTION.

3. ALL STRUCTURES SHOWN OR IMPLIED TO BE REMOVED SHALL BE REMOVED. PROVIDE DUST PROTECTION FOR ADJACENT AREAS AND SECURE ALL DEMOLITION AREAS WITH FENCING TO PROTECT "OTHERS" FORM

ENTERING THE SUBJECT AREA.

4. CAP ALL MISC. ELECTRICAL, MECHANICAL, AND PLUMBING UTILITIES THAT SERVICE THE AREA. SUCH CAPPING SHALL BE WITHIN WALL, CEILING OR FLOOR SYSTEM. ALL CAPPING SHALL BE BY TRADESMAN OF THE APPROPRIATE WORK.

5. ALL DEBRIS SHALL BE REMOVED FROM THE SITE DAILY TO AN APPROVED DUMPING FACILITY WHICH MEETS FEDERAL AND LOCAL REQUIREMENTS. OWNERS' DUMPSTERS MAY NOT BE USED.

6. REPAIR, CLEAN AND / OR REPLACE ANY DAMAGE TO EXISTING ADJACENT FINISH MATERIALS AND OTHER STRUCTURES NOT BEING DEMOLISHED.

7. OWNER WILL HAVE FIRST RIGHT OF REFUSAL OF ALL REMOVED ITEMS, DEVICES, FURNITURE, EQUIPMENT, AND MATERIALS.

8. COORDINATE ALL SEQUENCE AND CONSTRUCTION WITH OWNER PRIOR TO COMMENCEMENT.

9. PROTECT ALL NON-REMOVED / RELOCATED ITEMS, FURNITURE, AND FINISHES DURING DEMOLITION AND CONSTRUCTION.

10. REFER TO SPECIFICATIONS AND ALL DOCUMENTS HEREIN FOR ANY ADDITIONAL DEMOLITION INFORMATION / INSTRUCTION.
11. VERIFY THAT EXIT EGRESS IS MAINTAINED FOR ALL OCCUPIED AREAS OF

BUILDING SITE HROUGHOUT DEMOLITION AND CONSTRUCTION.

12. ALL COLUMNS ARE TO REMAIN, UNLESS OTHERWISE NOTED.

13. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES,

WATER LINES, ETC. PRIOR TO DIGGING AND / OR CONCRETE SLAB

DEMOLITION.

14. DURING DEMOLITION, PROVIDE TEMPORARY FIRE PROTECTION APPROVED BY STATE FIRE MARSHAL.

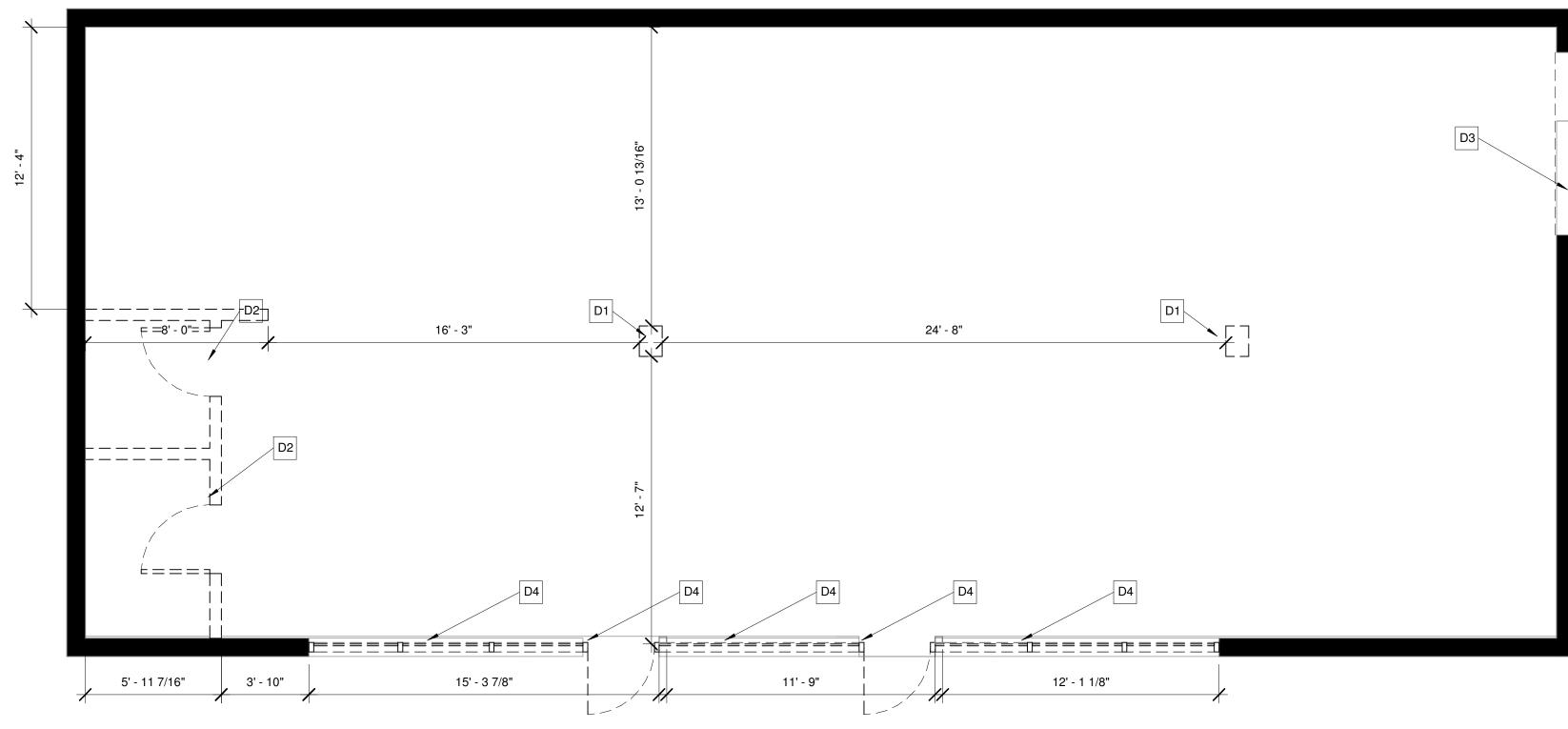
15. THE CONTRACTOR SHALL SLEEVE ELECTRICAL, MECHANICAL, PLUMBING UTILITIES THAT SERVICE THE DEMOLITION AREAS AND ARE REQUIRED FOR

16. CONTINUED OPERATION OF EXISTING SYSTEMS.

17. THE CONTRACTOR SHALL ALSO NOTIFY THE ARCHITECT IMMEDIATELY IF ANY WORK INDICATED IN THE CONTRACT DOCUMENTS CANNOT BE PERFORMED DUE TO EXISTING FIELD CONDITIONS.

18. THE EXISTING CONDITIONS SHOWN ARE IN COMPLIANCE WITH PREVIOUS CONSTRUCTION DOCUMENTS AND OBSERVED EXISTING FIELD CONDITIONS, UNLESS OTHERWISE NOTED. FIELD VERIFY ALL EXISTING CONDITIONS. SHOULD ANY DISCREPANCIES EXISTING, FIELD VERIFY ALL CONDITIONS PRIOR TO BIDDING.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOT ONLY THE PLANS AND SPECIFICATIONS, BUT ALL EXISTING SITE CONDITIONS AS WELL. THE CONTRACTOR IS TO CONDUCT A COMPLETE REVIEW OF THE SITE AND THE WORK TO BE PERFORMED. THE CONTRACTOR IS TO IMMEDIATELY SUBMIT TO THE ARCHITECT THROUGH THE CONSTRUCTION MANAGER ANY QUESTIONS OR REQUESTS FOR CLARIFICATION THEY HAVE REGARDING THE EXISTING CONDITIONS AND / OR PLANS. THE CONTRACTOR WARRANTS BY SUBMISSION OF A BID THAT THEY HAVE COMPLETELY REVIEWED ALL SITE CONDITIONS AND WHERE DISCREPANCIES



W Esst Elevato Deno

(a) Esst Elevato Deno

(b) Esst Elevato Deno

(c) Foot Famino Deno

(d) VARIES

VARIES

D4

South Elevation Demo
1/4" = 1'-0"



Parapet 15' - 0"

Roof front 14' - 1"

SOFFIT 10' - 7"

Level 1 0' - 0" **ETI** engineering

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Revision Schedule

Date

Revision

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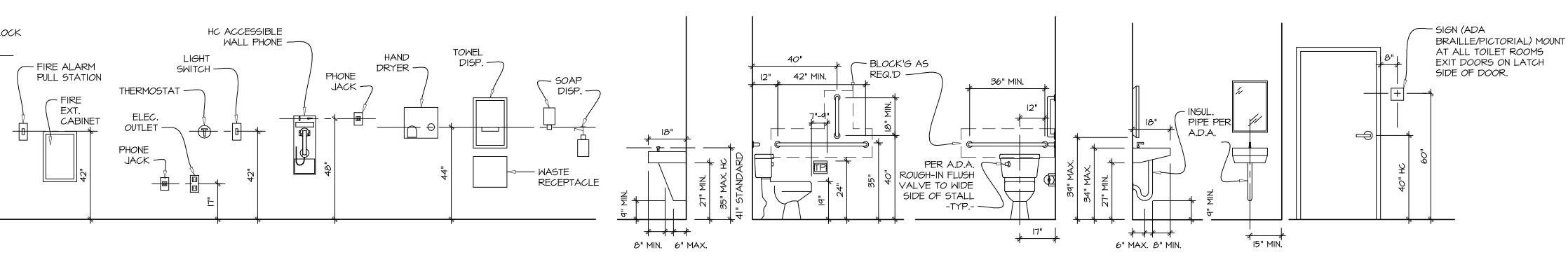
DEMO PLAN

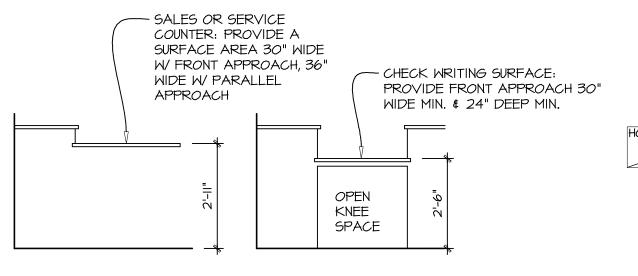
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- FIRE HORN & STROBE

> HOLLOW METAL OR ALUMINUM JAMB -(PER PLANS) TYPICAL DOOR JAMB OFFSET

ACCESSIBILITY GUIDELINES:

LIGHT SWITCHES, ELECTRICAL OUTLETS, ELECTRIC SERVICE PANELS, THERMOSTATS, THRU-WALL A/C UNITS AND ENVIRONMENTAL CONTROLS SHALL BE LOCATED NO HIGHER THAN 48" AND NO LOWER THAN 15 INCHES, ABOVE THE FLOOR. IF THE REACH IS OVER AN OBSTRUCTION (FOR EXAMPLE, 20 AND 25 INCHES IN DEPTH, THE MAXIMUM HEIGHT IS REDUCED TO 44 INCHES FOR FORWARD APPROACH OR 46 INCHES FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES IN DEPTH).

REINFORCE ALL BATHROOM WALLS TO ALLOW LATER INSTALLATION OF GRAB BARS AROUND THE TOILET, TUB, SHOWER & SHOWER SEAT WHEN THESE FACILITIES ARE PROVIDED. REINFORCEMENT FOR GRAB BARS MAY BE PROVIDED BY PLYWOOD OR WOOD BLOCKING.

STANDARD MOUNTING HEIGHTS & DETAILS *]* 3/8" = |'-0"

306.3 Knee Clearance.

306.3.1 General. Space under an element between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground shall be considered knee clearance and shall comply with 306.3.

EMERGENCY -

LIGHTING &

BATTERY PACK

306.3.2 Maximum Depth. Knee clearance shall extend 25 inches (635 mm) maximum under an element at 9 inches (230 mm) above the finish floor or ground.

306.3.3 Minimum Required Depth. Where knee clearance is required under an element as part of a clear floor space, the knee clearance shall be 11 inches (280 mm) deep minimum at 9 inches (230 mm) above the finish floor or ground, and 8 inches (205 mm) deep minimum at 27 inches (685 mm) above the finish floor or ground.

306.3.4 Clearance Reduction. Between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

306.3.5 Width. Knee clearance shall be 30 inches (760 mm) wide minimum.

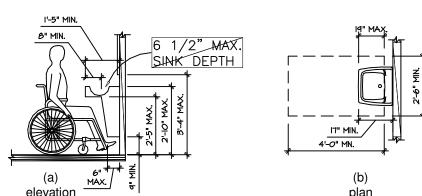


Figure 306.3 Knee Clearance

306 Knee and Toe Clearance

306.2 Toe Clearance.

306.2.1 General. Space under an element between the finish floor or ground and 9 inches (230 mm) above the finish floor or ground shall be considered toe clearance and shall comply with 306.2.

space, the toe clearance shall extend 17 inches (430 mm) minimum under the element.

306.2.2 Maximum Depth. Toe clearance shall extend 25 inches (635 mm) maximum under an element. 306.2.3 Minimum Required Depth. Where toe clearance is required at an element as part of a clear floor

306.2.4 Additional Clearance. Space extending greater than 6 inches (150 mm) beyond the available knee clearance at 9 inches (230 mm) above the finish floor or ground shall not be considered toe clearance.

306.2.5 Width. Toe clearance shall be 30 inches (760 mm) wide minimum.

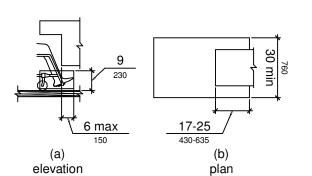
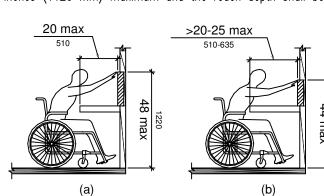


Figure 306.2 Toe Clearance

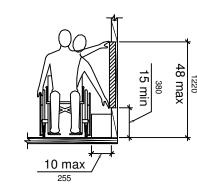
308.2.2 Obstructed High Reach. Where a high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (1220 mm) maximum where the reach depth is 20 inches (510 mm) maximum. Where the reach depth exceeds 20 inches (510 mm), the high forward reach shall be 44 inches (1120 mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.



ADA NOTES 1" = 1'-0"

308.3 Side Reach.

308.3.1 Unobstructed. Where a clear floor or ground space allows a parallel approach to an element and the side reach is unobstructed, the high side reach shall be 48 inches (1220 mm) maximum and the low side reach shall be 15 inches (380 mm) minimum above the finish floor or ground.



308.3.2 Obstructed High Reach. Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (1220 mm) maximum for a reach depth of 10 inches (255 mm) maximum. Where the reach depth exceeds 10 inches (255 mm), the high side reach shall be 46 inches (1170 mm) maximum for a reach depth of 24 inches (610 mm) maximum.

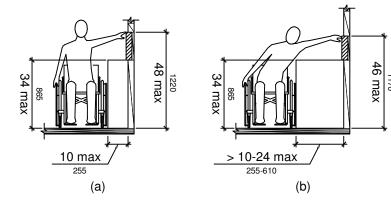


Figure 308.3.2 Obstructed High Side Reach

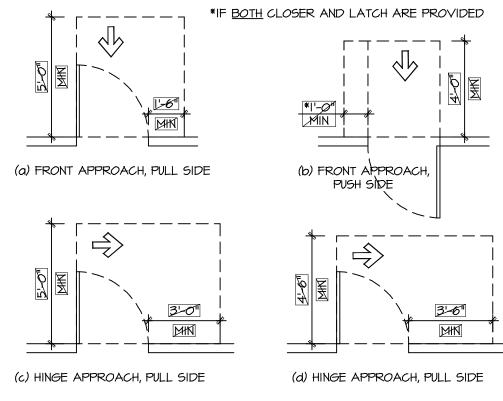
404.2.10 Door and Gate Surfaces. Swinging door and gate surfaces within 10 inches (255 mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16 inch (1.6 mm) of the same plane as the other. Cavities created by added kick plates shall be capped.

404.2.11 Vision Lights. Doors, gates, and side lights adjacent to doors or gates, containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one glazed panel located 43 inches (1090 mm) maximum above the finish floor.

404.3 Automatic and Power-Assisted Doors and Gates. Automatic doors and automatic gates shall comply with 404.3. Full-powered automatic doors shall comply with ANSI/BHMA A156.10 (incorporated by reference, see "Referenced Standards" in Chapter 1). Low-energy and power-assisted doors shall comply with ANSI/BHMA A156.19 (1997 or 2002 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1).

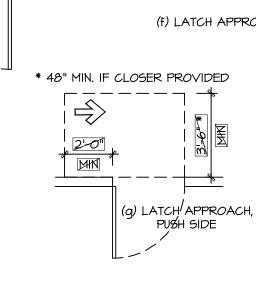
404.3.2 Maneuvering Clearance. Clearances at power—assisted doors and gates shall comply with 404.2.4. Clearances at automatic doors and gates without standby power and serving an accessible means of egress shall comply with 404.2.4.

404.2.4.3 Recessed Doors and Gates. Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches (455 mm) of the latch side of a doorway projects more than 8 inches (205 mm) beyond the face of the door, measured perpendicular to the face of the door or gate.

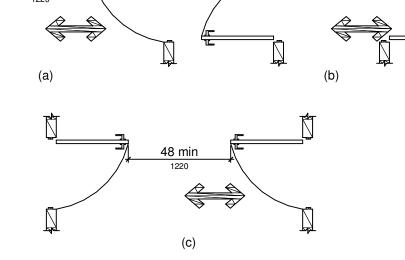


** 48 MIN IF BOTH CLOSER AND LATCH ARE PROVIDED * 54" MIN. IF CLOSER PROVIDED (e) HINGE APPROACH, (f) LATCH APPROACH, PULL SIDE * 48" MIN. IF CLOSER PROVIDED

* IF BOTH CLOSER AND LATCH ARE PROVIDED



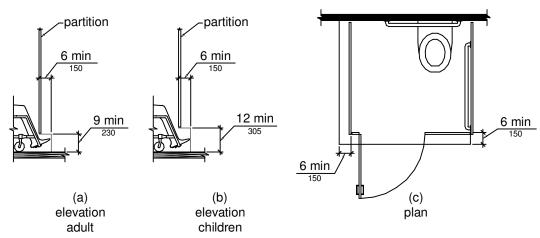
404.2.6 Doors in Series and Gates in Series. The distance between two hinged or pivoted doors in series and gates in series shall be 48 inches (1220 mm) minimum plus the width of doors or gates swinging into the space.



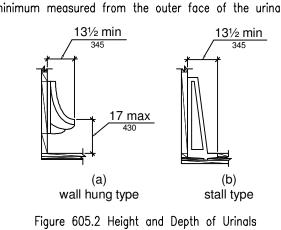
Ficure 404.2.6 Doors in Series and Gates in Series

604.8.1.4 Toe Clearance. The front partition and at least one side partition shall provide a toe clearance of 9 inches (230 mm) minimum above the finish floor and 6 inches (150 mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition support members. Compartments for children's use shall provide a toe clearance of 12 inches (305 mm) minimum above the finish floor.

EXCEPTION: Toe clearance at the front partition is not required in a compartment greater than 62 inches (1575 mm) deep with a wall-hung water closet or 65 inches (1650 mm) deep with a floor-mounted water closet. Toe clearance at the side partition is not required in a compartment greater than 66 inches (1675 mm) wide. Toe clearance at the front partition is not required in a compartment for children's use that is greater than 65 inches (1650 mm)deep



605.2 Height and Depth. Urinals shall be the stall-type or the wall-hung type with the rim 17 inches (430 mm) maximum above the finish floor or ground. Urinals shall be 13 1/2 inches (345 mm) deep minimum measured from the outer face of the urinal rim to the back of the



605.3 Clear Floor Space. A clear floor or ground space complying with 305 positioned for forward approach shall be provided. 605.4 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.

606 Lavatories and Sinks

606.2 Clear Floor Space. A clear floor space complying with 305, positioned for a forward approach, and knee and toe clearance complying with 306 shall be provided. 606.3 Height. Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches (865 mm) maximum above the finish floor or ground. 606.4 Faucets. Controls for faucets shall comply with 309. Hand—operated metering faucets shall remain open for 10 seconds minimum.

606.5 Exposed Pipes and Surfaces. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

CHAPTER 6: PLUMBING ELEMENTS AND FACILITIES

602 Drinking Fountains 602.2 Clear Floor Space. Units shall have a clear floor or ground space complying with 305 positioned for a forward approach and centered on the unit. Knee and toe clearance complying with 306 shall be provided.

EXCEPTION: A parallel approach complying with 305 shall be permitted at units for children's use where the spout is 30 inches (760 mm) maximum above the finish floor or ground and is 3 1/2 inches (90 mm) maximum from the front edge of the unit, including bumpers.

602.3 Operable Parts. Operable parts shall comply with 309. 602.4 Spout Height. Spout outlets shall be 36 inches (915 mm) maximum above the finish

602.5 Spout Location. The spout shall be located 15 inches (380 mm) minimum from the vertical support and 5 inches (125 mm) maximum from the front edge of the unit, including

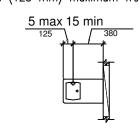


Figure 602.5 Drinking Fountain Spout Location

602.6 Water Flow. The spout shall provide a flow of water 4 inches (100 mm) high minimum and shall be located 5 inches (125 mm) maximum from the front of the unit. The angle of the water stream shall be measured horizontally relative to the front face of the unit. Where spouts are located less than 3 inches (75 mm) of the front of the unit, the angle of the water stream shall be 30 degrees maximum. Where spouts are located between 3 inches (75 mm) and 5 inches (125 mm) maximum from the front of the unit, the angle of the water stream shall be 15 degrees maximum.

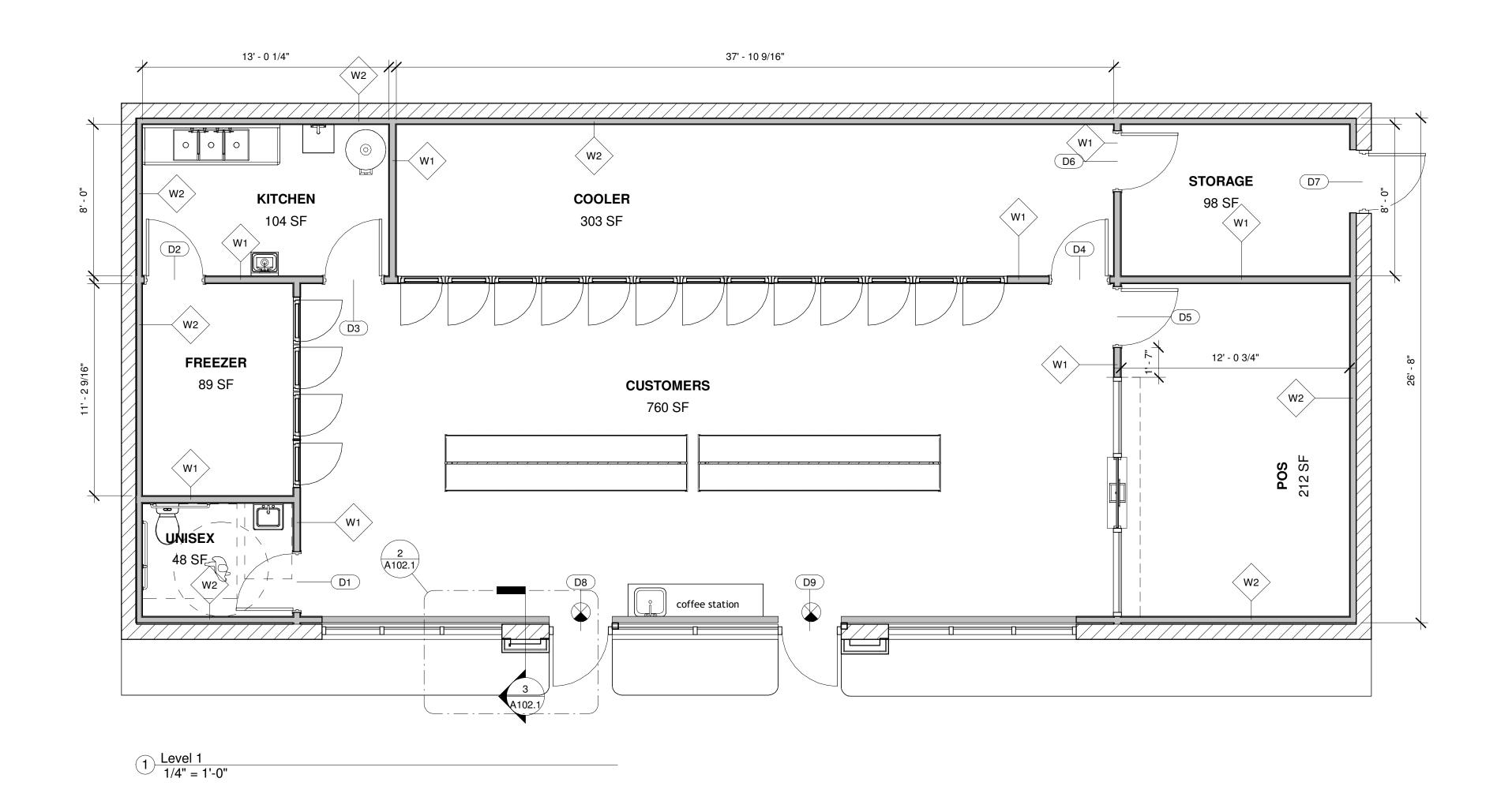
602.7 Drinking Fountains for Standing Persons. Spout outlets of drinking fountains for standing persons shall be 38 inches (965 mm) minimum and 43 inches (1090 mm) maximum above the finish floor or ground.

SCALE **VARIES**



nterior

ADA NOTES



Door	Schedule
	Scriedate

Mark	Туре	Width	Height	Hardware
D1	36" x 84" - HM Frame	3' - 0"	7' - 0"	3) BUTT HINGES (1) PRIVAE LEVER LOCKSET - KEY OUTSIDE BUSH BUTTON INSIDE (1) HEAVY DUTY FOOT OPERATED HOLD OPEN (1) WALL STOP
D2	36" x 84" - HM Frame	3' - 0"	7' - 0"	3) BUTT HINGES (1) PRIVAE LEVER LOCKSET - KEY OUTSIDE BUSH BUTTON INSIDE (1) HEAVY DUTY FOOT OPERATED HOLD OPEN (1) WALL STOP
D3	36" x 84" - HM Frame	3' - 0"	7' - 0"	3) BUTT HINGES (1) PRIVAE LEVER LOCKSET - KEY OUTSIDE BUSH BUTTON INSIDE (1) HEAVY DUTY FOOT OPERATED HOLD OPEN (1) WALL STOP
D4	36" x 84" - HM Frame	3' - 0"	7' - 0"	3) BUTT HINGES (1) PRIVAE LEVER LOCKSET - KEY OUTSIDE BUSH BUTTON INSIDE (1) HEAVY DUTY FOOT OPERATED HOLD OPEN (1) WALL STOP
D5	36" x 84" - HM Frame	3' - 0"	7' - 0"	3) BUTT HINGES (1) PRIVAE LEVER LOCKSET - KEY OUTSIDE BUSH BUTTON INSIDE (1) HEAVY DUTY FOOT OPERATED HOLD OPEN (1) WALL STOP
D6	36" x 84" - HM Frame	3' - 0"	7' - 0"	
D7	36" x 84" - Exterior Steel Door	3' - 0"	7' - 0"	3) BUTT HINGES (1) PRIVAE LEVER LOCKSET - KEY OUTSIDE BUSH BUTTON INSIDE (1) HEAVY DUTY FOOT OPERATED HOLD OPEN (1) WALL STOP
D8	Store Front Single Door	2' - 11"	6' - 10 3/4"	PER MANUFACTURE
D9	Store Front Single Door	2' - 11"	6' - 10 3/4"	PER MANUFACTURE

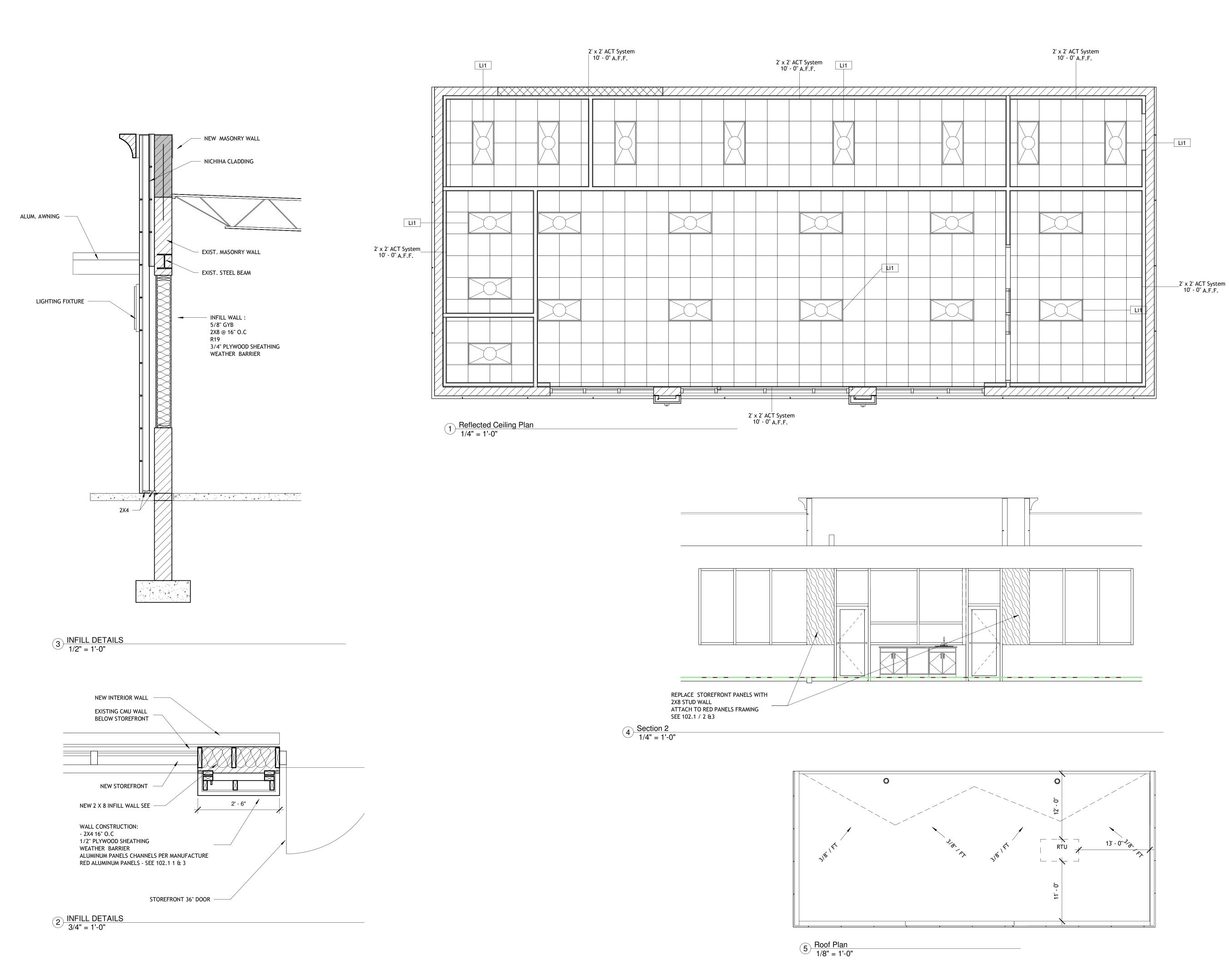
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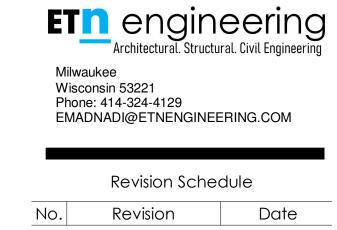
Name	Area	Floor Finish	Wall Finish	Ceiling Finish	Ceiling Height
UNISEX	48 SF	LAMINATE	GWB	ACOUSTIC	8' - 0"
FREEZER	89 SF	PER MANUFACTURE	PER MANUFACTURE	ACOUSTIC	11' - 0"
COOLER	303 SF	PER MANUFACTURE	PER MANUFACTURE	ACOUSTIC	11' - 0"
STORAGE	98 SF	LAMINATE	GWB	ACOUSTIC	11' - 0"
POS	212 SF	LAMINATE	GWB	ACOUSTIC	11' - 0"
CUSTOMERS	760 SF	LAMINATE	GWB	ACOUSTIC	11' - 0"
KITCHEN	104 SF	NON SLIP POLISHED CONCRETE	SMOOTH WASHABLE SURFACE	ACOUSTIC	11' - 0"



VARIES EMAD NADI E-38593 MILWAUKEE.

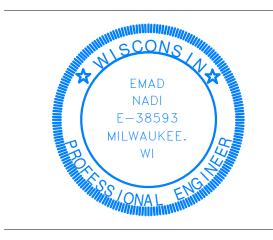
LAYOUT





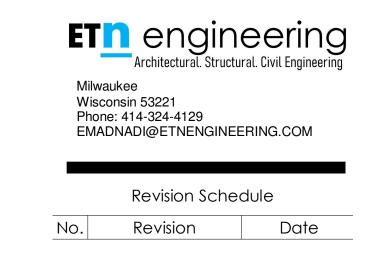
Mobil Mart Interior and Exterior Alteration 10636 W BLUEMOUND RD

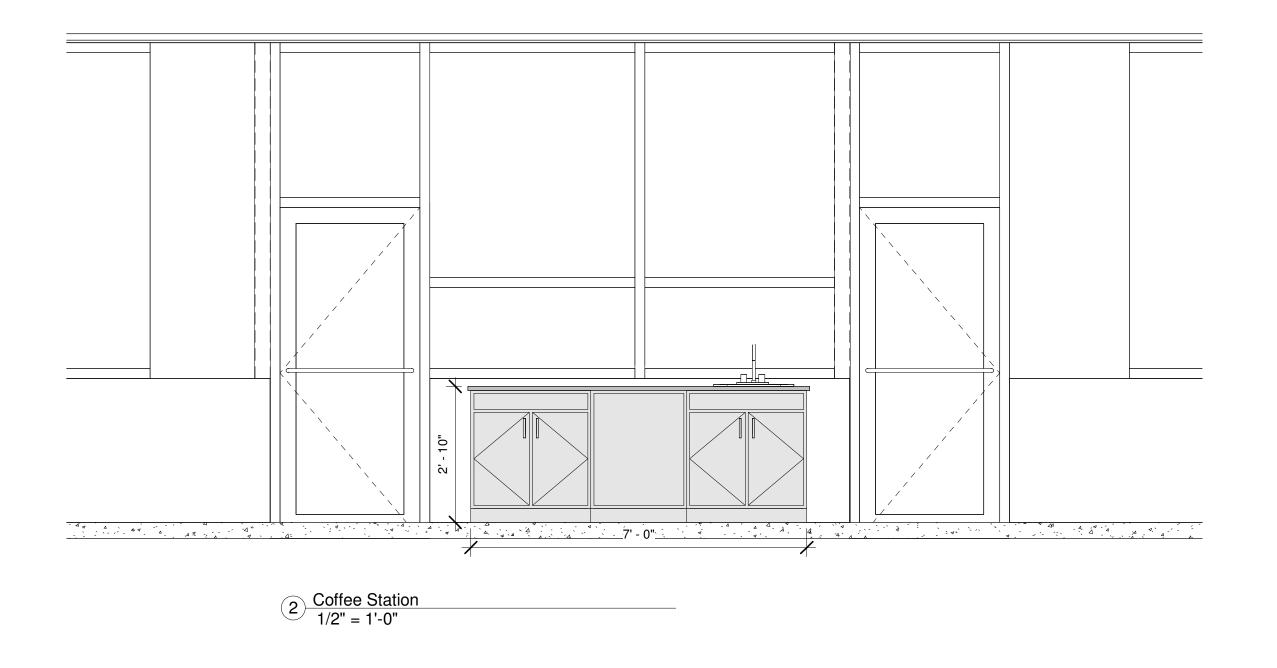
VARIES



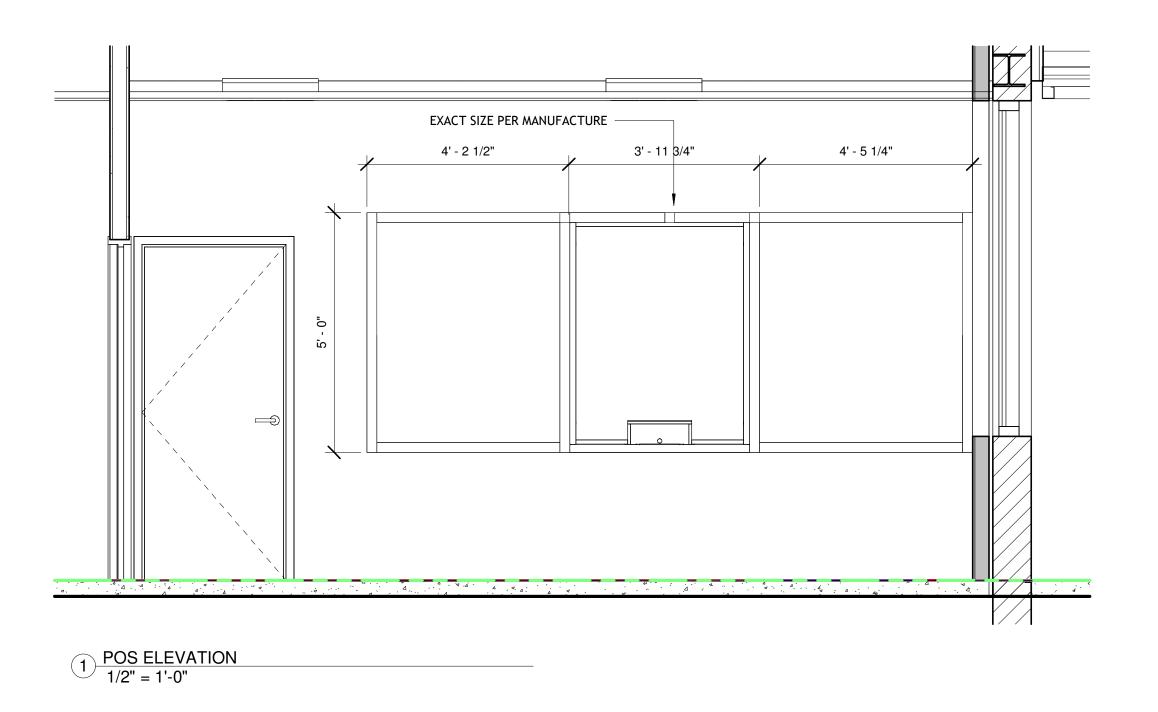
ARCHITECTURAL

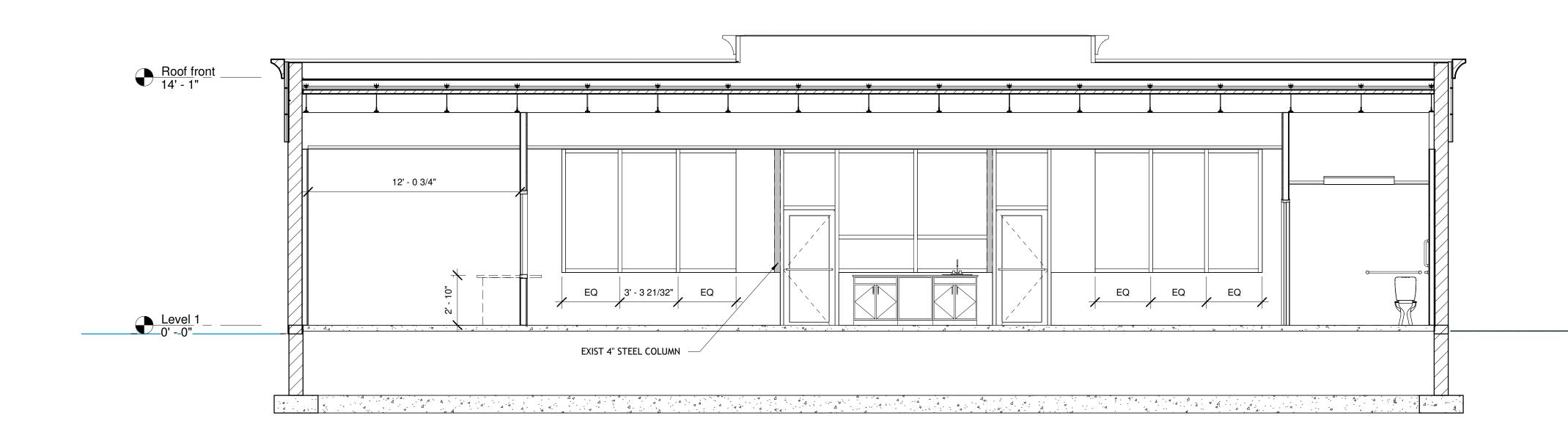
A102.1





3 Section 4 1/4" = 1'-0"





VARIES

VARIES

EMAD

NADI

E-38593

MILWAUKEE.

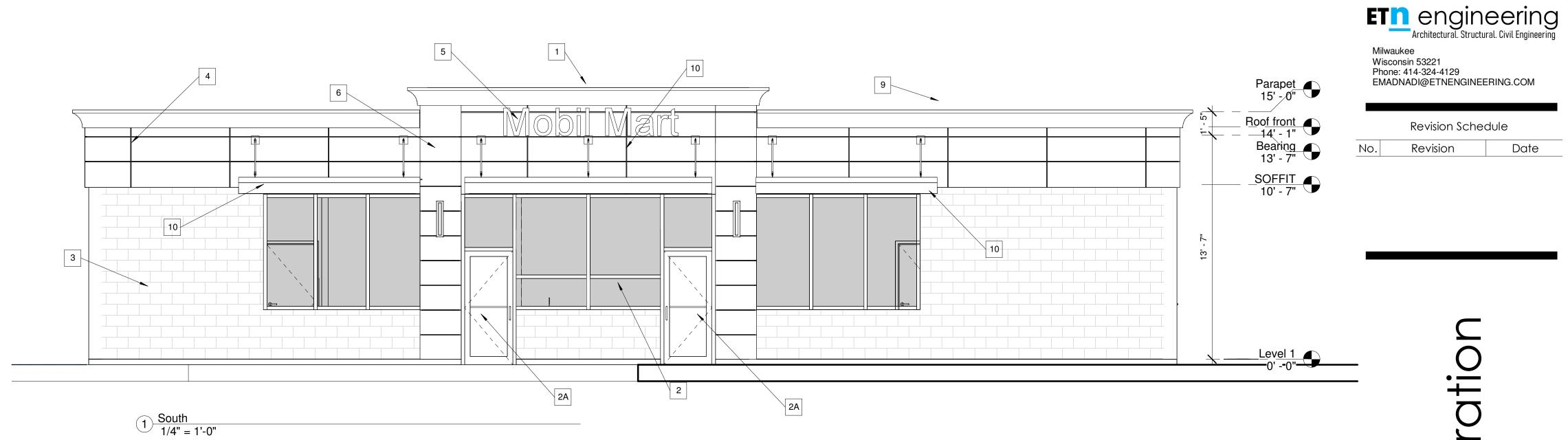
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INTERIOR DETAILS

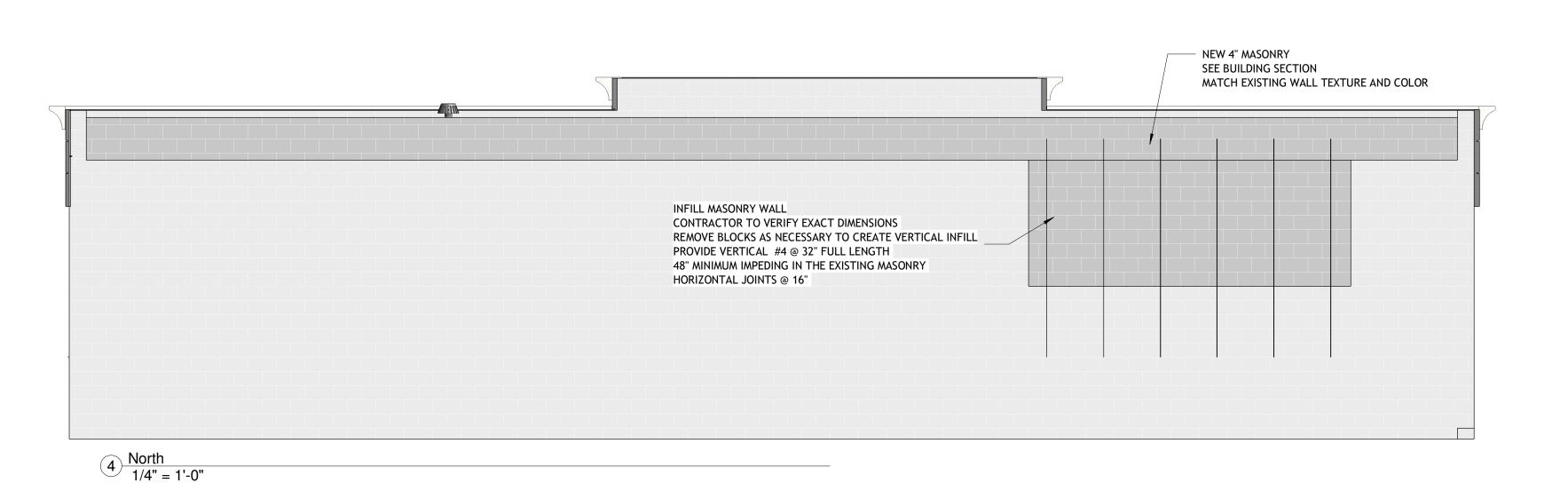
Notes

	140103
Label Number	Notes
1	EIFS CROWN ON WOOD FRAMING
2	THERMALLY Y-BROCKEN ANODIZED ALUMINUM WINDOW. 1" LOW-E INSULATING GLAZING.
2A	THERMALLY Y-BROCKEN ANODIZED ALUMINUM DOOR. 1" LOW-E INSULATING GLAZING.
3	PAINT EXISTING WHITE CMU WITH DARK GRAY COLOR
4	ALUMINUM CLADDING PANELS 18" X 60" - BLU E
5	ALUMINUM CLADDING PANELS 18" X 60" - BLU E
6	ALUMINUM CLADDING PANELS 18" X 48" - RED
9	Prefinished aluminum coping
10	ALUM. AWNING PER MANUFACTURE -

3 East Elevation 1/4" = 1'-0"







Alteration

Revision Schedule

Date

Revision

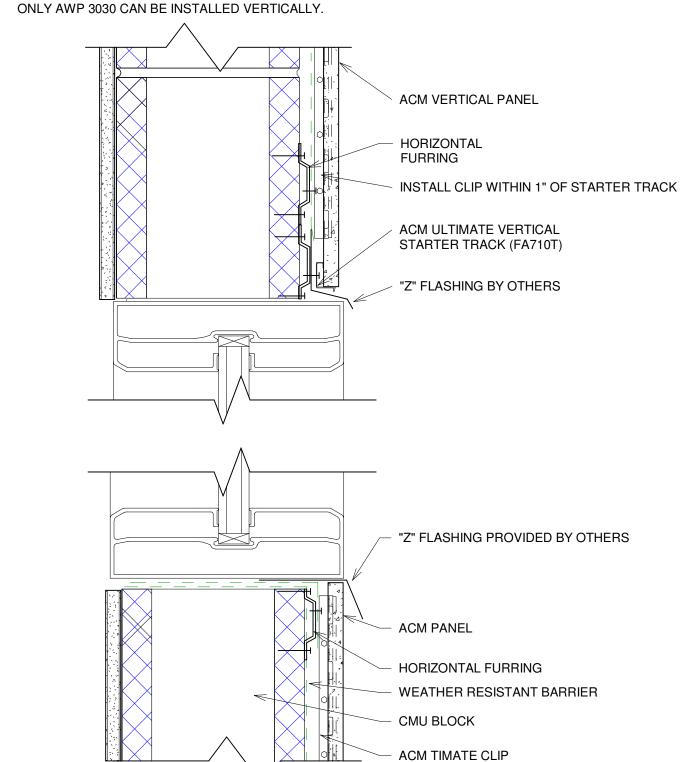
VARIES



ELEVATIONS

NOTES:

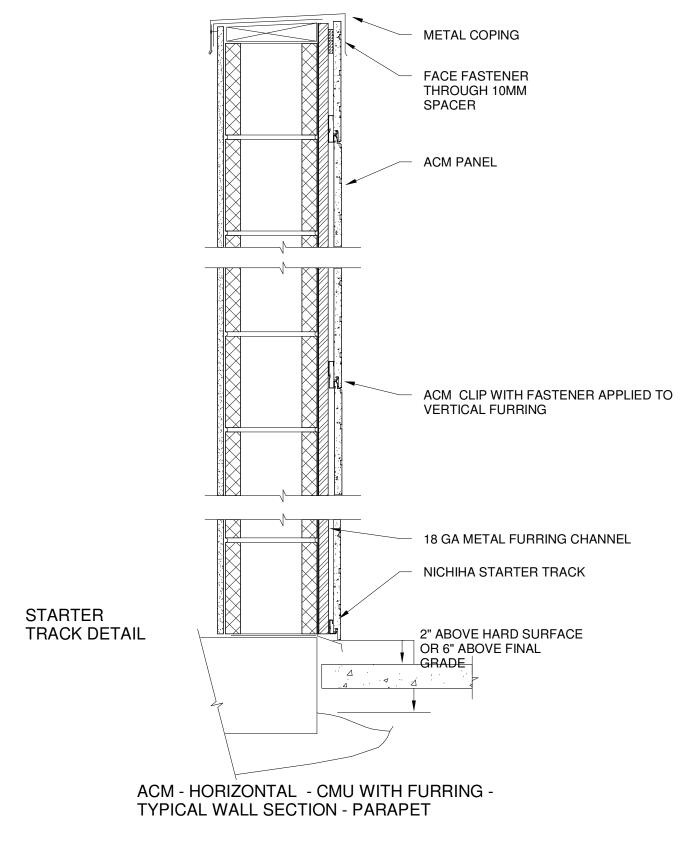
- 1. THIS CONCEPTUAL DETAIL IS A GUIDE FOR INSTALLATION OF ACM PRODUCTS. ARCHITECTS/ENGINEERS/CONTRACTORS ARE RESPONSIBLE FOR SUCCESSFUL APPLICATION WHICH DEPENDS UPON SUBSTRATE DESIGN AND CONSTRUCTION BUILT IN ACCORDANCE WITH BEST PRACTICES AND LOCAL BUILDING CODES.
- FOR VERTICAL PANEL STARTER TRACK, METAL FURRING CHANNEL MUST BE C-STUD OR HAT CHANNEL (SHOWN HERE) AND MUST BE 18 GA MINIMUM.
- STARTER TRACK SUPPORTS FULL DEAD LOAD OF AWP3030: 57 POUNDS PER PANEL, 32 POUNDS PER LINEAR FOOT. AN ENGINEER MUST DESIGN THE FURRING ANCHOR SCHEDULE FOR THE CMU
- APPLICATION TO ACCOUNT FOR DEAD AND WIND LOADS.
 COMPLY WITH LOCAL BUILDING CODE REQUIREMENTS FOR WEATHER/WATER RESISTANT
- SPACE HORIZONTAL FURRING AT NO MORE THAN 16" O.C. ADD ADDITIONAL HAT OR C TO SUPPORT VERTICAL PANEL STARTER TRACK.



ACM VERTICAL CMU WALL- HOLLOW METAL WINDOW HEADER & SILL WITH FLASHING

SCALE: 3" = 1'-0"

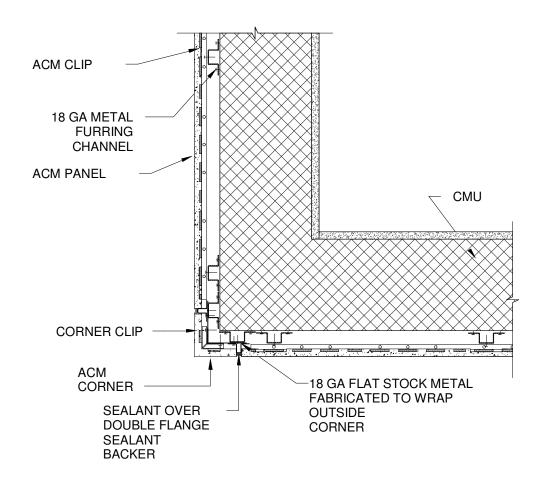
2 WINDOW HEADER 3" = 1'-0"



1 DETAILS 1/8" = 1'-0"



- THIS CONCEPTUAL DETAIL IS A GUIDE FOR INSTALLATION OF ACM PRODUCTS. ARCHITECTS/ENGINEERS/CONTRACTORS ARE RESPONSIBLE FOR SUCCESSFUL APPLICATION WHICH DEPENDS UPON SUBSTRATE DESIGN AND CONSTRUCTION BUILT IN ACCORDANCE WITH BEST PRACTICES AND LOCAL BUILDING CODES.
- METAL FURRING CHANNEL MUST BE C-STUD, "Z", OR HAT CHANNEL (SHOWN HERE) AND MUST BE A MINIMUM OF 18 GA. COMPLY WITH LOCAL BUILDING CODE REQUIREMENTS FOR WEATHER/WATER RESISTANT
- ACM PANEL REPRESENTED HERE IS 5/8" PRODUCT, ADJUST ACCORDINGLY FOR OTHER PRODUCT THICKNESSES.



ACM - HORIZONTAL AWP - CMU WITH FURRING -**OUTSIDE CORNER** -

FURRING CHANNEL ACM HORIZONTAL STARTER TRACK COMPRESSION JOINT FLASHING FACE FASTENER
THROUGH
10MM SPACER

ACM - HORIZONTAL - CMU WITH FURRING -HORIZONTAL COMPRESSION JOINT DETAIL



DETAILS

A300

ET engineering

Architectural. Structural. Civil Engineering

Phone: 414-324-4129 EMADNADI@ETNENGINEERING.COM

Revision Schedule

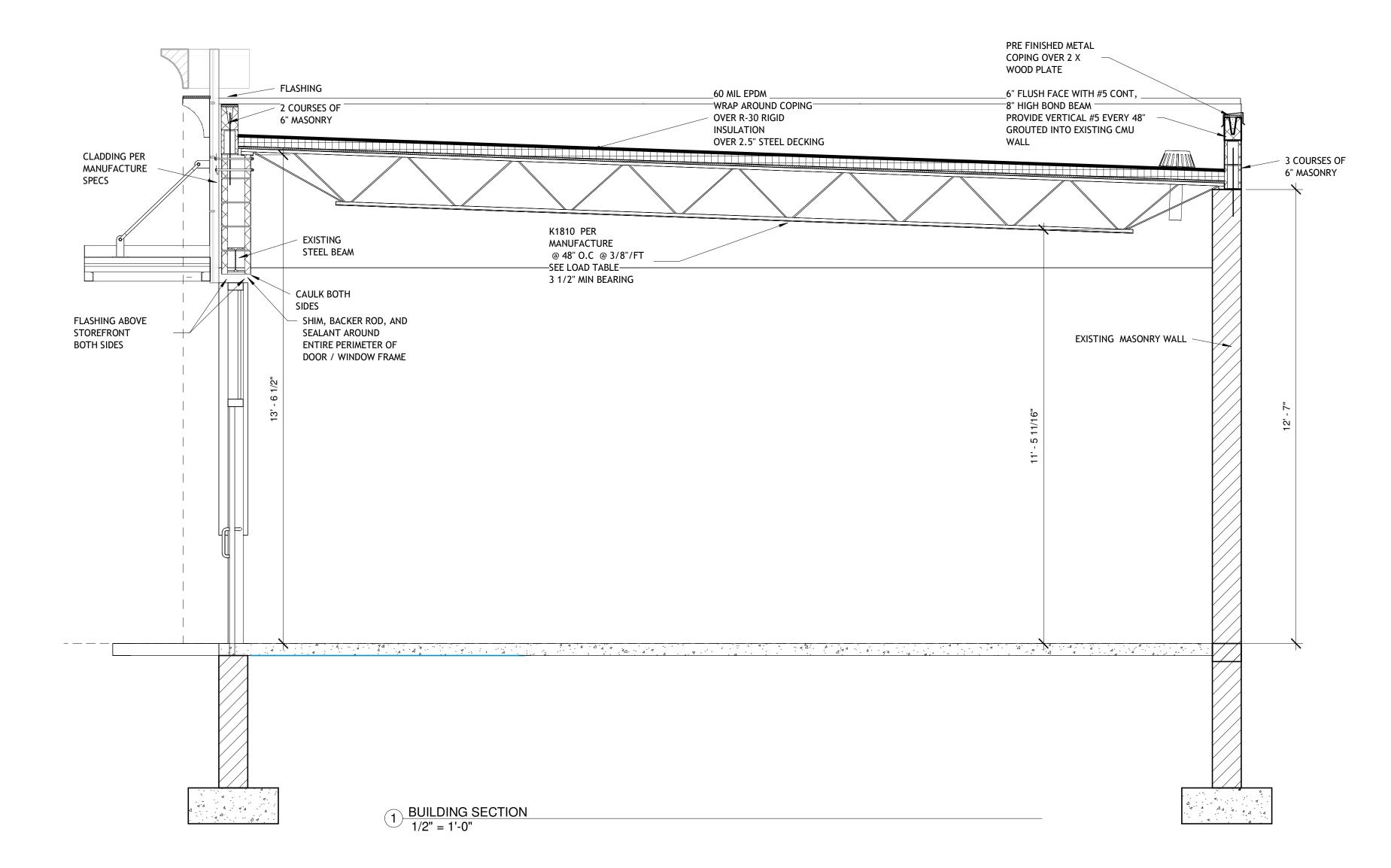
Revision

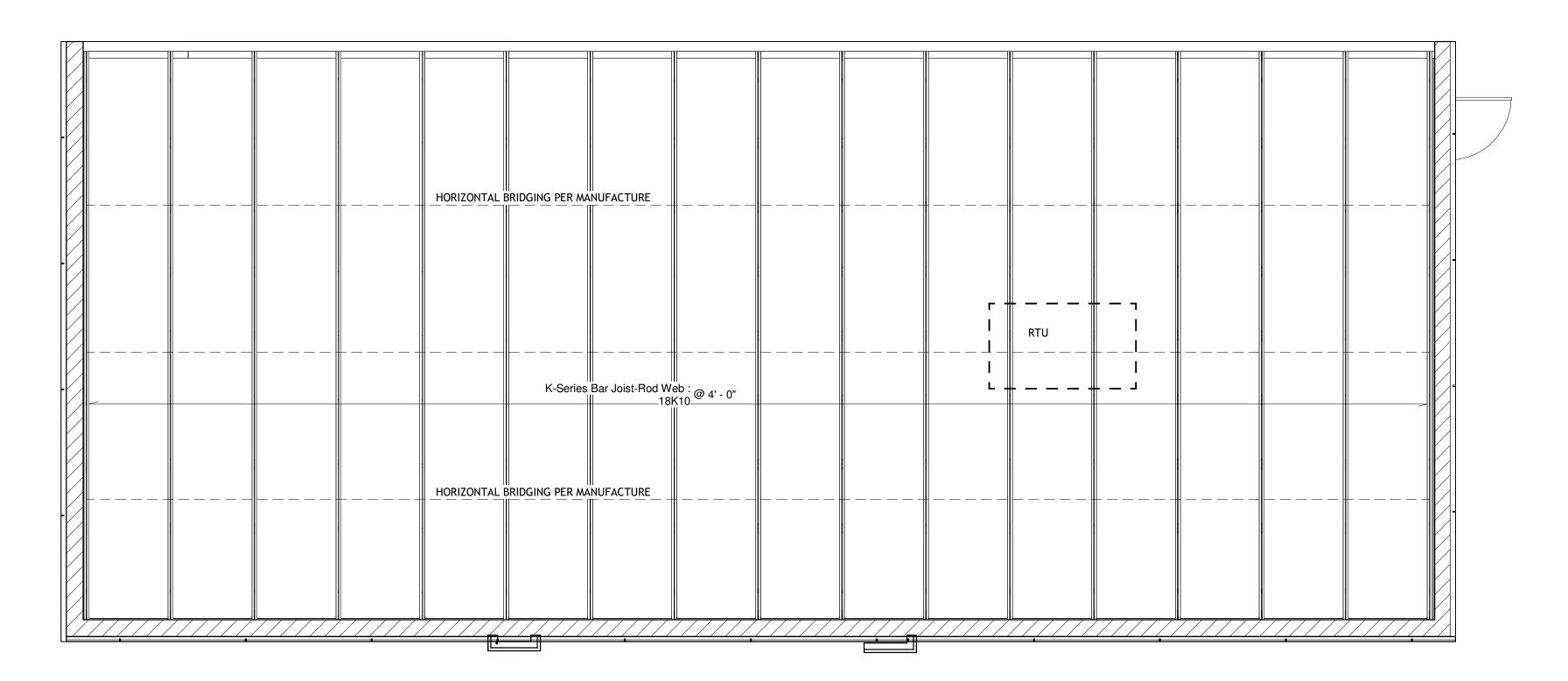
Date

Wisconsin 53221

```
SNOW LOADS
GROUND SNOW LOAD: 35.00 PSF
FLAT-ROOF SNOW LOAD: 29.40 PSF
SNOW EXPOSURE FACTOR: 1.00
SNOW IMPORTANCE FACTOR: 1.00
THERMAL FACTOR: 1.20
DRIFT SURCHARGE LOAD: 0.00 PSF
WIDTH OF SNOW DRIFT: 0.00 FT
WIND LOADS
DESIGN WIND SPEED: 115.00 MPH
RISK CATEGORY: II
WIND EXPOSURE: B
MWFRS Wind Calculations
MWFRS loads are calculated using the provisions of ASCE 7-10 Chapter 28. Loads are first calculated on the structure as a
whole, for transmission to shear walls.
Common Values
The following values are common for the entire structure:
V = 115.00 mph (basic wind speed, as entered by user)
Kd = 0.85 (wind directionality factor, from Table 26.6-1, for Main Wind Force Resisting System)
k t = 1.00 (topography factor, as entered by user, from Table 26.8-1)
K = 0.70 (velocity pressure coefficient, from Table 28.3-1 Note 1, evalulated at roof mean height)
Common Velocity Pressure
Velocity pressure at roof mean height (q ), Equation 28.3-1 evaluated at roof mean height per 28.4.1:
q = h 0.00256K = zKztKdV2 0.00256 0.70 1.00 0.85 115.00 mph 2= 24.76 psf
Force on Roof
Wind pressures on the roof are calculated here and will be used later when distributing load to the loadbearing walls that
support the roof.
GC<sup>p</sup> Coefficient Determination
Values from Figure 28.4-1 for roof zones, taking worst case of Load Case A and B:
GCp = -1.07 (Windward surface, edge zone)
GC<sup>p</sup> = -0.69 (Windward surface, field zone)
GCp = -0.53 (Leeward surface, edge zone)
GCp = -0.37 (Leeward surface, field zone)
Design Pressures
Pressure values from Equation 28.4-1:
p = q (G^{p} - GC^{p}) = (20.16 \text{ psf})(-1.07-0.18) = -25.20 \text{ psf} (Windward surface, edge zone)
p = q (G^{p} - G^{p}) = (20.16 \text{ psf})(-0.69 - 0.18) = -17.54 \text{ psf} (Windward surface, field zone)
p = q (G^{p} - G^{p}) = (20.16 \text{ psf})(-0.53-0.18) = -14.31 \text{ psf} (Leeward surface, edge zone)
p = q (G^{p} - G^{p}) = (20.16 \text{ psf})(-0.37 - 0.18) = -11.09 \text{ psf} (Leeward surface, field zone)
 These pressures are applied normal to the roof. For sloped roofs, only the vertical component will be taken when
distributing pressures to walls.
GRAVITY LOADS
ROOF LIVE LOAD: 25.00 PSF
FLOOR LIVE LOAD: 100.00 PSF
SNOW LOAD: 30 PSF
EARTHQUAKE LOADS
RISK CATEGORY: II
CLASS: B
SEISMIC IMPORTANCE FACTOR: 1.00
MAPPED 0.2 SECOND SPECTRAL RESPONSE ACCELERATION: 0.200
MAPPED 1.0 SECOND SPECTRAL RESPONSE ACCELERATION: 0.050
DESIGN 0.2 SECOND SPECTRAL RESPONSE ACCELERATION: 0.160
DESIGN 1.0 SECOND SPECTRAL RESPONSE ACCELERATION: 0.040
SEISMIC DESIGN CATEGORY: A
LATERAL FORCE RESISTING SYSTEM: ORDINARY REINFORCED MASONRY
SHEAR WALLS
DESIGN BASE SHEAR: 4.22 K
SEISMIC RESPONSE COEFFICIENT: 0.08
RESPONSE MODIFICATION FACTOR: 2.00
SEISMIC ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE METHOD
SOIL CAPACITY: ASSUMED 3000 PSF
MASONRY DESIGN CRITERIA
DESIGN STANDARD: TMS 402-13
SPECIFIED COMPRESIVE STRENGTH OF MASONRY (F'M): 2,000.00 PSI
GRADE OF REINFORCEMENT (FY): 60,000.00 PSI
MASONRY UNIT: 8 IN CMU
CMU DENSITY: NORMALWEIGHT
MASONRY MORTAR TYPE: TYPE S PORTLAND CEMENT/LIME
CONCRETE
DESIGN STANDARD: AISCE
SLAB ON GRADE : f'c = 4000 psi
FOOTING :f'c = 3000 psi
STEEL
WIDE FLANGE "W SHAPE" : A992
PLATES AND OTHER : A36
BOLTS: A325
WELDS:
WELDED CONNECTIONS ELECTRODES: 70 KSI
```

Walls:	Field	Windward	23.08
		Leeward	-25.31
	Edge	Windward	23.08
	J	Leeward	-28.33
Roof:	Zone 1 (Field)	Windward	9.41
		Leeward	-26.74
	Zone 2 (Edge)	Windward	9.41
		Leeward	-31.7
	Zone 3 (Corner)	Windward	9.41
		Leeward	-31.7
Overhang:		Roof Edge	-27.24 (total, both surfaces)
		Roof Corner	-19.81
Parapet Windy	ward side (case A)	Wall Field	47.01
		Wall Edge	
Leewa	ard side (case B)	Wall Field	42.84
		Wall Edge	46.28





engineering

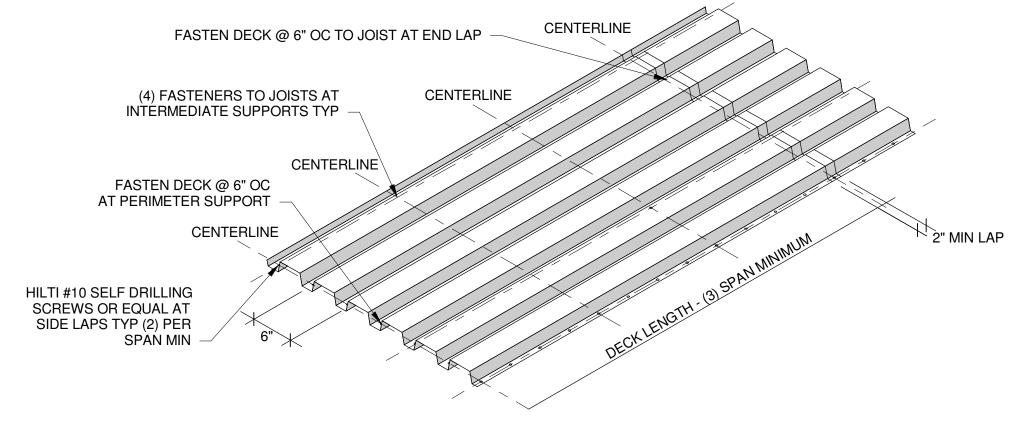
Architectural. Structural. Civil Engineering Milwaukee Wisconsin 53221 Phone: 414-324-4129 EMADNADI@ETNENGINEERING.COM Revision Schedule No. Revision Date

VARIES



STRUCTURAL PLAN

 $2 \frac{\text{Roof Framing}}{1/4" = 1'-0"}$



NOTES:

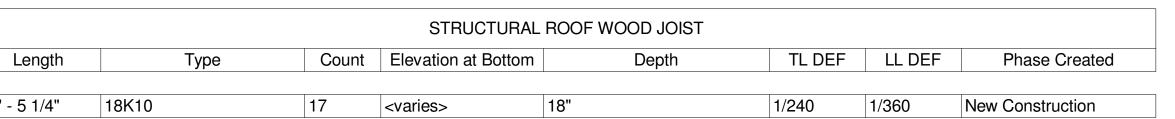
1. MECHANICALLY FASTEN DECK TO SUPPORTS WITH FASTENERS INDICATED BELOW. WELDING WILL NOT BE ALLOWED.

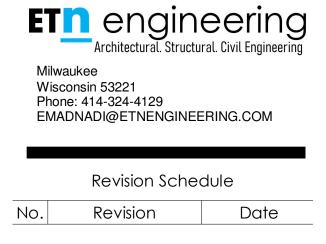
> - JOISTS AND BEAMS: 3/16" <= t <= 3/8" USE HILTI X-HSN24 - JOISTS: 1/8" <= t <= 3/16" USE HILTI X-HSN24
> - BEAMS & HEAVY JOISTS: t >= 1/4" USE HILTI X-ENP-19
> t = THICKNESS OF BASE MATERIAL

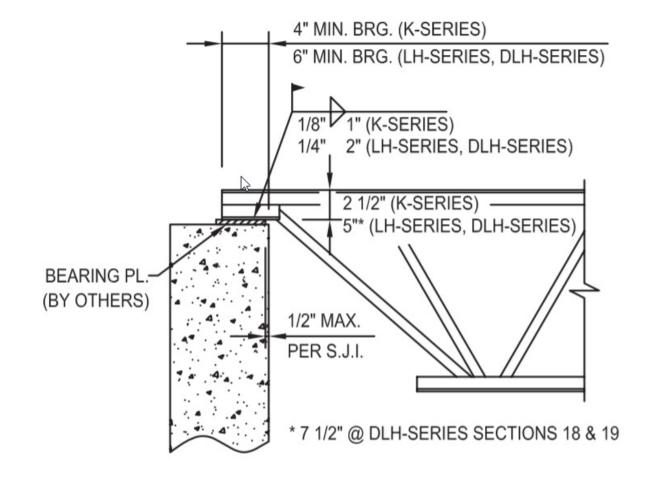
2. MINIMUM 1/8" MATERIAL THICKNESS REQUIRED AT JOIST TOP CHORDS.

3 STEEL DECKING DETAILS
1" = 1'-0"

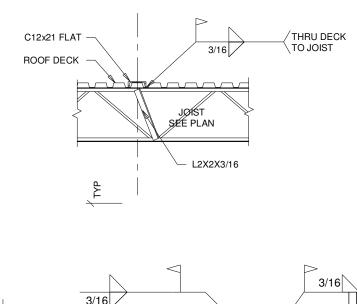
STRUCTURAL ROOF WOOD JOIST								
Length	Type	Count	Elevation at Bottom	Depth	TL DEF	LL DEF	Phase Created	
				_				
27' - 5 1/4"	18K10	17	<varies></varies>	18"	1/240	1/360	New Construction	

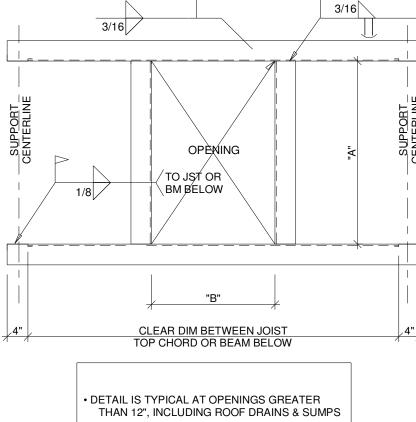






1) JOIST BEARING DETAILS 1/2" = 1'-0"



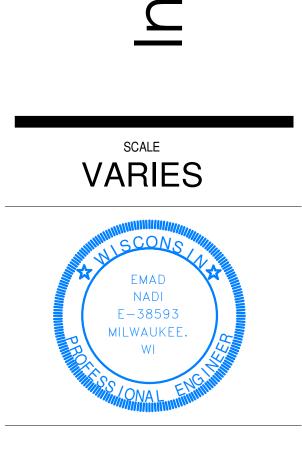


DIMENSIONS "A" & "B" BY MECHANICAL CONTRACTOR & ROOF SUMP SUPPLIER

• PROVIDE C12 X 21 AT RTU CURB (FLAT)

• SEE HVAC FOR LOCATION & SIZE REQUIRED

2 RTU DETAILS 3/4" = 1'-0"



STRUCTURAL DETAILS



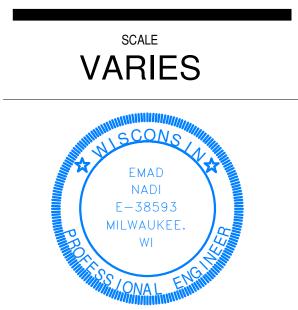


Revision

Date

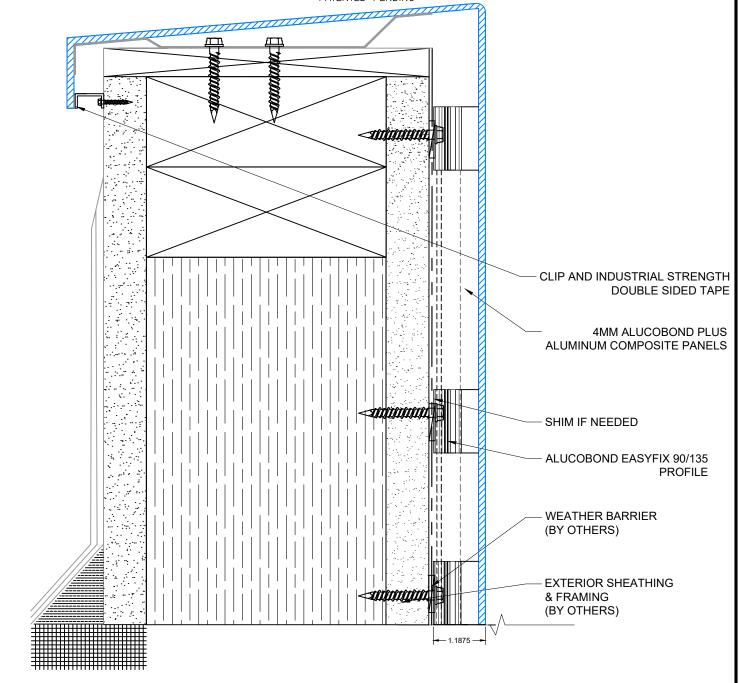
No.

Mobil Mart Interior and Exterior Alteration Mobil Marior Alteration Mauwatosa WI



STRUCTURAL DETAILS

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View Point-Side View

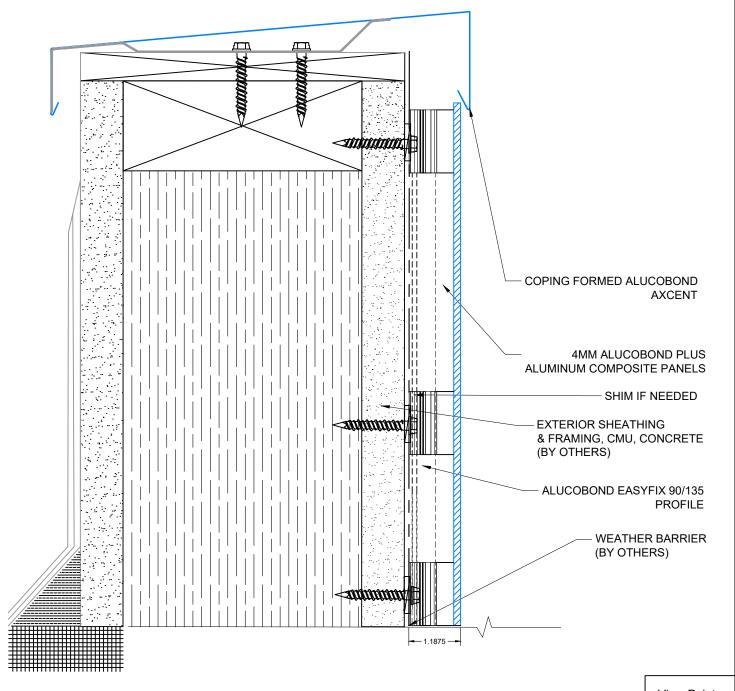


PARAPET ALUCOBOND PLUS



ALUCOBOND[®] EasyFix[™]: Vertical -

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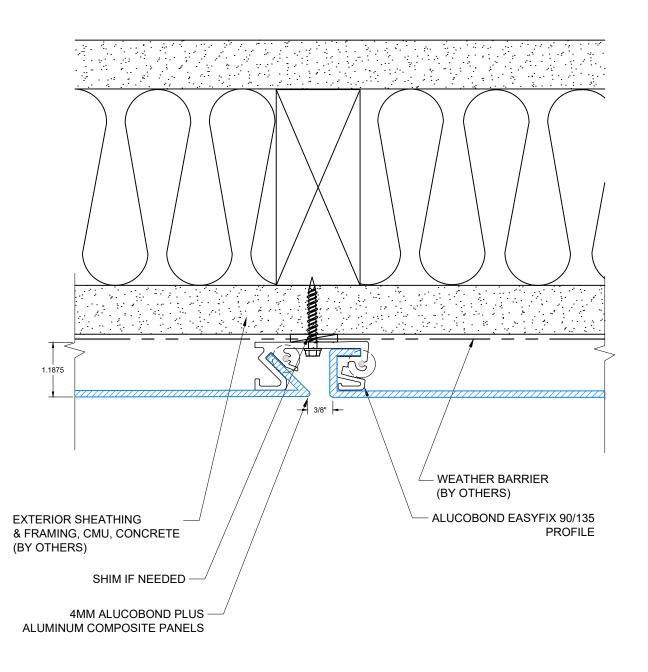


View Point-Side View





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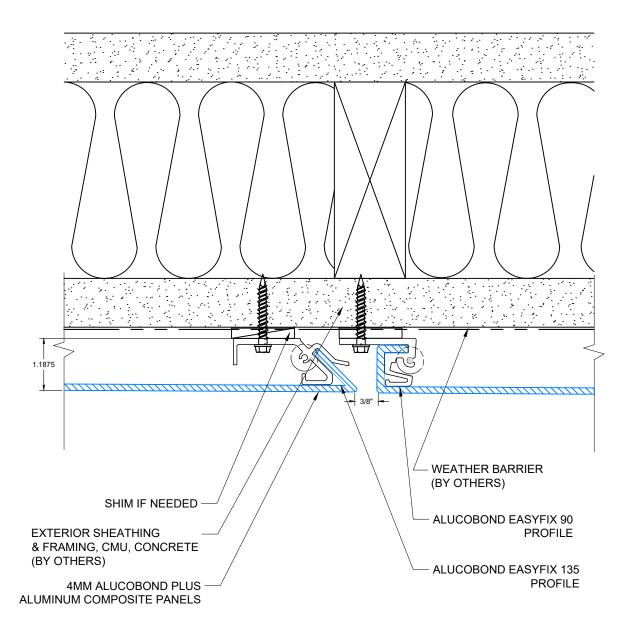


View Point-Top View





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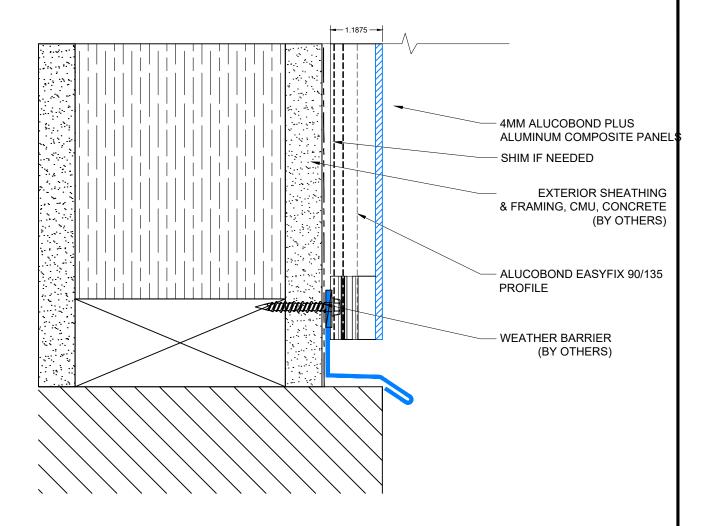
View Point-Top View



OPTIONAL VERTICAL



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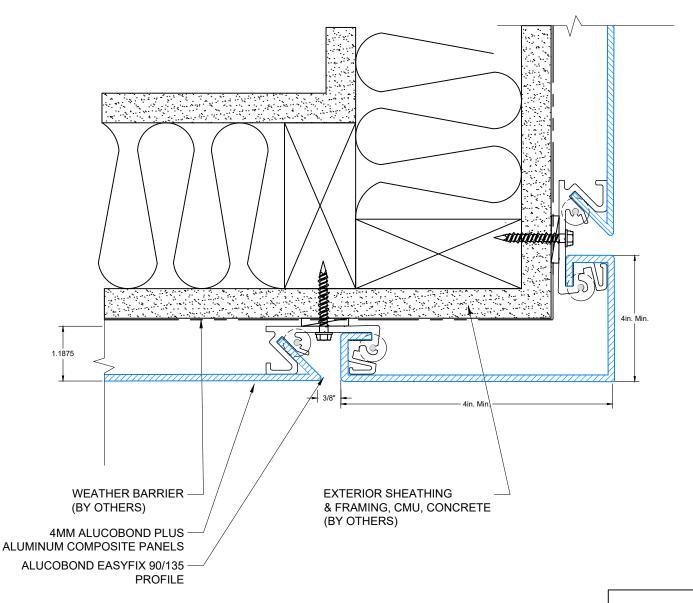
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BASE CONDITION DETAIL



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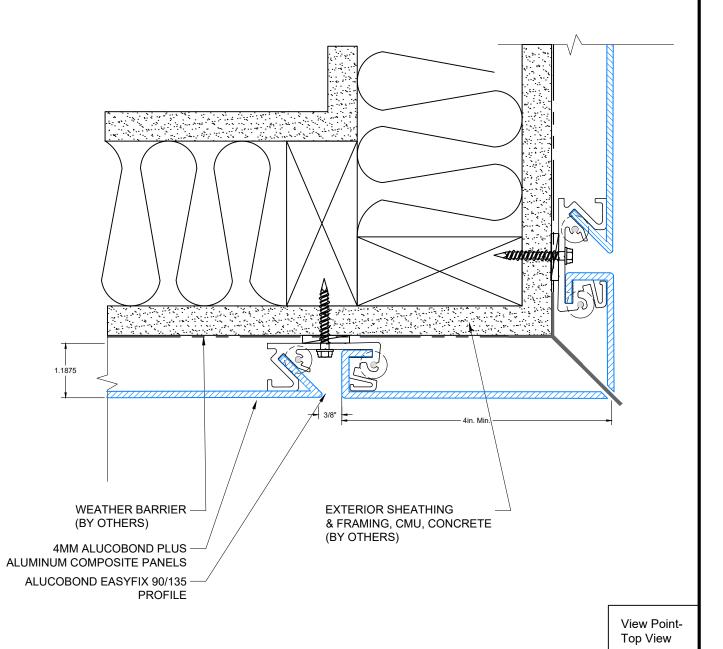
View Point-Top View



OUTSIDE CORNER



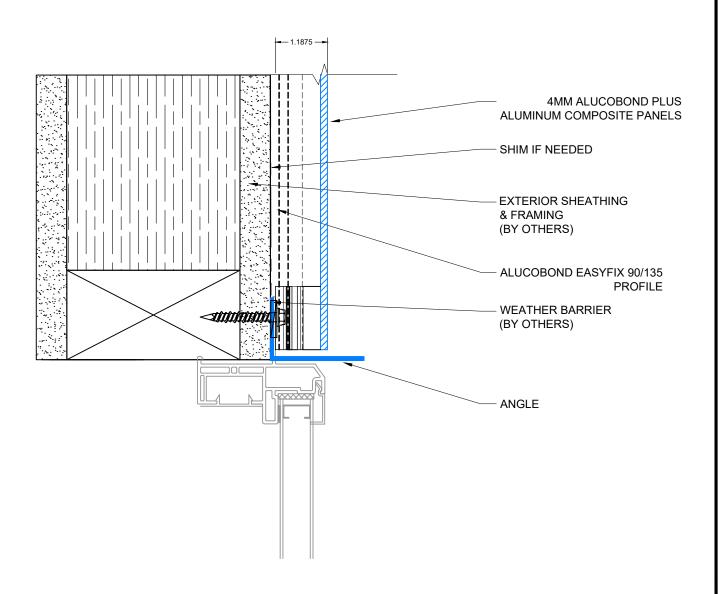
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4 <u>OUTSIDE CORNER</u>



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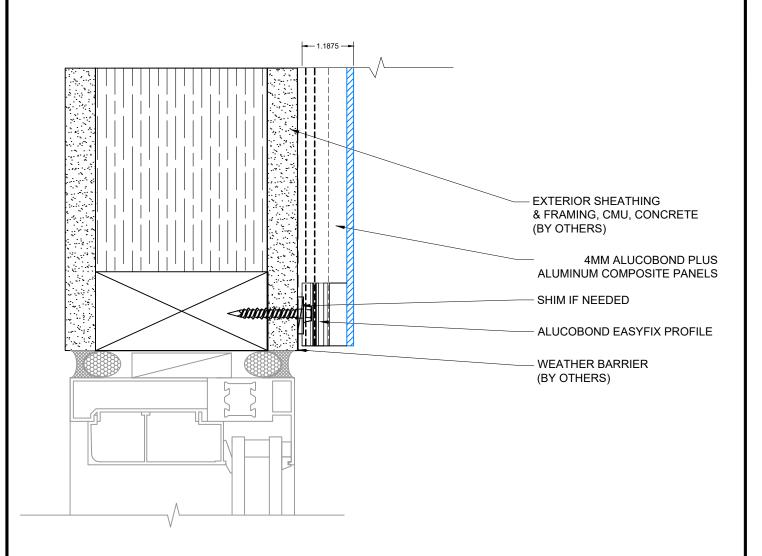
View Point-Side View



WINDOW HEAD CONDITION



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View Point-Side View

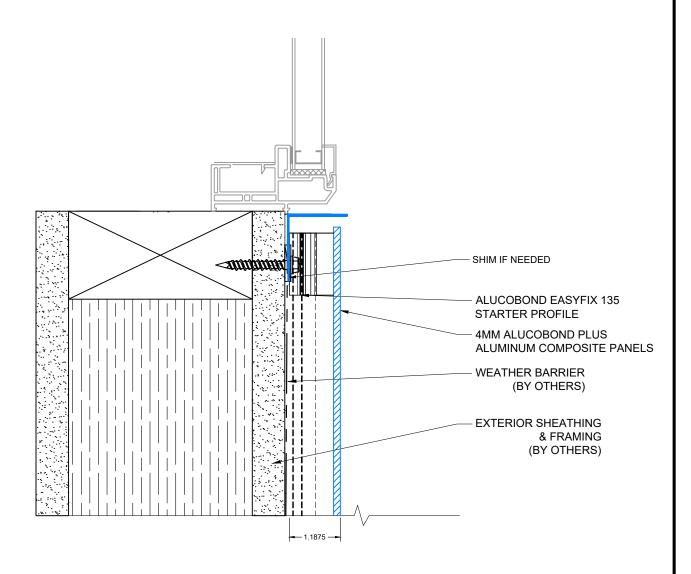


OPTIONAL WINDOW HEAD



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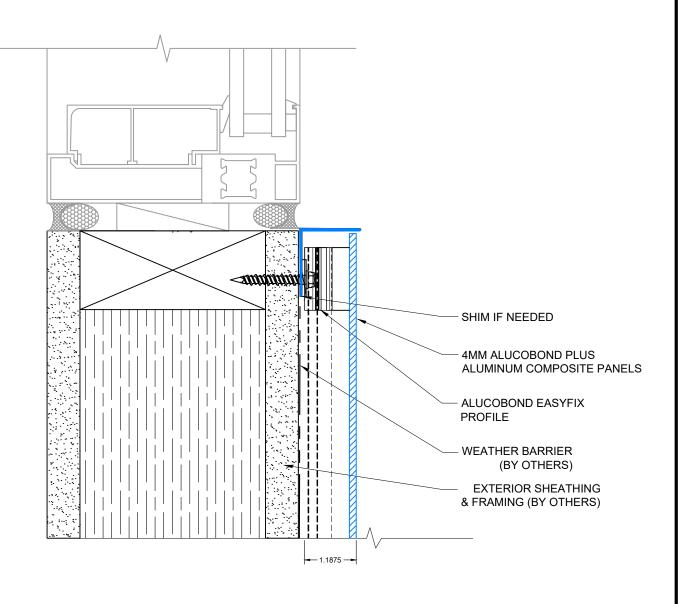


View Point-Side View





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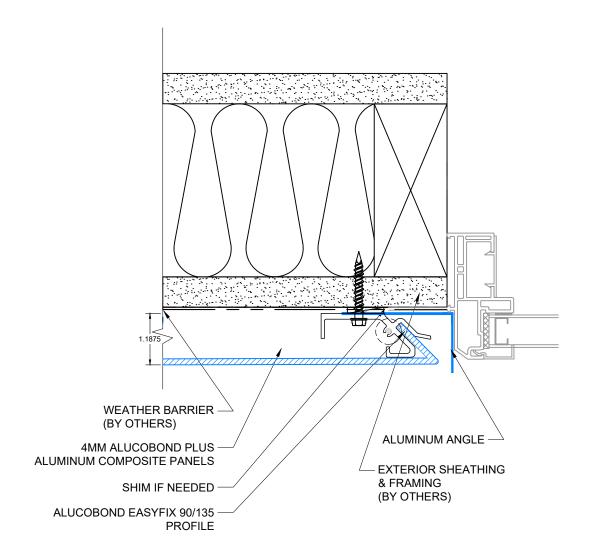
View Point-Side View

(6a)

WINDOW SILL OPTIONAL



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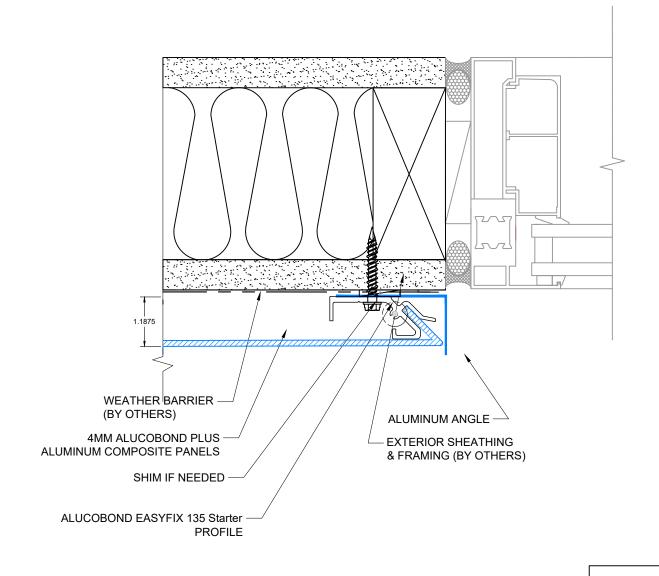


View Point-Top View





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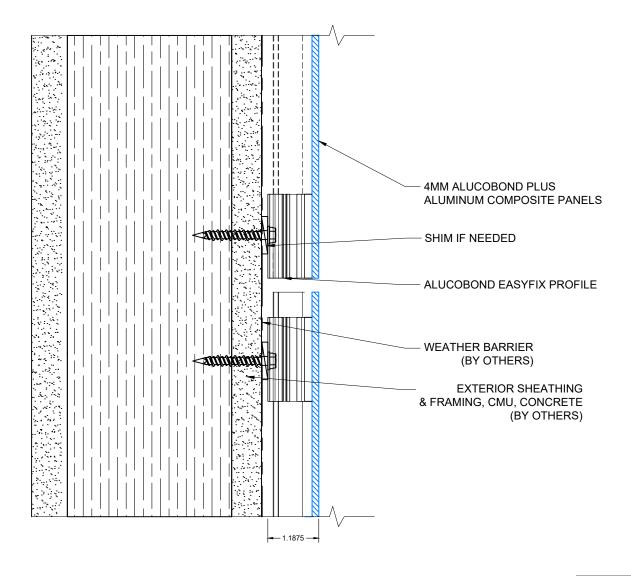


View Point-Top View





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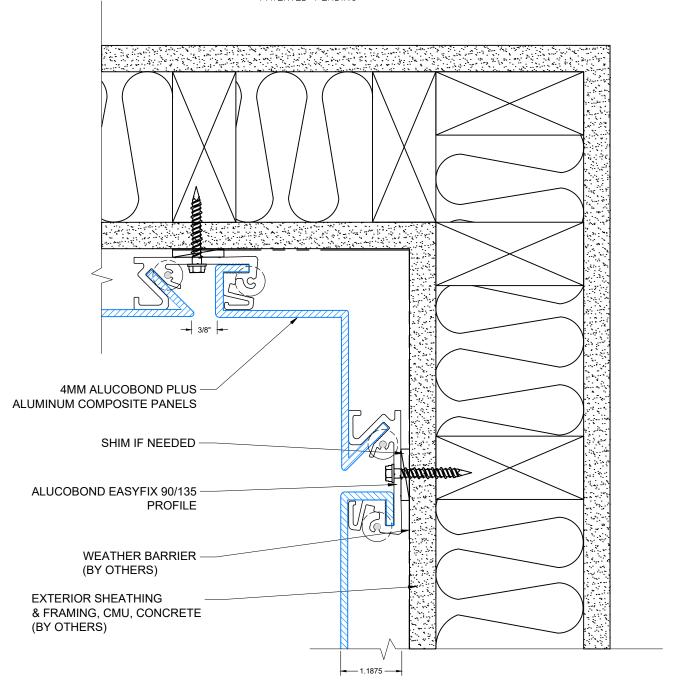
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8 VERTICAL JOINT DETAIL



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PATENTED PENDING



View Point-Top View





ALUCOBOND® PLUS GIVING SHAPE TO GREAT IDEAS

Fabrication Manual

This fabrication manual has been developed to assist fabricators to work with 4mm ALUCOBOND® PLUS material in the most efficient and effective manner. The recommendations in this manual are the result of many years of combined experience by fabricators in North America.



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INTRODUCTION

This fabrication manual has been developed to assist fabricators to work with ALUCOBOND® PLUS material in the most efficient and effective manner. The tips and suggestions contained in this manual are the result of many years of combined experience by fabricators in both North America and Europe.

The recommended suggestions and product data are based on information which is, in our opinion, reliable. However, since skill, judgment, and quality of equipment and tools are involved, and since conditions and methods of using ALUCOBOND PLUS material are beyond our control, the suggestions contained are provided without guarantee. We recommend that prospective users determine the suitability of both the material and suggestions before adopting them on a commercial scale. 3A COMPOSITES USA INC. DOES NOT MAKE ANY WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PURPOSE, WITH RESPECT TO ANY SAID SUGGESTIONS AND PRODUCT DATA. In no event shall 3A Composites USA Inc. have any liability in any way related to or arising out of said suggestions and product data for direct, special, consequential or any other damages of any kind regardless whether such liability is based on breach of contract, negligence or other tort, or breach of any warranty, express or implied.

Also, normal safety and health precautions practiced in any fabricating environment should be used when fabricating ALUCOBOND PLUS material. Goggles or other face protection, as well as hearing protection should always be worn.

SDS for ALUCOBOND PLUS material are available through our Customer Service Department.

This fabrication manual is written to address the fabrication of 4mm ALUCOBOND PLUS material. Although DIBOND material (2mm, 3mm, 4mm) is a similar composite, it is not covered by this manual. Questions regarding DIBOND material are answered in the DIBOND material Processing Manual.



Section I: FABRICATING

Considerate care should be taken in the layout and handling of ALUCOBOND PLUS material. Refer to Section VI of this manual for information on care and handling.

The use of coolants or lubricants is not required when sawing.

A. Sawing (For Sizing Panels)

ALUCOBOND PLUS material is manufactured with any one of several high quality finishes. It is best to move the saw blade rather than the material in most operations. Saw cutting can be accomplished with the following cutting equipment:

1. TABLE SAWS

Table saws are not recommended for cutting sheets larger than 4' x 4' in size.

2. PANEL SAWS

Panel saws provide an effective method of cutting. These saws, whether standard equipment or custom made, perform well and have the added advantage of space savings. If a panel saw is to be used as production equipment, an industrial model should be purchased in order to obtain adequate cutting tolerances and increase the longevity of the equipment.

3. MULTIPLE OPERATION RIP/V-GROOVING SAWS

In high production operations, equipment that is capable of performing more than one operation with a single pass through the machinery may be used. This equipment can make multiple saw cuts (sizing the panel) and V-Grooves (rout) at the same time.

4. PORTABLE SAWS

Cutting ALUCOBOND PLUS material with portable circular saws is another effective method. As mentioned, this equipment should also be production/industrial type equipment.

5. RECIPROCATING SAWS

Reciprocating saws work well for cutouts. Care should be aken with portable saws and reciprocating saws to prevent damage to the ALUCOBOND PLUS material surface. More than one sheet can be cut at a time by stacking panels. If center cutting (i.e., letter cutouts) is required, a foam pad may be placed under the material with the reciprocating blade cutting into the foam. The sheets may be clamped or secured with double-faced tape for the cutting operation. When clamping between jaws, protect the panel surface against damage.



Section I: FABRICATING cont'd.

B. Blade Recommendations

Consult Table I for recommended blades and cutting speeds for various types of saws.

TABLE 1

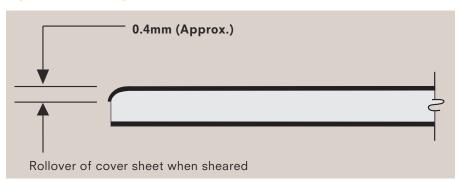
WORKING METHOD	CUTTING MATERIAL	BLADE OR BAND GEOMETRY	TOOTH GEOMETRY	CUTTING SPEED (MAX.)	CUTTING FEED (MAX.)
Circular Saws	Carbide tipped or high-speed steel (For anodized finish, use Carbide tipped only.)	8" x 14" blades with maximum number of carbide teeth available, designed for cutting nonferrous material. The blade should be ground thinner from the rim towards the center to prevent pinching.	Angle or circular tooth, alternate beveled, triple ground. Tooth gap wall rounded. Chip angle: 5o to 15o. Clearance angle: 10o to 30o. Tooth spacing: 3/16" to 1" (4mm to 25mm), fine spacing preferable.	5,500 RPM	16"/second
Bandsaws	Tempered spring strip steel	Thickness: .03" to .047" (0.8mm to 1.2mm). Width: 9/16" to 1" (15mm to 25mm). Use racket or straight set.	Skip teeth, designed for nonferrous and ferrous materials (light metals & plastics). Tooth spacing: minimum ten teeth per inch.	10,000'/min.	10"/second
Reciprocating saws	High-speed steel	Thickness: .03" to .047" (0.8mm to 1.2mm). Width: 3/16" to 9/16" (15mm to 15mm). Use racket or straight set.	Hook or circular tooth with alternate angles, set or waved. Tooth spacing: .010" to .250" (2mm to 6mm). (Plywood blade).		4"/second

C. Shearing

ALUCOBOND PLUS material can be easily sheared. However, a slight roll-down of the aluminum cover sheet may occur on the impact side (reference **Figure 1**). This roll-down area is often referred to as the "edge zone." In this area, the polythylene core is compressed and can lead to increased stress between the core and the aluminum cover sheet. Due to this additional stress, shearing should be avoided when the edge of the panel es exposed to the environment.

When shearing ALUCOBOND PLUS material, light markings on the material may be caused by the hold down pads. In order to avoid these markings, the hold down on the shear should be fitted with a shock-absorbing rubber pad which will help to prevent damage to the ALUCOBOND PLUS material.

Figure 1 - Shearing





Section I: FABRICATING cont'd.

D. Jointing or Filing of Edges

Floor model woodworking jointers are effective for edge finishing.

For finishing work, after contour cutting with a reciprocating saw (ordinary cutting files work best), the file profile should be from slightly to fulling rounded. The proper filing direction is length-wise along the edge.

E. Routing: For Bending

Unlike sheet metals which require the use of a large break press for folding fabrication, ALUCOBOND PLUS material can be accurately folded by hand after a simple routing operation is done on the back skin. Anytime a blueprint shows a fold line, this routing operation is done at the location of the bend. This fabrication method is unique to composite panel fabrication and is referred to as Rout & Return. Floor model woodworking jointers are effective for edge finishing.

ALUCOBOND PLUS material may be routed using one of the two following methods: (Either method should use high-quality industrial equipment.)

1. ROUTER

One procedure for routing ALUCOBOND PLUS material is to use an industrial or commercial grade, hand-operated router. For production operations this method is relatively slow. The recommended feed rate is 6' to 10' per minute using carbide tipped cutters.

Special custom cutters for ALUCOBOND PLUS material are available (reference Section VII). These cutters have been specifically developed for ALUCOBOND PLUS material and will produce the required configuration for proper rout tolerances. Commercially available 90° wood working routing cutters, available from your local hardware store, may be modified to provide approximately the same function as the custom cutters, provided the tip is ground to a (or flattened) 1/16" minimum at the point (reference **Figure 2**).

Keep router bit sharp to reduce heat build-up and the need to rerout fused core material.

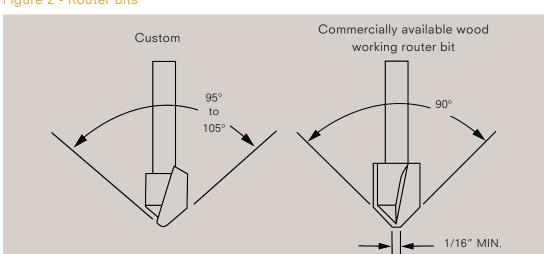
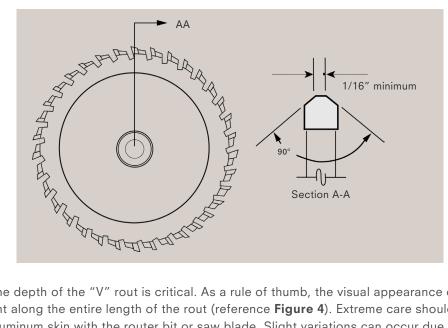


Figure 2 - Router Bits

2. CIRCULAR SAW (CUSTOM BLADE)

For fabrication of a large number of sheets that require routing, a portable circular saw fitted with a special blade is advisable (reference **Figure 3**). This blade is often referred to as a "V" Routing Blade. These blades, used with a quality industrial saw, you will produce the required tolerances at a much faster rate than hand routers (reference Section VII). Many fabricators use a worm gear-driven industrial-quality saw, with a larger plastic base plate added for stability.

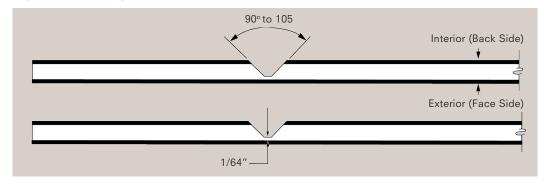
Figure 3 - Routing Saw Blade ("V" Routing blade)



The depth of the "V" rout is critical. As a rule of thumb, the visual appearance of the rout line should be consistent along the entire length of the rout (reference **Figure 4**). Extreme care should be taken not to touch the exterior aluminum skin with the router bit or saw blade. Slight variations can occur due to thickness changes in the ALUCO-BOND PLUS material sheet; constant depth of the rout ensures a good smooth line when the edge is folded.

The same guidelines should be used when routing with a "V" Routing Blade on a portable circular saw or with a portable router. **Figure 4** indicates the finished rout required to develop a quality bend. Leave skin plus 1/64" of PLUS core.

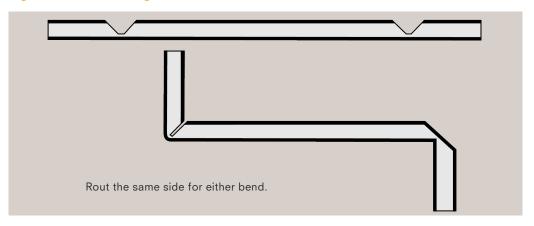
Figure 4 - Routing





By routing only one side, ALUCOBOND PLUS material can be bent either upward or downward to create both an inside or outside corner as illustrated in **Figure 5**.

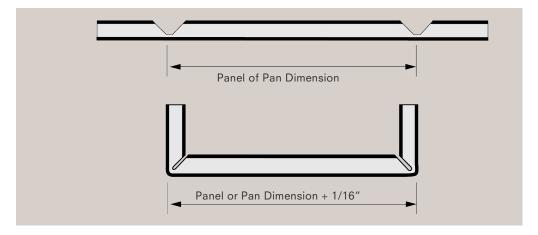
Figure 5 - "V" Routing



NOTE: The material is most easily bent when the rout is made at least one inch or more from the edge of the panel.

An ALUCOBOND PLUS material "pan" is easily fabricated by routing all four sides, notching the corners (shown in **Figure 7** and **Figure 8**), and folding or returning each of the routed sides (reference **Figure 6**). This type of fabrication is commonly referred to as "Rout & Return."

Figure 6 - Routing



Note that as a result of the slight radius produced when bending, your finished panel dimension will be 1/32" to 1/16" larger when folded. This is determined by the profile of the cutter used to make the rout. Trial cuts should be made prior to production to determine any necessary adjustments in layout dimensions (feference **Figure 6**).

On the following page, two different methods of fabrication are illustrated showing how corners may be handled on the folded or "returned" leg of the "pan."



Figure 7 - Square Corner Cutouts

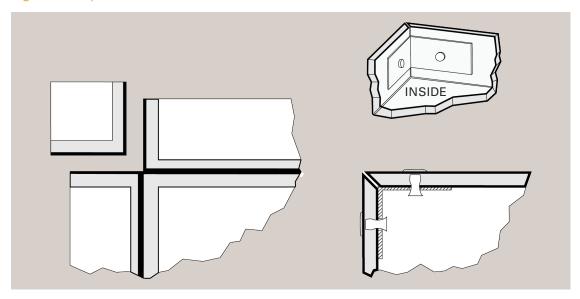
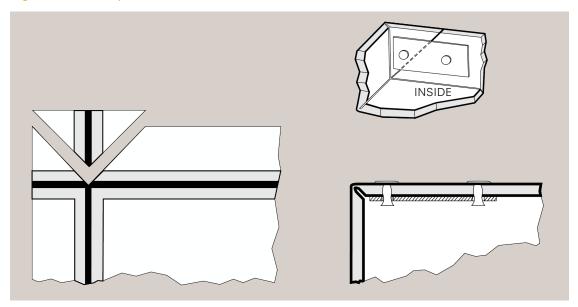


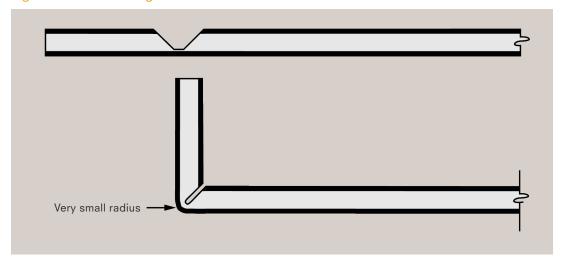
Figure 8 - Envelope Corner Cutous



F. Small Radius Bending (by routing)

A very small radius can be achieved by "V" routing and folding (reference Figure 9).

Figure 9 - "V" Routing



By changing the shape of the cutter used, a larger radius can be achieved. A flatter, wider cut will result in a smoother bend (reference **Figure 10**). Care must be taken when sliding the router across the ALUCOBOND PLUS material to avoid surface scratches. Care must also be taken to avoid cracking the paint of the surface. A minimum of a 1-T radius is required for the ALUCOBOND metal and paint.

Figure 10 - Flat Routing

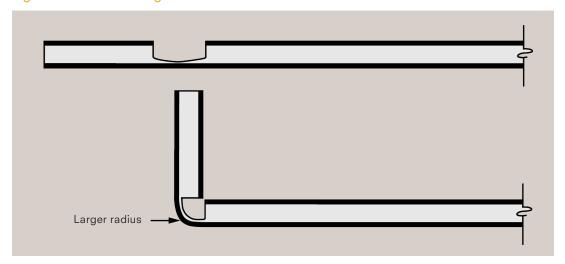
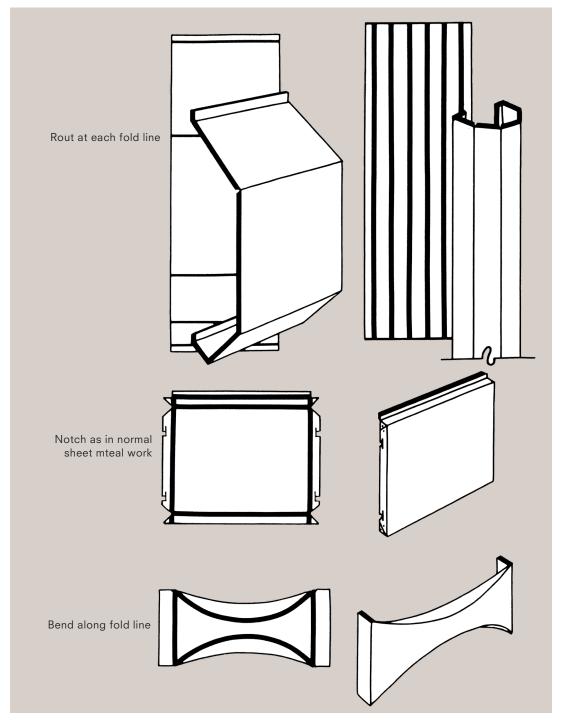


Figure 11 - Routing Concepts





G. Curving

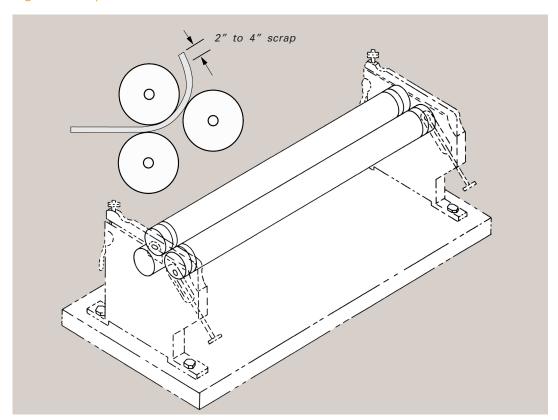
The minimum bending radius for 4mm ALUCOBOND PLUS material without routing the back skin is 4" (101mm).

ALUCOBOND PLUS material can be cold formed in a pyramid roller or a press brake. The process is similar to the forming of aluminum; however, due to the sensitive surface, care should be taken to ensure rollers are clean, smooth, and free of defects to avoid damage to the surface finish.

1. PYRAMID ROLLER

As an extra precaution, a film should be used between the panel and the rollers to further protect the panel surface. Do not pinch the ALUCOBOND PLUS material between the rollers. Roll the panel 3° to 5° tighter to allow for a small amount of springback that will occur. Once the sheet is curved; however, it will remain curved (reference **Figure 12**).

Figure 12 - Pyramid Roller



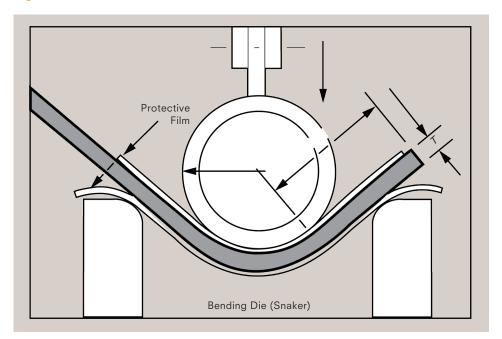
- 1. Make sure rollers are clean
- 2. Use protective material between rollers and ALUCOBOND PLUS material (top and bottom)
- 3. Adjust rollers for thickness (4mm)
- 4. Allow 2" to 4" scrap at each end for typical pyramid rolling.



2. PRESS BRAKE

As an extra precaution, a film should be used between the panel and the rollers to further protect the panel surface. Do not pinch the ALUCOBOND PLUS material between the rollers. Roll the panel 3° to 5° tighter to allow for a small amount of springback that will occur. Once the sheet is curved; however, it will remain curved (reference **Figure 13**).

Figure 13 - Press Brake



H. Drilling

ALUCOBOND PLUS material can be worked with twist drills usually used for aluminum and plastics, and on drilling machines customarily used for metals.

Working Specifications:

Drill Bit: Twist drill, high-speed steel

Tip Angle: 100° to 140°, or counterbore grind with centering tip

Cutting Speed: 164 RPM to 984 RPM

Quick removal of chips can be achieved by a process of high revolution, slow feed and occasional lifting of the drill bit.

I. Punching

The punching of flat-formed parts from ALUCOBOND PLUS material is performed the same way as the solid aluminum sheet, using evenly ground tools and the narrowest possible cutting gap. Be sure to punch through the ALUCOBOND PLUS material to completely serrate the core material. As with shearing, a slight roll down may occur. Refer to the section on shearing for additional information.



Section II: JOINING

A. General Advice on Joining Elements

Use the following guidelines when other elements come in direct contact with the surface of ALUCOBOND PLUS material:

1. Acceptable joining element materials:

Aluminum

Stainless Steel

Plated or coated steel with cadmium, zinc, or aluminum

2. Unacceptable joining element materials:

Copper

Brass

Bronze

Iron

Raw Steel

Unacceptable materials cause corrosion of joining surfaces due to electrolysis of dissimilar materials. Therefore, use "heavy" or "red" metals only with an electrically insulating intermediate layer.

When joining elements are to be anodized, assemble the materials after the anodizing process.

Proper consideration should be given to the thermal expansion characteristics of ALUCOBOND PLUS material when using any of the joining techniques. Refer to Section V, Subsection C for the method of determining thermal expansion of ALUCOBOND PLUS material.

B. Threaded Fasteners

The easiest method of joining sheets of ALUCOBOND PLUS material together or to an extrusion profile erection system is with machine screws or bolts (reference **Figure 15** below). This method allows the panel to be removed. Use the largest possible flat washer to minimize surface pressure and eliminate possible compression due to cold flow of the core material. Arrange attachment screws at least 2.5 x the diameter of the fastener from the edge of the sheet, as shown in **Figure 16** on the following page.

It is not recommended to torque fasteners due to the cold flow of the core material. Two complete turns of the nut past finger tight is common practice (reference **Figure 17** on the following page.)

Figure 15

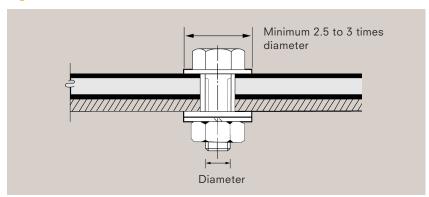




Figure 16

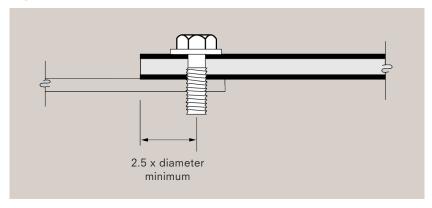
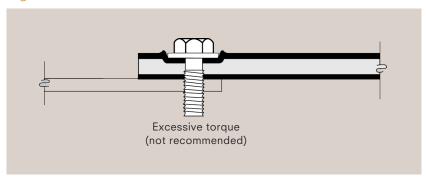
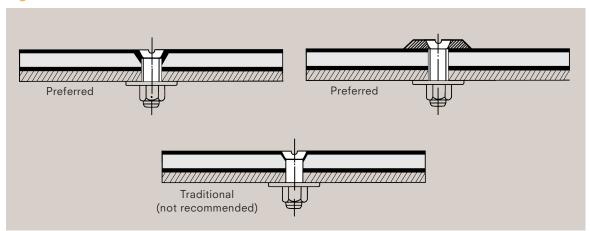


Figure 17



To countersink into ALUCOBOND PLUS material without prior preparation, tighten the nut and washer onto the bolt and draw the head of the fastener into the cover sheet. Countersink washers can also be used. Either method is preferable in lieu of traditional countersinking as shown in **Figure 18**.

Figure 18



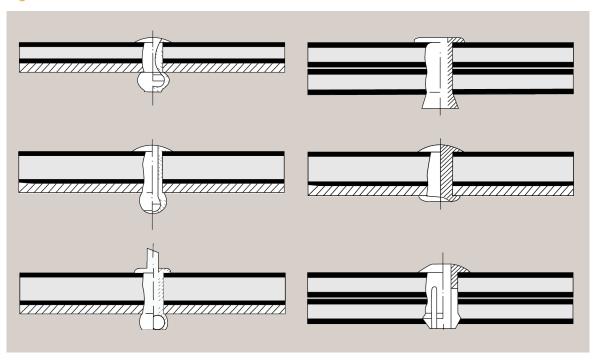


C. Rivets

Panels of ALUCOBOND PLUS material can be fastened together or joined to aluminum extrusion profiles or other sheet metals with rivets common to aluminum construction. Blind rivets provide the advantages of labor savings, one-sided working of the material, and the reduced potential of surface damage. Semi-tubular, solid and other types of rivets can also be effective on a production basis.

Place the closing or set-head on the side of the aluminum extrusion profile or sheet metal. When conditions do not permit this or when two pieces of ALUCOBOND PLUS material are to be joined together, use rivets with special wide closing heads as shown in **Figure 19** or with tightly fitting washers.

Figure 19



When blind rivets are subjected to tensile strength tests, the head tends to "unbutton" from the ALUCOBOND PLUS material, or pull through the hole. Since this would cause localized tearing of the ALUCOBOND PLUS material, use the largest possible rivet head for connections that will experience loading.

Aluminum alloys such as 5032 and 5154 are suitable rivet material. Due to stress corrosion, alloy 5056 should not be used if the temperature of the manufactured part is expected to rise over 140° F (60° C).

Rivet connections are well suited for parts that may be subjected to concussion or vibration. Colored plastic concealment caps are available for various types of blind and tubular rivets. Consult the rivet manufacturer for details. Follow the directions and determine suitability by pre-testing.



D. Concealed Fastening

Concealed fasteners may be used when a smooth, exposed surface is required, as in exterior building cladding, interior surfaces, signs, exhibits, store fixtures and furniture. Several fastening options are available, including adhesives and mechanical attachments. All of these methods have medium to low load transmitting capacity compared to conventional fasteners.

1. ADHESIVE BONDING

Most adhesives and sealing compounds do not adhere to the core material; therefore, bond to the aluminum skin of the ALUCOBOND PLUS material only (reference **Figure 21**).

To achieve reliable bonding, it is imperative to follow the adhesive manufacturer's instructions.

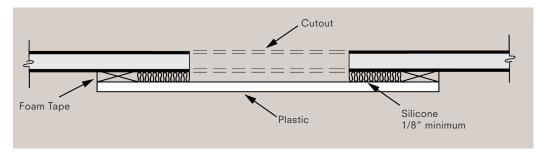
For interior design purposes, high strength contact adhesives that do not require lengthy setting times can be used to achieve particularly high shear strengths.

Where moderate cure times are acceptable, construction adhesives should be considered.

When longer cure times are not objectionable, silicones can be used successfully. However, it may be necessary to hold the components with foam tape while the silicone sets.

When using an adhesive to hold dissimilar materials, select one that will handle thermal movement without shearing. Use a low modulus sealant where greater amounts of movement are expected (i.e., plastics to aluminum), and high modulus sealants if minimum movement is expected (i.e., bonding aluminum to aluminum).

Figure 21



One of the architectural and display features in great demand is the ability to attach ALUCOBOND PLUS material to a substrate without having exposed fasteners. Although there are some techniques to accomplish this using conventional fasteners, the vast majority of this type of connection is done using adhesives. To develop some general guidelines, 3A Composites USA Inc. has reviewed some well-known adhesives and can present the following information.

The General Guidelines on **page 19** have been established based on the research done into the use of adhesives on ALUCOBOND PLUS material.



2. "STUD WELDING" ON ALUCOBOND PLUS MATERIAL

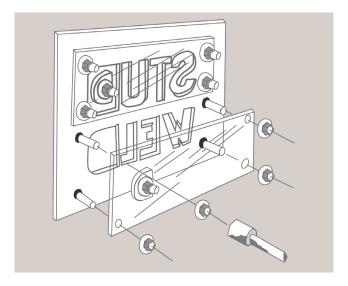
Another approach for attaching to ALUCOBOND PLUS material has been developed which is very fast and easy. This attachment method utilizes a special stud that has no threads, together with a push nut.

This non-threaded stud must be manufactured of the most compatible alloys to ensure the maximum weldability possible to the panel. The proper stud can be easily fastened or welded using a standard capacitor discharge stud welder. The use of a non-threaded stud eliminates the problems of finding the lead threads, paint in the threads, or of most importance, the possibility of over torquing the retaining nut which could shear the weld (reference **Figure 22**).

The push nut has a built-in washer and locking function. Therefore, the use of a washer, lock washer and nut are not needed. Installing the push nut is a simple thrust with a nut driver. Performing stud welds on a test panel to observe the impact on the opposite surface is recommended as read-through can be a problem.

To remove, the self-threaded push nut is unscrewed. Oversized holes are drilled in the material to be attached at the stud locations prior to installation. Paint should be removed at each stud location by mild abrasion or with the use of paint removers prior to welding. Care should be used to select the proper settings depending on the stud welding gun and the thickness of ALUCOBOND PLUS material.





3. TAPES

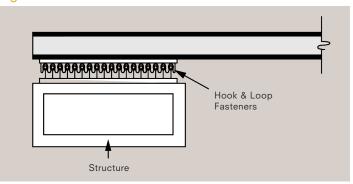
For concealed attachment, double-faced high strength foam tapes are effective. The purpose for these various tapes are: 1) to hold material under limited load applications, 2) to hold material in line while silicone sets, and 3) for sealing (reference **Table 2** on page 19).



4. HOOK AND LOOP SYSTEMS

Hook and Loop systems and mounting systems may be used when simple demounting is needed (reference **Figure 23**).

Figure 23



5. BOND ON STUD

An alternative to stud welding is the bond on stud. These are available in various pad sizes as well as different bolt dimensions and are easily used to attach other materials to the back side of ALUCOBOND PLUS material (reference **Figure 24**).

Figure 24

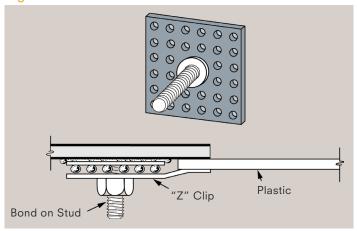


TABLE 2

3M - Industrial Tape & Specialties Division	VHB Double Coated Acrylic Foam Tape
Avery Dennison - Specialty Tape Division FasTape Acrylic Foam Tape	
Mactac - Technical Products Division	MACmount Double-Coated Foam Tapes
Norton - Norton Performance Plastics Corp.	Normount



E. General Adhesive Guidelines

- 1. To achieve reliable bonding, it is imperative to follow the adhesive manufacturers's application instructions.
- 2. Although many adhesive materials work well on the coil coated paint finishes on ALUCOBOND PLUS material, no product, either adhesive or tape, has been found that will adhere to the core materials. All attachments should be made through contact with the aluminum facers of ALUCOBOND PLUS material.
- **3.** Care must be taken in the selection of an adhesive regarding the expansion of the materials to be joined. Where significant thermal expansion can occur (i.e. exterior applications) adhesives should be of medium or low modulus materials to allow for movement without shear or loss of bond. For interior applications where thermal expansion is not a consideration, high modulus adhesives can be used to join materials.
- **4.** Cure time is generally a consideration in the choice of adhesives. Silicones take a good deal of time to cure before a load can be applied whereas the faster curing adhesives do not have the movement capabilities to meet the project needs. In these instances, a combination of tape and adhesive is often used.

Example: Two pieces of ALUCOBOND PLUS material must be connected for a strong permanent bond in a short period of time. The adhesive area is 2" x 36".

Many times a strip of double-sided tape (approx. 3/4" wide) will be applied next to a bead of silicone adhesive. For the near term, the tape holds the ALUCOBOND PLUS. For the longer term, the silicone adhesive will cure and relieve the load applied to the tape, which now acts as a joint filler.

The following adhesives have been shown to adhere to ALUCOBOND PLUS material. On anodized ALUCOBOND PLUS material, a primer is necessary in certain cases. Please refer to the adhesive manufacturer guidelines or contact 3A Composites Technical Services.

Isopropyl alcohol two-cloth cleaning method is a minimal surface preparation for all adhesive bonding.

1- part Silicones, Adhesives and Sealants:

- Dow 995: 1-part silicone structural adhesive
- Pecora 864, 890, 895: 1-part silicone sealant
- . Tremco Spectrem 1, Spectrem 2, Proglaze SG: 1-part silicone sealant
- Schnee Morehead SM5731: 1-part silicone sealant
- . GE SCS2800, SCS9000, SCS2000, SCS2900, GE7000: 1-part silicone sealant

1-part Silicones or Urethane Adhesives/Sealants Requiring a Primer:

- Dow 790, Dow 795: 1-part silicone sealant
- Surface preparation: Solvent wipe and Dow Corning 1200 Prime Coat required
- Tremco Dymonic: 1-part polyurethane sealant
 - Surface preparation: Isopropyl alcohol two-cloth cleaning method, primer #6

2-part Methacrylate, Urethane and Epoxy Adhesives:

- Lord 406/19 (methacrylate), 7542AB, 7545AB (urethane)
- IPS Weld-On 45, Weld-On SS515 (methacrylate)
- Scotch Weld 3M 2216 (epoxy with long working time): Scuffing required

The adhesive manufacturers have reported that Lord 406/19 and IPS Weld-On 45 may also be used on unprimed aluminum.

Synthetic Rubber and 1-part Urethane Adhesives:

- Lord 7610 (1-part urethane): Scuffing required
- Schnee Morehead SM7108 (1-part urethane)
- Liquid Nails LN-901 (synthetic rubber)

Many different types of adhesives and tapes have been found to work well with ALUCOBOND PLUS material. It is important to follow the guidelines listed above and to experiment with any new adhesive or technique prior to generating the final product.

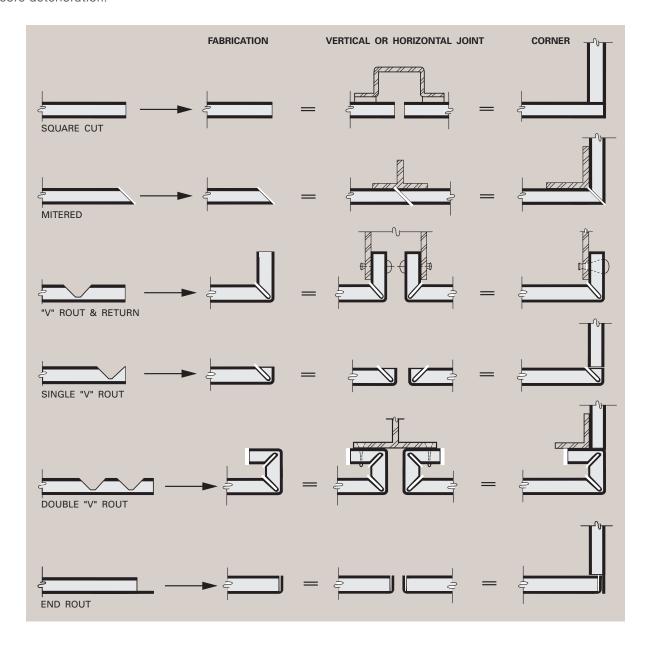


Section III: CONCEPTS

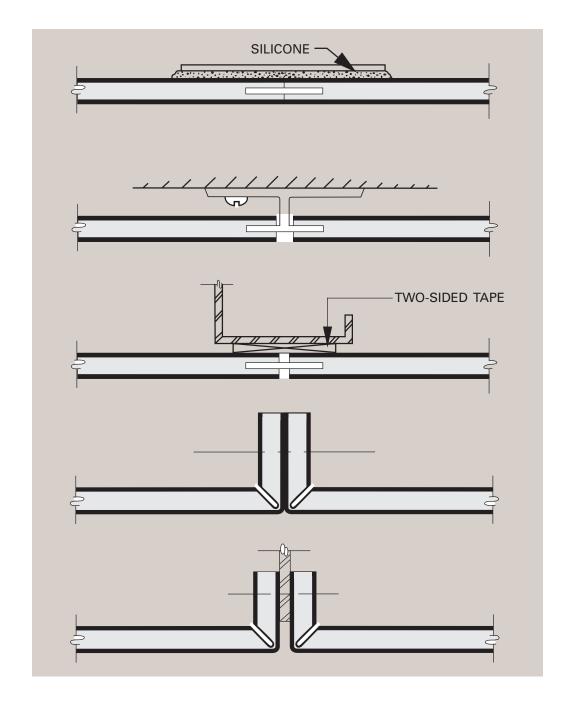
A. Details

The following details are provided for conceptual purposes only. These are not the only methods that can be used to attach ALUCOBOND PLUS material, nor can they be used generically without consideration for each individual application. Good design, thermal expansion, and engineering may preclude the choice of details used.

NOTE: The core material of ALUCOBOND PLUS material is UV stabilized, which eliminates the concern of core deterioration.



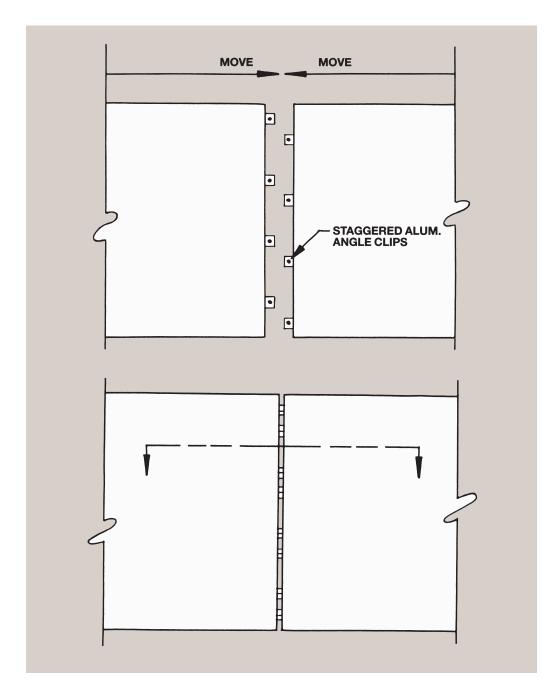
INTERIOR JOINTS - NO ALLOWANCE FOR THERMAL EXPANSION





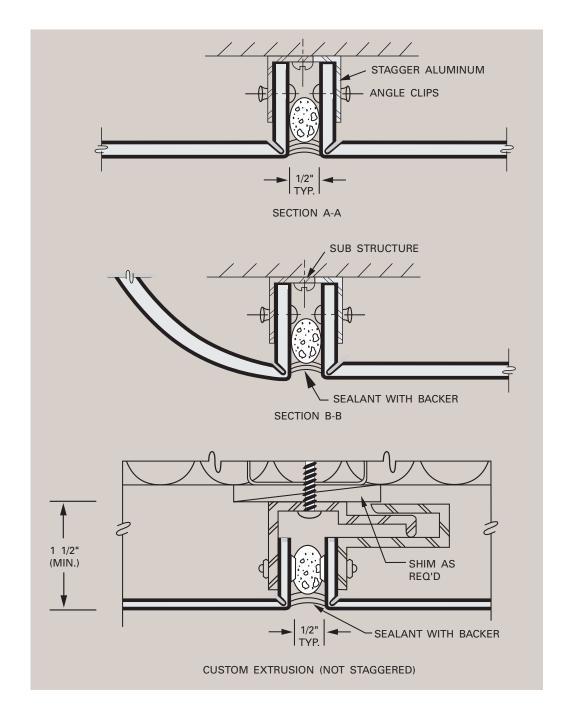
EXTERIOR JOINTS - ALLOWS THERMAL EXPANSION OF PANELS

NOTE - Clips are at different locations on left & right side of panels to allow for easier installation.



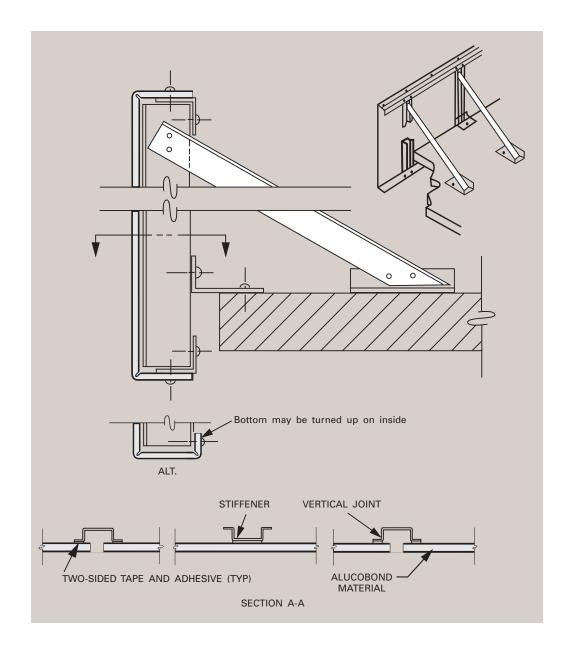


EXTERIOR JOINTS - ALLOWS THERMAL EXPANSION OF PANELS



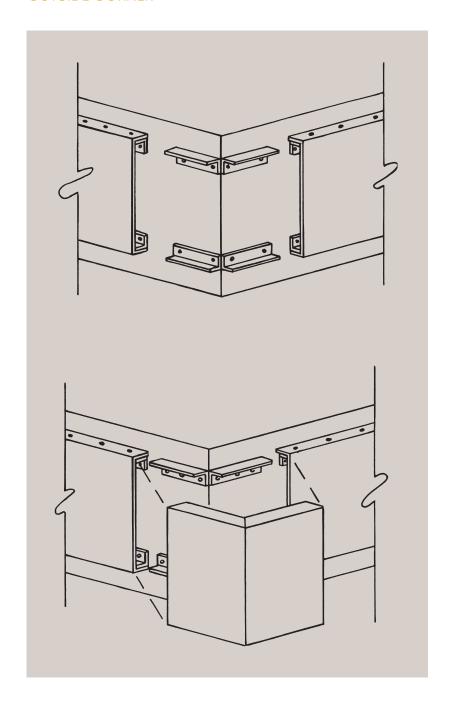


SIGN BAND

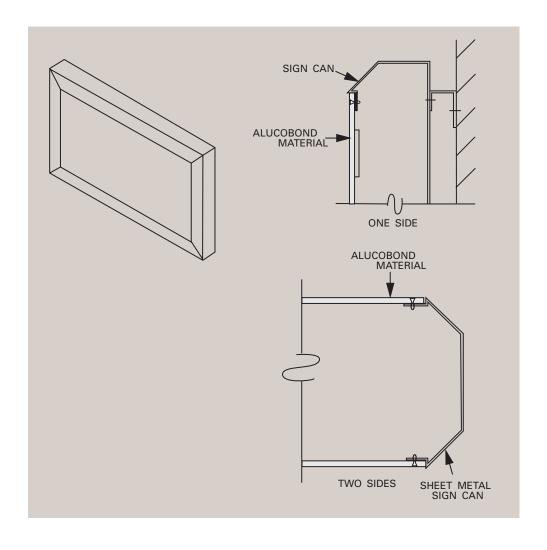




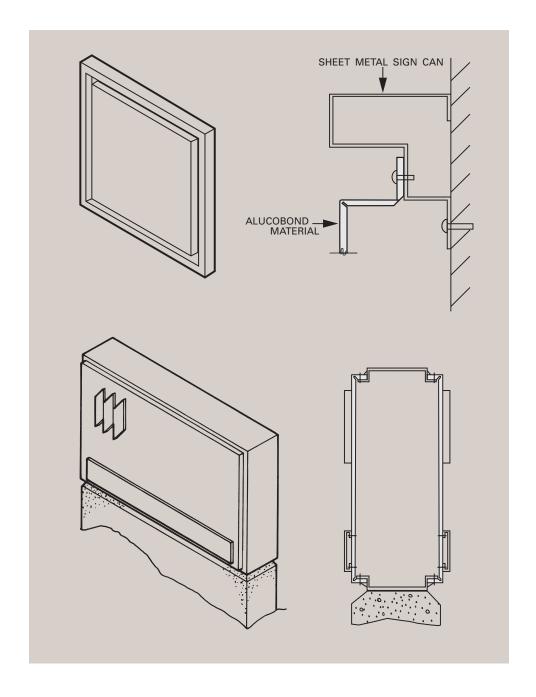
OUTSIDE CORNER



SIGNAGE ELEMENT

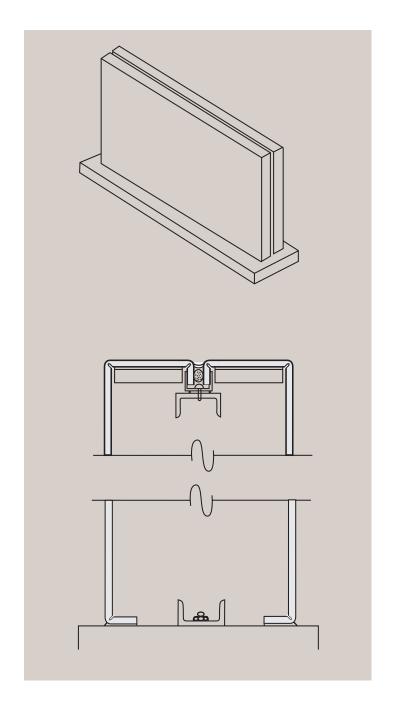


MULTI-PLANE ELEMENTS





SYMMETRICAL SIGN





Section IV: OFF-LINE FINISHING

A. Painting

On many projects that involve ALUCOBOND PLUS material, a small quantity of "custom color" panels are often required. Because of the limited quantity, it is often not practical to obtain the "custom color" from the factory and post painting is required. Several of the paint manufacturers have tested their products over the standard finishes coil coated by 3A Composites USA Inc. and also over anodized material. Following is a list of the Paint Supplier, Coil Coat Finish and the materials needed for post painting.

Painting should be done by qualified applicators with experience in this type of application.

1. PREPARATION

The first step in the post painting process is an assessment of the substrate concerning the cleaning, pretreating and priming required prior to application of the finish. There are no standard procedures for all possible situations due to the variety and condition of the surface to be painted. Before painting, testing should be done on a small area to determine that the preparation, application, and adhesion of the finish are satisfactory. The coating adhesion between the post paint finish and the original coating must be carefully evaluated using common coating adhesion testing procedures. Also, color/gloss matching needs to be evaluated to provide an acceptable final appearance. If testing indicates poor adhesion, do not proceed. Contact your coating representative or ALUCOBOND PLUS Technical Services.

2. APPLICATION

Before painting, always check the coating manufacturer's application guidelines and follow the specific instructions shown on the product data sheet and application instructions. For specific recommendations or questions, contact your coating representative.

Surfaces to be painted must be clean, dry and free of dust, dirt, oil, grease and foreign contaminants. Clean the surface according to the paint manufacturer application guidelines.

If recommended by the paint manufacturer, the curing of paint may be accelerated through a moderate increase in temperature. For composite material, the temperature must never exceed 140° F.

Where sanding is necessary, do not sand through coating to metal substrate.

TABLE 3

COIL COATING FINISH	SURFACE PREPARATION	PRIMER	TOP COAT	
AKZO NOBEL 800-2	AKZO NOBEL 800-233-3301 or 770-662-8464			
Debugge	Degrease with Grip-Gard® M-600 Wax & Grease Remover. Sand surface with 320-360 grit paper dry		Grip-Gard®	
Polyester	Degrease with Grip-Gard® M-600 Wax & Grease Remover		Grip-Gard® HS Grip-Gard® Plus Meta-Flex®	
Duranar®	Degrease with Grip-Gard® M-600 Wax & Grease Remover. Sand surface with 320-360 grit paper dry	Grip-Gard® HB Surfacer	Grip-Gard® Grip-Gard® HS Grip-Gard® Plus Meta-Flex®	
Duranar® XLE	Degrease with Grip-Gard® M-600 Wax & Grease Remover. Sand surface with 320-360 grit paper dry	Grip-Gard® HB Surfacer	Grip-Gard® Grip-Gard® HS Grip-Gard® Plus Meta-Flex®	
Megaflon®	Degrease with Grip-Gard® M-600 Wax & Grease Remover		Grip-Gard® Grip-Gard® HS Grip-Gard® Plus Meta-Flex®	
Clear Anodized	Degrease with Grip-Gard® M-600 Wax & Grease Remover. Sand surface with 320-360 grit paper dry	Grip-Gard® Washprimer	Grip-Gard®	
BENJAMIN MOORE	E & CO. 800-334-0400			
Polyester Duranar® Duranar® XL & Anodized		M15 Bonding Primer	M22 Urethane Alkyd Gloss Enamel, others also available	
CARBIT PAINT CO.	. 312-280-2300			
Polyester Duranar® Duranar® XLE Megaflon® Clear Anodized	Clean surfaces with a 50/50 blend of isopropyl alcohol and water		Carbithane 11® Series Carbithane 12® Series	
DUPONT INDUSTR	DUPONT INDUSTRIAL COATINGS 800-338-7668			
Polyester Megaflon Clear Anodized	Scuff sand with red Scotch Brite pad, clean with H-69 isopropyl alcohol		Imron® 333 Line Polyure- thane Enamel, Imron® 1.2 Waterborne Copolymer WG	
Polyester Duranar® Duranar® XLE Megaflon® Clear Anodized	Scuff sand with red Scotch Brite pad, clean with H-69 isopropyl alcohol	Imron® 1.5 Waterborne Copolymer WF	Imron® 1.5 Waterborne Copolymer WG	
Polyester® Duranar® Duranar® XL Megaflon® Clear Anodized	Scuff sand with red Scotch Brite pad, clean with H-69 isopropyl alcohol	Corlar® VHS 90P Epoxy Mastic Primer	Imron® 333 Line Polyure- thane Enamel	



TABLE 3 - CONTINUED

COIL COATING FINISH	SURFACE PREPARATION	PRIMER	TOP COAT		
MATTHEWS PAINT	MATTHEWS PAINT CO. 800-323-6593 or 262-947-0700				
Polyester Duranar® Duranar® XLE Megaflon®	Wipe down with 45330SP Speed Prep Cleaner, abrade with 320/400 grit or red Scotch Brite pad, then wipe again with Speed Prep Cleaner		MAP® VOC MAP® Satin VOC MAP®		
ONE SHOT, LLC 21	9-949-1684				
Polyester Megaflon®	Lightly scuff sand with gray Scotch Brite pad and wipe down with isopropyl alcohol	5005 Acrylic Bonding Primer White	1 SHOT Lettering Enamels, CHROMATIC Bulletin Colors		
Duranar® Duranar® XLE	Lightly scuff sand with gray Scotch Brite pad and wipe down with isopropyl alcohol		1 SHOT Lettering Enamels, CHROMATIC Bulletin Colors		
Clear Anodized	Lightly scuff sand with gray Scotch Brite pad and wipe down with isopropyl alcohol	5005 Acrylic Bonding Primer White, 4331011 TiCote Clear Primer Flat	1 SHOT Lettering Enamels, CHROMATIC Bulletin Colors		
PPG INDUSTRIES	300-441-9695	•			
Polyester® Duranar® Duranar® XL Megaflon®	Lightly scuff sand and remove all forms of contamination, clean with solvent		PPG Duracryl® Acrylic Lacquer		
T.J. RONAN PAINT	CORP. 800-247-6626 or 718-292-1100	•			
Polyester Duranar® Duranar® XLE Megaflon® Clear Anodized	Wipe with isopropyl alcohol (91%)	Metro Vinyl Primer (water borne), Universal Primer, Sticktite White Primer	Bulletin Color, Lettering Enamel, Aquacote (water borne)		
SHERWIN-WILLIAM	//S 700-331-7979				
Polyester Duranar® Duranar® XLE		DTM Bonding Primer	DTM Acrylic coating Metalatex semi-gloss coating		
Clear Anodized		DTM Wash Primer	DTM Acrylic coating Metalatex semi-gloss coating		
Polyester Duranar® Duranar® XLE Megaflon® Clear Anodized	Cleaning per SSPC-SP1 (solvent cleaning)		Bond-Plex water based acrylic coating		
SPRAYLAT CORP. 8	SPRAYLAT CORP. 800-336-1936 or 914-699-3035				
Polyester Duranar®	Must be sanded or primed	Series 20/30 Wash Primer	Series 20 Acrylic Lacquer Series 30 Polyurethane		
Duranar® XLE Anodized	Clean contaminate free	Series 20/30 Wash Primer	Series 20 Acrylic Lacquer Series 30 Polyurethane		
Polyester® Duranar® Duranar® XL Megaflon®	Scuff sand using Scotch Brite pad		Polycryl		
Clear Anodized		Series 20/30 Wash Primer	Polycryl		



B. Screen Printing

Anodized or coil coated ALUCOBOND PLUS material can easily be screen printed. Any screen printing ink used must be cured by air drying, jet drying under 40 seconds at a maximum air or panel temperature of 250° F, or UV cured at maximum panel temperature of 140° F. Temperature or dwell times in excess of these limits may cause warping or distortion of the panel.

It is recommended to contact the ink manufacturer to determine the products best suited for a particular application.

Proper surface preparation prior to screen printing is essential. Wipe the printing surface with isopropyl alcohol to remove any surface residue; allow isopropyl alcohol to dry (visual inspection) and screen print as usual.

ALUCOBOND PLUS material are often screen-printed when used in the signage and display industry. Although it would be impossible for any ink or panel manufacturers to run a trial using all of the different types of inks available, 3A Composites USA Inc. has worked in cooperation with several different ink manufacturers to determine the performance of various inks on standard finish material.

As always, it is strongly suggested that a trial run of any ink process to be completed prior to commitment to a full production run. 3A Composites USA Inc. recommends that you consult with the ink manufacturer if there are any questions regarding the use of a particular ink and to test any application prior to initiating a production run.

The information found in **Table 4** is the summary from the recommendations of screen print ink manufacturers for printing on Polyester, Duranar, Duaranar XL, and Anodized ALUCOBOND PLUS. Please use these recommendations as a guide only. No warranty, guarantees, or claims concerning the practicality, merchantability, or fitness of any off-line coating material or process are made by 3A Composites USA Inc.

TABLE 4

	POLYESTER	DURANAR	DURANAR XL	ANODIZED
NAZ-DAR/KC 917-422-1888	3200 w/5% NB 80	3200 w/5% NB 80	3200 w/5% NB 80	7200
	3600 w/5% NB 80	3600 w/5% NB 80	3600 w/5% NB 80	
	System 2	System 2	System 2	
317-422-1000	7200	7200	7200	
	9700		9700	
	Fascure Satin			
	Gloss Poly	Gloss Poly	Gloss Poly	
	MR Matte	MR Matte	MR Matte	
	Polydyne	Polydyne2	Polydyne2	
	Uvipak PE	Uvipak PE	Uvipak PE	
	Fast Dry Enamel	Fast Dry Enamel	Fast Dry Enamel	Fast Dry Enamel
SERICOL 913-342-4060	HGXE	HGXE	HGXE	
		Polyscreen TP w/ catalyst Polyscreen TP w/ catalyst	Polyscreen TP w/ catalyst	Polyscreen TP w/ catalyst
	SP Enamel	SP Enamel	SP Enamel	
			Fascure	
			Fascure PB	
			PEL	
			Plastical	



C. Panel Repair

Painted ALUCOBOND PLUS material of any thickness can be repaired. Any small areas damaged during fabrication or erection may be repaired using materials recommended by the particular paint system manufacturer supplying the off-line paint finish. These minor repairs are generally done with an automotive glazing putty between the primer and finish coat. The glazing putty is applied to the sanded, dented area. Allow applied putty to dry, then sand, prime and paint much like the methods used in an auto body repair.

Larger and deeper dents may be filled using an automotive polyester body filler. Once again, auto body repair practices are used. Generally, a larger dented area is sanded with a rough grit paper and drilled with small diameter holes and then filled, sanded, primed and painted.

This method of repair should be used only after all fabrication is done on the panel. Any rolling, shearing, or punching operations through a filled area may cause damage to the repair.



Section V: ENGINEERING

A. Deflection

Deflections of ALUCOBOND PLUS material under load are demonstrated by the following charts. The charts are developed to demonstrate the amount of spacing between supports across the short dimension of the panel in comparison to the panel deflection. Deflections in excess of 2" should not be allowed as such excess may stress the aluminum skin beyond allowable limits.

B. Windload Data

Charts 1 and 2 contain data relative to the use of 4mm ALUCOBOND PLUS material under two types of support conditions where the panel is fixed or attached along two sides only: Single span with flexible ends and twin span with flexible ends.

To determine support spacing, choose the chart for the type of support planned. At the bottom of the chart labeled "Space in Feet," enter the chart with anticipated support spacing, then follow this value of spacing upward until it intersects the curve, labeled according to design windload. Read the corresponding deflection at the left side of the chart labeled "Deflection in Inches." At no time should the intersection of the planned support distance and the windload be above the line marked "Maximum Tension." Adjust anticipated design spacing and supports as needed to avoid exceeding "Maximum Tension." If this deflection value exceeds the allowable deflection, adjust spacing accordingly.

Example:

What is the maximum deflection of a sheet of 4mm ALUCOBOND PLUS material supported on two sides, every 3'-0" with flexible ends, under a windload of 40 psf?

Locate the chart for 4mm twin span condition. At the bottom of the chart find the "Spacing in Feet." Follow the 3.00' line upward until it intersects the 40 psf curve, then line over to the left side of the chart and read the "Deflection in Inches" of 1.150".



CHART 1 - WINDLOAD CHART: 4MM, SINGLE SPAN

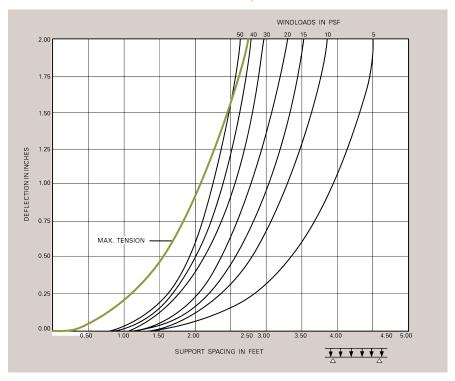
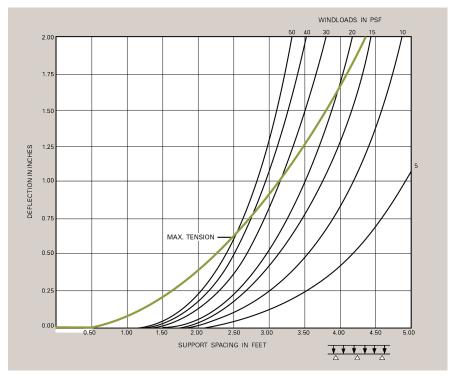


CHART 2 - WINDLOAD CHART: 4MM, TWIN SPAN SIMPLY SUPPORTED





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C. Thermal Expansion

Thermal expansion should always be considered in designs using ALUCOBOND PLUS material. ALUCOBOND PLUS material has been tested and has a Rate of Expansion of 0.000158"/ft/° F. That translates into 1/8" movement in an 8 foot panel with a 100° F temperature change. Temperature differences must be considered between shop (fabrication) temperature and the highest or lowest temperature the panel is expected to achieve. An example of this concept is listed below. Care should always be taken to avoid restricting thermal movement of the panel to eliminate unacceptable bowing and over-stressing of the fasteners. The coefficient for unlike materials should be considered in joint design.

Panel Length @ Shop Temperature: 10' (120") Panel Width @ Shop Temperature: 4' (48")

Maximum Panel Temperature (including reflected heat): 175° F

Minimum Panel Temperature: -20° F Fabrication Shop Temperature: 60° F

Maximum Panel Lenth Dimensions

+ Temperature change: $175^{\circ} F - 60^{\circ} F = 115^{\circ} F$

Total Expansion: $0.000158'' \times 10' \times 115^{\circ} F = +0.1817''$

- Temperature change: $60^{\circ} \text{ F} - (-20^{\circ} \text{ F}) = 80^{\circ} \text{ F}$

Total Contraction: $0.000158'' \times 10' \times 80^{\circ} F = 0.126''$

Panel Width at extreme temperature: 9' - 11 7/8" @ -20° F

10' - 0 3/16" @ -175° F

Total Panel Length change is .1817" + .126" = 0.3077" (From -20° F to 175° F)

Maximum Panel Width Dimensions

+ Temperature change: $175^{\circ} \text{ F} - 60^{\circ} \text{ F} = 115^{\circ} \text{ F}$

Total Expansion: $0.000158" \times 4' \times 115° F = +0.07268"$

- Temperature change: $60^{\circ} \, \text{F} \cdot (-20^{\circ} \, \text{F}) = 80^{\circ} \, \text{F} \, 0.000158'' \times 4' \times 10^{\circ} \, \text{F}$

Total Contraction: 80° F = 0.050"

Panel Width at extreme temperature: 3' - 11 61/64" @ -20° F

4' - 0 5/64" @ 175° F

Total Panel Width change is .07268" + .050" = 0.12268" (From -20° F to 175° F)



D. Technical Data

ALUCOBOND PLUS material is an aluminum composite material (ACM) consisting of two cover sheets of .020" (nominal) gauge aluminum thermobonded to a solid, fire retardant core. ALUCOBOND PLUS meets the higher requirements of fire classifications while offering the proven product properties such as flatness, form-ability, durability and ease of fabrication. It is produced in 4mm core thicknesses in a continuous process. All material is supplied with a mill edge.

Standard Test Method*	Description	Category	4mm
ASTM C-365	Flatwise Compression Strength (Ultimate)	Mechanical	9291 psi
ASTM C-393	Core Shear Properties (Perpendicular) Ultimate Facing Bending Stress	Mechanical	24,720 psi
ASTM C-393	Core Shear Properties (Parallel) Ultimate Facing Bending Stress	Mechanical	22,732 psi
ASTM D-790	Flexural Modulus (Perpendicular)	Mechanical	1891 ksi
ASTM D-790	Ultimate Flexural (Perpendicular)	Mechanical	18,573 psi
ASTM D-790	Flexural Modulus (Parallel)	Mechanical	1815 ksi
ASTM D-790	Ultimate Flexural (Parallel)	Mechanical	17,703 psi
ASTM D-790	Yield Flexural Stress (Perpendicular)	Mechanical	6667 psi
ASTM D-790	Yield Flexural Stress (Parallel)	Mechanical	6930 psi
ASTM D-638	Modulus of Elasticity (Perpendicular)	Mechanical	2930 ksi
ASTM D-638	Tensile Strength (Perpendicular)	Mechanical	7750 psi
ASTM D-638	Tensile Yield at 0.2% Offset (Perpendicular)	Mechanical	6570 psi
ASTM D-638	Elongation (Perpendicular)	Mechanical	14.2%
ASTM D-732	Punching Shear (Maximum Shear Load)	Mechanical	2198 lbs.
ASTM D-732	Punching Shear (Shear Strength)	Mechanical	4615 psi
ASTM C-518	Thermal Conductivity	Thermal	U=6.5 Btu/hr ft ² °F
ASTM C-518	Thermal Resistance	Thermal	R=0.16
ASTM C-518	Thermal Conductance	Thermal	6.25
ASTM D-648	Deflection Temperature - Perpendicular	Thermal	185°F
ASTM D-648	Deflection Temperature - Parallel	Thermal	189°F
ASTM C-273	Shear Test in Flatwise Plane (Ultimate Core Shear Strength)	Bond Integrity	765 psi
ASTM C-297	Tensile Bond Strength Test in Flatwise Plane (Ultimate)	Bond Integrity	1016 psi
ASTM D-1781	Bond Integrity	Bond Integrity	> 22.5 in-lb/in
ASTM E-90	Sound Transmission (STC)	Acoustical	30
ASTM E-90	Sound Transmission (OITC)	Acoustical	24
ASTM C-272	Water Absorption	Physical	0.003%
ASTM D-696	Coefficient of Linear Thermal Expansion	Physical	1.11x10 ⁻⁵ in/in °F
ASTM D-635	Rate of Burning	Fire Performance	Classified CC1
ASTM D-1929	Ignition Temperature - Self	Fire Performance	783°F
ASTM D-1929	Ignition Temperature - Flash	Fire Performance	784°F
ASTM E-84	Surface Burning Characteristics (Flame Spread)	Fire Performance	< 25
ASTM E-84	Surface Burning Characteristics (Smoke Development)	Fire Performance	< 100
CAN/ULC-S102	Surface Burning Characteristics (Flame Spread)	Fire Performance	< 25
CAN/ULC-S102	Surface Burning Characteristics (Smoke Development)	Fire Performance	< 100

^{*}The ASTM (American Society for Testing & Materials) Standard Test Method defines the way a test is performed and the precision of the result. The result of the test is then used to assess compliance with a standard specification.

Bending Strength

The following formula can be used to calculate bending stress:

M_b = Bending Moment

 t_1 = Total Thickness

Z = Section Modulus

t_c = Thickness of Core

W = Width

$$S_b = \frac{M_b}{Z} = \frac{6t_1 \times M_b}{(t_1^3 - t_c^3) W}$$



D. Technical Data cont'd.

Temperature Resistance

Withstands environmental temperature changes from -55° F to + 175° F. Changes dimensionally 0.000158" per foot per degree Farenheit. The coefficient of linear expansion is governed by the aluminum cover sheets.

Bond Integrity

ALUCOBOND PLUS material has been tested to ASTM D-1781 for bond integrity, simulating its resistance to delamination. The following minimum values have been established:

Bond Strength: 214 PSI (Vertical Pull)/ASTM C-297 Peel Strength: 115 Nmm/mm o ASTM D-1781

No appreciable loss of bond strength has been determined due to normal weather conditions.

Sound Transmission & Vibration Characteristics

Sound Transmission Class for ALUCOBOND PLUS material has been determined by ASTM E-90. Vibration damping loss factor was determined using the procedure of ASTM STP-378.

Loss Factor @ 100 HZ STC No. 4mm: .280 28



Section VI: PROCESSING

A. Storage

ALUCOBOND PLUS material should always be stored in a cool dry area where temperatures are relatively stable. Excessive temperature fluctuations may cause condensation to form on the stored sheets, possibly resulting in permanent surface damage, especially on anodized material. Do not allow moisture to reach stored material.

Ideally, crates of ALUCOBOND PLUS material should be stored horizontally with adequate support to prevent sagging, and not more than four skids high; or if the panels are 16' or longer, not more than four skids high. Long-term storage with the panels sagging could create a permanent bow in the material. However, small quantities of material may be stored on edge if adequately supported with an "A" frame rack. The "A" fram must have a solid base and back rest.

B. Fabricating Tables

Several approaches can be used for ALUCOBOND PLUS material fabrication tables. These depend primarily on need, cost, and space.

Vacuum or suction tables can be built with minimal expense and used effectively to speed up processing. Vacuum tables can be hand built utilizing PVC pipes, an industrial-type vacuum, and a porous top surface, as shown in **Figure 26**.

Tables should be well supported and laterally stable. The surface needs to be capable of being easily cleaned. The material used for the surface should be of a type that will not accumulate chips and other debris that could damage the surface of the sheets.

The use of spring clamps, screw clamps, and "C" clamps should always be done in conjunction with a flat, or other flat spacers, to avoid point compression on the ALUCOBOND PLUS material. Point clamping may cause a dimpling in the surface. The flat bar can also be used as a straight edge for routing or cutting. Care should be taken to avoid shifting of the panel while fabricating.

Avoid sliding the panels as they are placed on or removed from the table.

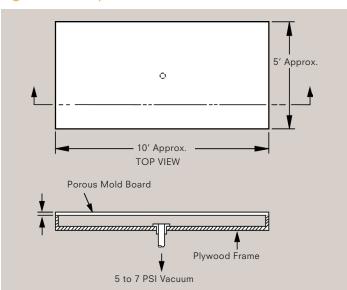


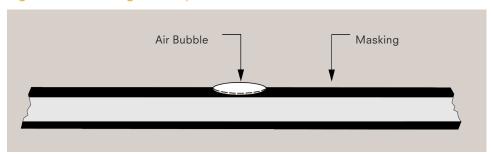
Figure 26 - Simple Vacuum Table

Section VI: PROCESSING cont'd.

C. Masking

Masking prior to fabrication is highly recommended to avoid surface damage. Under most circumstances, masking can be applied at the factory. If masking is applied at the fabrication point, the paint manufacturer should be consulted for compatibility. Incorrect masking selection may damage the panel finish. For standard polyester finishes, polyvinyl or Polyethylene film is recommended. Adhesive strength should be of the least amount available and tested to ensure compatibility with the surface finish. Applicators of sufficient quality to apply a smooth bubbleless film are needed since trapped air bubbles can leave a permanent mark on the paint finish (reference **Figure 27**).

Figure 27 - Masking Techniques



Caution should be taken when the fabricated product is exposed to ultraviolet light. Masking should be removed immediately after installation. Certain masking films are not compatibile with anodized surfaces and one should consult the suppluer prior to use. Although this masking material protects the surface from minor scratches and dirt accumulation, some markers will penetrate and stain the painted surface.

Section VII: SOURCES

The following list of products and sources is for your reference, and is not intended as a complete listing of either satisfactory products and materials or of possible sources of supply.

A. Adhesives

1. Two Part-Adhesives

Dymax Corporation 51 Greenwoods Road Torrington, CT 06790 860-626-6326

National Starch & Chemical Corp. Finderne Avenue Bridgewater, NJ 08807 908-685-5000

Sika Corporation 201 Polito Ave. Lyndhurst, NJ 07071 201-933-8800

2. Construction Adhesives

Construction & Sub Floor Adhesive Sovereign Engineered Adhesives

123 W. Bartges Street Akron, OH 44331-1081 800-323-5158

TACC 56 Air Station Industrial Park Rockland, MA 02370 800-503-6991

3. Structural Adhesives

Dow Chemical Product Information P.O. Box 0994 Midland, MI 48686-0997 989-496-6000

GE Silicon Products 260 Hudson River Road Waterford, NY 12188 800-332-3390

LEECH Products, Inc. P.O. Box 2147 Hutchinson, KS 67504-2147 620-669-0145

4. Other (Epoxy, Etc.)

Lord Corp. Industrial Adhesives Dept. 2000 West Grandview Blvd. Erie, PA 16509 814-868-3611

B. Blades, Router Bits and Drill Bits

1. Custom Routing Blades and Cutters, Saw Blades

Drake Corp. 1913 N. Van Buren Street Huntingburg, IN 47542 812-683-2101

2. Drill Bits

(Standard: High speed steel bits)

C. Extrusions

ABC Sign Products, Inc. 2028 Southeast Frontage Road Fort Collins, CO 80525 970-482-5225 800-248-9889

APCO

388 Grant Street Southeast Atlanta, GA 30312-2227 404-688-9000 800-215-4039

Excellart Sign Products, LLC 1654 S. Lone Elm Road Olathe, KS 66061 913-764-2364 800-627-9044

Futura Industries Corp. P.O. Box 160350 Building H-11 Freeport Center Freeport Center Station Clearfield, UT 84016-0350 801-773-6282

Signcomp 2925-A Walkent Court Grand Rapids, MI 49544 616-784-0405 877-784-0405

D. Fasteners

1. Bond on Stud

Midwest Fasteners P.O. Box 73238 Cleveland, OH 44193 937-866-0463

2. Stud Welding

Southern Stud Weld 3910-H North Freeway Houston, TX 77022 713-691-0897



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Section VII: SOURCES

E. Fabricating Tables

1. Porous Mold Board

Diamond Supply Inc. 200 Dalton Ave. P.O. Box 5115 Charlotte, NC 28206 704-376-2125

F. Machinery

1. Press Brake

(Available through commercial sources)

2. Pyramid Rollers

(Available through commercial sources)

3. Routers

Black & Decker

Skil

Sears

Miller Falls

4. Panel Saws

Colonial Saw 122 Pembroke Street P.O. Box A

Kingston, MA 02364

781-585-4364

W.W. Thayer Co. 1444 Hoelzer Court Pacific, MO 63069 636-257-3311

HOLZ-HER U.S. Inc. 5120 Westinghouse Blvd. Charlotte, NC 28273 704-587-3400

Fax: 704-587-3412

5. Multiple Operations Rip/V - Grooving Saws

> Multiscore 15-7157 Honeyman St. Delta British Columbia V4G1E2 604-946-6130

G. Masking

Bischof & Klein 2 Anderson St. Monmouth Beach, NJ 07750 732-229-8126

IVEX Novacel 55 Tower Rd. Newton, MA 02464 610-268-3698

Main Tape P.O. Box 379 Plymouth, WI 53073 800-858-0481

H. Paints

AKZO Nobel 5555 Spalding Dr. Norcross, GA 30092 770-662-8464

Beckers Specialty Corporation 2526 Delta Lane Elk Grove Village, IL 60007 847-766-3555

Dura Coat Products 26655 Peoples Road Madison, AL 35756 256-353-7800

Sherwin Williams 101 W. Prospect Ave. Cleveland, OH 44115 800-474-3794

PPG Industries #1 PPG Place Pittsburgh, PA 15272 800-441-9695

T.J Ronan Paint Corp. 749 East 135th Street Bronx, NY 10454 718-292-1100 800-247-6626

Sherwin Williams 10 Midland Building 101 Prospect Ave. Cleveland, OH 44115 216-566-2151

Spraylat Corporation 716 South Columbus Ave. Mount Vernon, NY 10550-4795 914-699-3030



Section VII: SOURCES

I. Sealants

Dow Corning Corp. Product Information P.O. Box 0994 Midland, MI 48686-0997 989-496-6000

General Electric Co. 260 Hudson River Road Waterford, NY 12188 800-332-3390

IPS Corporation 455 W. Victoria Street Compton, CA 90220 800-898-3300 / 310-898-3300 Fax: 310-898-3392

Lord Corporation Industrial Adhesives Division 2000 West Grandview Blvd. P.O. Box 10038 Erie, PA 16509 814-868-3611

Pecora Corp. 165 Wambold Road Harleysville, PA 19438 800-523-6688

Rhodia 259 Prospect Plains Rd. Cranbury, NJ 08512-CN7500 609-860-4000 800-634-5705

Schnee Morehead Inc. 111 North Nursery Road Irving, TX 75060 1-800-TRUST SM 972-438-9111 Fax: 972-554-3939

Sika Corporation 201 Polito Ave. Lyndhurst, NJ 07071 201-933-8800

Tremco Corp. 3735 Green Road Beachwood, OH 44122 216-292-5000

J. Screen Print Inks

Naz-Dar 925 Roselawn Ave. Toronto, ON M6B1B7 Canada 416-789-5111

Naz-Dar 8501 Hedge Lane Terrace Shawnee, KS 66227 913-422-1888

Sericol 1101 West Cambridge Circle Drive Kansas City, KS 66110 913-342-4060

K. Tapes

3M Industrial Tape and Specialties Div. 900 Bush Avenue St. Paul, MN 55144 800-362-3550

Avery Dennison Specialty Tape Division 250 Chester Street Painesville, OH 44077 440-639-2600

Mactac Technical Products Division 4560 Darrow Road Stow, OH 44224-1898 800-401-5005

Saint Gobain Performance Plastics Corp. One Sealants Park Granville, NY 12832 800-724-0883 518-642-2200





ALUCOBOND



Alief Neighborhood Center
ALUCOBOND PLUS: Custom Northern Pewter Mica,
Custom Ridgedale Silver Mica, Custom Michigan Silverstorm
Architect: EYP Architecture & Engineering
Fabricator: Byrne Metals

ALUCOBONDUSA.COM / 800.626.3365



The ALUCOBOND® brand has been the pioneer in metal facades with over 50 years of reputable performance in architectural cladding. Sought after for its outstanding product attributes such as flatness, formability, durability, and ease of fabrication, ALUCOBOND products allow architects and fabricators to bring distinctive and exciting visions to life. ALUCOBOND PLUS, with its fire retardant core, has been developed exclusively to allow architects and designers to meet today's fire performance requirements set by the International Building Code (IBC) while using ACM as the material of choice. ALUCOBOND AXCENT provides opportunities to create innovative designs for metal wall cladding, trim, and many other applications.

Made in the USA, ALUCOBOND is manufactured by 3A Composites USA in a range of sizes and trend-forward colors and finishes, both stock and custom. Our array of options lend to creating inspiring architectural concepts





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and influential brand assets. Our Brand Identity Program offers dedicated support for stakeholder communications, expertise in color selection, specification support, a trusted fabricator network worldwide, and longevity in product and life cycle.

3A Composites USA is committed to maximizing the life of our products through adherence to ISO standards. In the production of ALUCOBOND PLUS, strenuous efforts have been implemented to reduce energy and water consumption, increase productivity, reduce waste and therefore significantly reducing CO₂ emissions on a continual basis.

Learn how ALUCOBOND has been giving shape to great ideas by leading the world in design innovation, and continually adapting to the needs of the growing architectural community.

(left top) Creek Lines Sculpture by BRIDGE, San Antonio, TX (left bottom) Norwegian Cruise Line Terminal B, Miami, FL (right) The Elm, Bethesda, MD

ALUCOBOND® PLUS

ALUCOBOND PLUS 4mm ACM is comprised of two sheets of smooth .020" aluminum thermobonded to a solid, fire retardant core. Developed exclusively to meet fire performance requirements while providing the benefits & versatility of ACM.



Product Properties

Thickness of aluminum skin	0.020" (nominal)
Product thickness	0.157" (4mm nominal)
Weight	1.56 lb/ft²
Standard panel dimension*	62" x 196"
Maximum width	62"
Maximum length	400"

^{*} Exceptions to standard dimensions include mirror, print, and anodized finishes. Refer to product range table on page 7. Sheets may be fabricated to meet custom panel sizes within maximum width and length above.

ALUCOBOND® AXCENT™

ALUCOBOND AXCENT is a flat aluminum sheet available in three thicknesses: .040", .063", and .080". ALUCOBOND AXCENT .040" sheets offer the perfect complement to ALUCOBOND PLUS for parapet caps, canopies, soffits, and trim. ALUCOBOND AXCENT™ .063" and .080"thick flat aluminum sheets are an excellent noncombustible option for metal wall panels and cladding installed over solid substrates or hat channels. It is also ideal for metal trim, soffits and columns that require larger spans and demand durability. ALUCOBOND AXCENT .063" and .080"materials may be formed utilizing route and return or brake-bend methods for dynamic curves.



Product Properties

	.040"	.063"	.080"
Standard Width*	48.0"	60.0"	60.0"
Standard Length*	120.0"	120.0"	120.0"
Custom Length (minimums apply)	64"- 192"	64"- 192"	64"- 192"
Weight	0.56 lb/ft2	0.90 lb/ft2	1.14 lb/ft2

^{*} width tolerance ± 0.00625"; length tolerance ± 0.125"

ALUCOBOND® EasyFix™

ALUCOBOND EasyFix is a cost-effective installation method for wood-frame construction in multifamily and mixed-use sectors. The simple installation method utilizes an innovative design for attachment of ALUCOBOND PLUS panels. The design provides an aesthetic solution similar to traditional ACM systems.

ALUCOBOND EasyFix must be used with:

- ALUCOBOND PLUS
- ALUCOBOND EasyFix: Clips or Rails

Product Properties

System Weight	1.9 lb/ft²
Max Panel Width Surface*	36"
Maximum sheet width/length	62"/400"
Clip length	3"
Rail length	12′

^{*} Project specific engineering required for wider panel applications.



(left bottom) Norwegian Cruise Line Terminal B, Miami, FL

(right) The Elm, Bethesda, MD

ALUCOBONDUSA.COM / 800.626.3365

Colors & Finishes



ALUCOBOND is stocked in 90 trend-forward colors & finishes, availability varies by product type. Scan or click the QR code to explore the colors in each Collection.

The Classic Collection



Color plays an integral role in the architectural environment; the timeless palette in our Classic Collection reflects your passion for what's possible. From classic neutrals to biophilic hues, this line offers a wide range of options to help you give shape to great ideas.

The Natural Collection



Biophilic design conceptualizes space in a way that acknowledges the human need to connect with nature. The finishes in the Natural Collection amplify the organic beauty and character of different elements & materials found in the world around us.

The Spectra Collection



To add a dynamic element of fascination and movement to any architectural facade, these transitional finishes celebrate the natural color shifts that occur in the world around us - from raw natural elements to the glowing luster and sheen found in modern alloys and luxury finishes.

The Anodized Collection



In addition to the strength and highquality appearance that come standard with our collections, this line uses the anodizing process to enhance the intrinsic clarity and beauty of aluminum while creating a harder, smoother, more durable surface.



90 STOCKED ACM COLORS

Complementary flat aluminum sheet colors available.



FLATNESS AND RIGIDITY

Meet design intent without the appearance of oil canning.



FORMABILITY

ALUCOBOND may be cold formed in a pyramid roller or press brake.



LIGHTWEIGHT

Lighter than traditional

construction materials, allowing

for fast and easy installation.

EASE OF FABRICATION

Compatible with various fabrication machinery and techniques.



DURABLE

CUSTOM COLOR EXPERTISE

ALUCOBOND is certified

for a service life of 50

years minimum.

We will match hand samples, Pantone®, RAL, NCS or other paint code reference in desired gloss levels and textures.



PERFORATION CAPABILITIES

Solid, mica and metallic finishes may be perforated in geometric, slotted or customized patterns.



CONTRIBUTES LEED POINTS

ALUCOBOND PLUS and **AXCENT** contribute toward LEED credit for recycled



content.



ZERO VOC'S EMITTED IN USE

Zero VOC's are emitted from installed ALUCOBOND PLUS and ALUCOBOND AXCENT panels. Additionally, panels are coil-coated in a factory that captures & destroys 99% of VOC's.



EPD MEETS ISO STANDARDS

ALUCOBOND has an industry **Environmental Product Declaration** (EPD) in accordance with International ISO Standards, certifying a service life of 50 years.



100% RECYCLABLE

ALUCOBOND PLUS and ALUCOBOND AXCENT are 100% recyclable materials, meaning the core material and the aluminum skins can be returned to the material cycle and reused in new products.







Alief Neighborhood Center (bottom right) Margaritaville, Jacksonville Beach, FL @ Attic Fire Photography (top right) Exo Apartments, Reston, VA @ Mark Kempf (left)

Standard Product Range

ALUCOBOND PLUS					
Thickness			4mm		
Width	40"	49.2"	50"	60"	62"
Length	196"	146"	196"	198"	196"
Solids	0		0		•
Micas / Metallics	0		0		•
Color-Changing	0		0		•
Textured	0		0		•
Reflect Mirror		•			
Anodized				•	
Brushed			0		•
Prints			•		



Paint Finishes

ALUCOBOND finishes are coated in accordance with AAMA standards which represent the highest performance standards for exterior finishes in the industry. All finishes are backed with a best-in-class warranty covering full replacement or repair costs.

PVDF (Polyvinylidene Fluoride) finishes can be produced in either a 2-coat (primer + color coat) or 3-coat (primer + color coat + top coat). Known for its durability and strong performance characteristics PVDF is used to develop a high-quality solid, mica or metallic

PVDF/FEVE finish consists of 2 coats of PVDF & a clear coat of FEVE. On our Spectra finishes, the FEVE coat provides a higher gloss level & depending on the viewing angle, different wave-lengths of light are reflected, resulting in an everchanging color gradient with iridescent highlights.

SMP (Silicone Modified Polyester)

Paint systems are a blend of polyester & silicon intermediates. SMP coatings deliver an excellent balance of exterior gloss, and color retention with resistance to stains, chalking, ultraviolet radiation, weather and humidity.

FEVE (Fluoropolymer Based) A

transparent top coat is applied to the coil, protecting the surface from the elements & preserves the aesthetic of the bare finish. Various tints can be applied to broaden the color palette & add to the aesthetics of a project.

For warranty information please contact your local ALUCOBOND Sales Manager.

Applications

Exterior Wall Cladding | Materials: ACM, .063", .080"

- ALUCOBOND's flatness, rigidity, lightweight and formability support a plethora of design intents
- Our versatility of stocking colors & finishes gives designers the freedom to mix finishes without sacrificing budget
- ALUCOBOND can withstand weather conditions while maintaining its aesthetic long-term

The University of Texas (UT) Darrell K Royal-Texas Memorial Stadium (below) Founder Plaza (right) Courtesy of Ace Glass Construction Corp./Ace Glass Manufacturing Corp.



Soffit & Canopy | Materials: ACM, .040", .063", .080"

- The flatness, lightweight and rigidity of ALUCOBOND PLUS panels make it a great option for soffit and canopy applications
- ALUCOBOND AXCENT can be roll formed or pressed to add strength and create interlocking joints
- ALUCOBOND PLUS and ALUCOBOND AXCENT can also be easily ventilated to increase airflow, easily cut for lighting or signage elements, and can be curved along rounded faces
- ALUCOBOND AXCENT is available in a wide range of colors complementary to PLUS



University of Missouri

Quick Glance

Application headings identify appropriate material selections.

ACM - ALUCOBOND PLUS

.040", .063", .080" - ALUCOBOND AXCENT



Ceilings | Materials: ACM, .040", .063", .080"

- Class A fire rating makes ALUCOBOND PLUS appropriate for interior and exterior
- Custom designs can allow for back panel illumination and creative ceiling concepts
- Color-shifting finishes from the Spectra Collection are popular for dynamic ceiling applications



University of Texas



Curtainwall and Sun Shades | Materials: ACM, .063", .080"

With a Class A Fire Rating, ALUCOBOND PLUS fire-retardant (FR) ACM panels are ideal for curtainwall applications and offer a variety of benefits:

- Panels are available with one side or both sides finished
- Fins can be custom designed to complement the exterior cladding and reduce solar gain
- Provides continual color flow from curtainwall to vertical ALUCOBOND panels
- Replaces glass to enhance the design aesthetic and reduce project costs
- Used in curtainwall systems that utilize structural silicone, structural tapes or pressure plate
- May be used in spandrel applications to create a unique facade

(left) Confidential Commercial Building in Crystal City, VA, © Sam Kittner

ALUCOBOND® EasyFix System for Exteriors & Interiors | Materials: ACM

- Cost-effective installation method for commercial wood-frame construction in multifamily and mixed-use projects
- Utilizing an innovative design for the attachment of ALUCOBOND PLUS panels, ALUCOBOND EasyFix offers simplicity and efficiency in meeting tight construction schedules
- Trend-forward color options along with customizable panel layouts, reveal options, and widths allow for freedom in design
- The design provides an aesthetic solution similar to traditional ACM systems, combining 2 types of folds
- ALUCOBOND EasyFix is quickly fabricated off-site by a trained and Licensed Fabricator.
- Ships flat to the job site for easy handling. Installation is made simple with a variety of fastening options.

Interiors | Materials: ACM, .040", .063", .080"

- Seamless transition from exterior facade to interior design
- Dynamic color palette of 89 stock colors & finishes
- Ability to create unique customizable shapes
- Biophilic hues effortlessly complement surroundings
- Large flat panels inspire clean design
- Custom color capabilities
- Create striking modern designs
- May be used for wall cladding, feature wall, beam wrap, baffles, stairway, architectural ceiling, column cover, entry way, mechanical covering, and more

Houston Center - Lobby Renovation (center) @ Peter Molick Arkansas Children's Hospital Pine Bluff Clinic © Tim Hursley





page 8

Applications

Quick Glance

Application headings identify appropriate material selections.

ACM - ALUCOBOND PLUS

.040", .063", .080" - ALUCOBOND AXCENT

Flashing / Parapet Cap

Materials: .040", .063", .080"

- ALUCOBOND AXCENT is easily formed in a variety of machines to create the perfect cap
- ALUCOBOND AXCENT is available in a wide range of colors complementary to ALUCOBOND PLUS

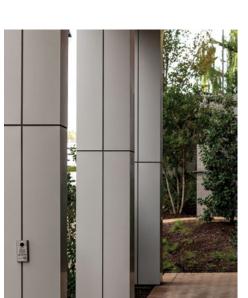
MDL Flats, D.C. (right)

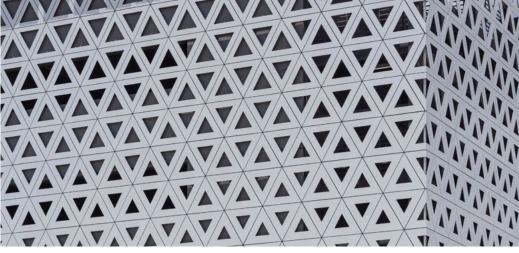
Perforation

Materials: ACM, .040", .063", .080"

- ALUCOBOND PLUS can be used to transform the exterior facade with perforated designs allowing for more light and creative intent
- Custom perforation designs enables new aesthetic possibilities
- Both faces of the panel can be finished with long lasting exterior coatings

Gilman Honda, Dallas, TX (right)





Column Covers | Materials: ACM, .063", .080"

- ALUCOBOND PLUS and ALUCOBOND AXCENT can be easily formed via route and return, rolling, and brake-bends, making for an ideal column cover
- Tight radii can be achieved and weather tightness can be maintained with sealed joints

SHI International Garza Office Building, courtesy of White Construction Company (left)
Hyatt Place National Harbor, D.C. (right)

Testing & Certifications



ALUCOBOND® PLUS

N. AMERICAN BUILDING CODE ACCEPTANCE

- IBC
- Miami-Dade County, Florida
- National Building Code of Canada
- State of Florida
- City of Los Angeles, California

SUSTAINABILITY DESIGN

- LEED 3
- LEED v4.0 and 4.1
 - LCA Industry Standard
 - EPD Industry Standard

ACCEPTED EVALUATION REPORTS

- ICC-ES: 1185
- Florida Product Approval: FL29842
- Miami Dade County NOA: 15-0923.03
- Los Angeles Research Report: 24868
- Underwriters Laboratory: 19980

WALL ASSEMBLY FIRE TESTING

- CAN / ULC S134*
- NFPA 285*
- *Results are based upon tests made with ALUCOBOND PLUS panels in specific wall assemblies. For more information about assemblies that have been tested, please contact technical support:
- Thomas.Rogers@3acomposites.com

Type I-V Attachment Systems

Exterior Systems

Wet Seal Systems

The Rout and Return Wet System uses a primary silicone sealant for air and water barrier, along with a simple clip design. These systems are economical, and are recommended for use on sloping walls.

DBVR Systems

The drain-back ventilated rainscreen system using ACM protects the wall of the building from high and rapid temperature changes. The system is designed to block nearly all moisture, however, when water does enter the cavity it will drain through the designed weep holes or will dry naturally via the airflow of the cavity.

PER Systems

The pressure equalized rainscreen system creates pressure equilibrium between the cavity and the outside wind force. This prevents any capillary movement of water into the cavity. This design requires the air and vapor barrier to absorb the windload.

Interior Systems

Face Fastened

A Face Fastened system eliminates the need for routing panels, and can provide a clean aesthetic when using fasteners that are painted to match ALUCOBOND panels.

Edge Capture

Edge Capture systems allow for the least amount of preparation of the ALUCOBOND panels, and can be a great option for feature walls or decoration.

Tape

Taped systems have long been used in both the exterior and interior markets. Tape systems involve shop application of hanging extrusions which are then hung onto pre-placed clips or rails. Manufacturers such as 3M and Tesa, have numerous products that have been successfully used in hanging ACM all over the world.

ALUCOBOND EasyFix (Exteriors & Interiors)

ALUCOBOND EasyFix is a cost-effective installation method for wood-frame construction in multifamily and mixed-use sectors. Utilizing an innovative design for the attachment of ALUCOBOND PLUS panels, ALUCOBOND EasyFix offers simplicity and efficiency in meeting tight construction schedules. The design provides an aesthetic solution similar to traditional ACM systems, combining 2 types of folds - 135° and 90°. Using the available attachment system, panels insert into short clips or a continuous rail. Ideal for exterior or interior cladding.

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ALUCOBOND

3A Composites USA's integrated management system provides us with an important framework for implementing sustainability initiatives in our business operations. The main constituents of our integrated management system are the areas of safety, health, environment, energy and quality.

"Significant efforts to reduce energy and water consumption, increase productivity, cut down waste and therefore significantly reduce CO_2 emissions are made on a continuous basis."

Energy Reduction

Efficient handling of energy sources can have a major impact on reducing CO_2 , a key consideration at 3A Composites USA. This is why we have set up an energy management system in accordance with ISO 14001, with the goal of improving efficiency and reducing waste.

Life Cycle

The high durability of ALUCOBOND has proven to last the test of time. With a verified service life expectancy of 50 years ALUCOBOND removes the high waste associated with replacement of materials. A plethora of applications allow architects to offer new and innovative designs while meeting the standards of sustainable planning.

Recycling

ALUCOBOND can be easily and homogeneously dismantled and returned to the reusable material cycle. ALUCOBOND PLUS and ALUCOBOND AXCENT are 100 % recyclable, i.e. the core materials and aluminum skins are returned to the material cycle and used to produce new material. It is the high material value of aluminum which provides the most important recycling impetus for the economy. Aluminum is recyclable to an unlimited extent without losing its characteristics.

VOC and SVOC Emissions

ALUCOBOND PLUS and ALUCOBOND AXCENT panels are coil-coated in a factory that captures and destroys volatile organic compounds (VOC's). This process is accomplished using a regenerative thermal oxidizer in our facility's paint line. By removing VOC's in the factory, there is no need for field coating and accompanying VOC's.

LEED Certification

Since LEED's introduction in 1998 it has become the most recognizable green building program in the world. LEED focuses on constructing buildings that have minimal impact on the environment during construction, occupation and reclamation, and recognizes that utilizing recycled materials is an important part of minimizing environmental impact.

The recycled aluminum content of ALUCOBOND PLUS and available EPD can provide contribution toward earning LEED points. This recognition is the driving force for using ALUCOBOND PLUS material.







TFC CANOPY 1107 N. TAYLOR RD. GARRETT, IN 46738 PH. (260) 357-6665 FAX (260) 357-6533

TABLE OF CONTEN	ITS
DRAWING TITLE	DRAWING # OF 3
PLAN VIEW & ELEVATIONS	1
DETAILS	2
DETAILS	3

CODE SPECIFICATIONS

I.C.C. INTERNATIONAL BUILDING CODE (2015 EDITION)

AISC STEEL CONSTRUCTION MANUAL, FOURTEENTH EDITION

AISC CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES (2010 EDITION) AISI SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL

AWS D1.1-2011 STRUCTURAL WELDING CODE

INTERNATIONAL PLUMBING CODE, 2015

AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (335-89S1)

2015 IBC

1603.1.1 FLOOR LIVE LOAD: N/A 1603.1.2 ROOF LIVE LOAD: 20 PSF 1603.1.3 ROOF SNOW LOAD: Pg = 35 PSF Pf = 29.4 PSF Ce = 1.0 Ct = 1.2Cs = N/APd1e = 21.61 PSF Pd1s = 21.61 PSF We = 4.66 FTWs = 4.66 FT1603.1.4 WIND LOAD: V(3 SEC GUST) = 115 MPH Vasd = 90 MPH I = 1.0 EXPOSURE = C

GCpi = 0.00 RISK CATEGORY = II

1603.1.5 EARTHQUAKE DESIGN DATA RISK CATEGORY = II Ss = 0.087 S1 = 0.047SITE CLASS = D Sds = 0.093 Sd1 = 0.075 SEISMIC DESIGN CATEGORY = B SEISMIC-RESISTING SYSTEM = CANTILEVERED COLUMN "G2" BASE SHEAR = 0.49 kips/COLUMN Cs = 0.074CONSTRUCTION TYPE: TYPE IIB
USE GROUP: MERCANTILE-GROUP M ANALYSIS PROCEDURE =

ERECTOR NOTES

A. ALL LEVELING NUTS AND FOOTING ELEVATIONS MUST BE CHECKED WITH A TRANSIT. VERIFY ALL FOOTING BOLT CENTERS.

B. CHECK ALL STEEL FOR PLUMB, SQUARE, AND LEVEL AFTER IT IS ERECTED.

C. ALL ASTM A325 AND A490 BOLTS SHALL BE INSTALLED PER THE RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENTGH BOLTS, (JUNE 11, 2020) CONTAINED IN PART 16. SPECIFICATIONS AND CODES OF THE AISC STEEL

D. CHECK LEVELNESS OF BOTTOM OF PURLINS WITH A TRANSIT.

E. ALL BRACING FOR BEAMS AND PURLINS IS TO BE WELDED ON BEFORE

DECK PANELS ARE INSTALLED.

FIELD PRIME ALL STRUCTURAL STEEL CONNECTIONS AND SPLICES AFTER

WASHERS ARE REQUIRED ON ALL BOLTED CONNECTIONS. THE NUT AND WASHER SHALL BE PLACED AT THE TOP OF CONNECTION (NUT SIDE IF BOLT RUNS HORIZONTALLY). A WASHER IS REQUIRED FOR ALL BOLTED CONNECTIONS AT SLOT LOCATIONS (UNLESS

H. DO NOT DEVIATE FROM PLANS WITHOUT PRIOR TFC CANOPY CONSENT.

MATERIAL SPEC.

HOT-ROLLED STRUCTURAL - A992 A500 GRADE C

ASTM2950

PLATE -A529 COLD-FORMED STRUCUTRAL - A1011 GRADE A (FY=55 KSI)

DECK PANELS -A653 (FY=50 KSI) WELDS -AWS/D1.1 E70XX ELECTRODE HIGH STRENGTH BOLTS -A325N WASHERS F436

STRUCTURAL TUBE -

METAL CANOPY SYSTEM

I. DO NOT SCALE DRAWINGS

8.1 SNUG-TIGHTENED JOINTS

9.1 SNUG-TIGHTENED JOINTS

TO BRING THE CONNECTED PLIES INTO FIRM CONTACT."

SNUG-TIGHTENED JOINT IS NOT A CONSIDERATION."

II. ALL CONSTRUCTION SHALL CONFORM TO APPLICABLE STATE AND LOCAL CODES.

BOLT NOTES:

ALL A325 AND A490 BOLTED CONNECTIONS MARKED WITH THE DESIGNATION (ST) SHALL BE INSTALLED AS SNUG-TIGHTENED JOINTS AS DEFINED IN SECTION 8.1 OF THE RCSC SPECIFICATION

FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, JUNE 11, 2020, CONTAINED IN PART 16, SPECIFICATIONS AND CODES OF THE AISC STEEL CONSTRUCTION MANUAL, FOURTEENTH EDITION.

. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF

AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH

INSPECTION REQUIREMENTS FOR SNUG-TIGHTENED JOINTS ARE AS LISTED IN SECTION 9.1 OF THE RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS, JUNE 11, 2020, CONTAINED IN PART 16, SPECIFICATIONS AND CODES OF THE AISC STEEL CONSTRUCTION MANUAL,

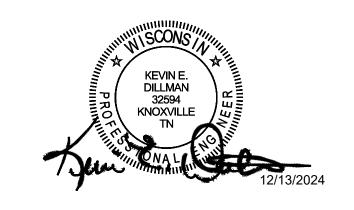
"... AFTER THE CONNECTIONS HAVE BEEN ASSEMBLED, IT SHALL BE VISUALLY ENSURED THAT THE PLIES OF THE CONNECTED ELEMENTS HAVE BEEN BROUGHT INTO FIRM CONTACT AND THAT

GENERAL NOTES

WASHERS HAVE BEEN USED ... NO FURTHER EVIDENCE OF CONFORMITY IS REQUIRED FOR SNUG-TIGHTENED JOINTS. THE MAGNITUDE OF THE CLAMPING FORCE THAT EXISTS IN A

III. ALL WELDING UNLESS SPECIFICALLY NOTED SHALL BE PERFORMED IN THE COMPANY SHOP BEFORE SHIPMENT. ALL WELDS SHALL BE 'FULL' WELDS, A MINIMUM OF 1/4" SIZE AND PERFORMED BY CERTIFIED WELDERS. UNLESS NOTED OTHERWISE.

CERTIFIED BY:



REV.	DESCRIPTION	DATE	BY

LOCATION: 10636 W. Bluemound Road ☐ ERECTOR ☐ CONSTR ☐ STEEL ☐ JOB FILE Wauwatosa, WI JOB # 702342 CUSTOMER: U.S. Petroleum Equipment Kimberly, WI SCALE: 24'-0" x 102'-0" -- 4 Cols. ENGINEER: KED DO NOT SCALE DATE: DRAWING NO. DRAWN BY: JFE JOB REF. Peoples Properties

COVER

Dec-12-2024

